

[Editorial changes](#)

[ECE/TRANS/WP.15/256](#)

[ECE/TRANS/WP.15/256/Add.1](#)

[ECE/TRANS/WP.15/256/Corr.1](#)

[ECE/TRANS/300/Corr.1](#)

[ECE/TRANS/300/Corr.4](#)

PART 1

General provisions

CHAPTER 1.1

SCOPE AND APPLICABILITY

1.1.1 Structure

Annexes A and B of ADR are grouped into nine parts. Annex A consists of Parts 1 to 7, and Annex B of Parts 8 and 9. Each part is subdivided into chapters and each chapter into sections and sub-sections. Within each part the number of the part is included with the numbers of the chapters, sections and sub-sections, for example Part 4, Chapter 2, Section 1 is numbered "4.2.1".

1.1.2 Scope

1.1.2.1 For the purposes of Article 2 of ADR, Annex A specifies:

- (a) Dangerous goods which are barred from international carriage;
- (b) Dangerous goods which are authorized for international carriage and the conditions attaching to them (including exemptions) particularly with regard to:
 - classification of goods, including classification criteria and relevant test methods;
 - use of packagings (including mixed packing);
 - use of tanks (including filling);
 - consignment procedures (including marking and labelling of packages and placarding and marking of means of transport as well as documentation and information required);
 - provisions concerning the construction, testing and approval of packagings and tanks;
 - use of means of transport (including loading, mixed loading and unloading).

1.1.2.2 Annex A contains certain provisions which, according to Article 2 of ADR, pertain to Annex B or to both Annexes A and B, as follows:

1.1.1	Structure
1.1.2.3	(Scope of Annex B)
1.1.2.4	
1.1.3.1	Exemptions related to the nature of the transport operation
1.1.3.6	Exemptions related to quantities carried per transport unit
1.1.4	Applicability of other regulations
1.1.4.5	Carriage other than by road
Chapter 1.2	Definitions and units of measurements
Chapter 1.3	Training of persons involved in the carriage of dangerous goods
Chapter 1.4	Safety obligations of the participants
Chapter 1.5	Derogations
Chapter 1.6	Transitional measures
Chapter 1.8	Checks and other support measures to ensure compliance with safety requirements
Chapter 1.9	Transport restrictions by the competent authorities
Chapter 1.10	Security provisions
Chapter 3.1	General
Chapter 3.2	Columns (1), (2), (14), (15) and (19) (application of provisions of Parts 8 and 9 to individual substances or articles).

1.1.2.3 For the purposes of Article 2 of ADR, Annex B specifies the conditions regarding the construction, equipment and operation of vehicles carrying dangerous goods authorized for carriage:

- requirements for vehicle crews, equipment, operation and documentation;
- requirements concerning the construction and approval of vehicles.

- 1.1.2.4 In Article 1(c) of ADR, the word "vehicles" need not refer to one and the same vehicle. An international transport operation may be performed by several different vehicles provided that the operation takes place on the territory of at least two Contracting Parties to ADR between the consignor and the consignee indicated in the transport document.

1.1.3 Exemptions

1.1.3.1 *Exemptions related to the nature of the transport operation*

The provisions laid down in ADR do not apply to:

- (a) The carriage of dangerous goods by private individuals where the goods in question are packaged for retail sale and are intended for their personal or domestic use or for their leisure or sporting activities provided that measures have been taken to prevent any leakage of contents in normal conditions of carriage. When these goods are flammable liquids carried in refillable receptacles filled by, or for, a private individual, the total quantity shall not exceed 60 litres per receptacle and 240 litres per transport unit. Dangerous goods in IBCs, large packagings or tanks are not considered to be packaged for retail sale;
- (b) *(Deleted)*
- (c) The carriage undertaken by enterprises which is ancillary to their main activity, such as deliveries to or returns from building or civil engineering sites, or in relation to surveying, repairs and maintenance, in quantities of not more than 450 litres per packaging, including intermediate bulk containers (IBCs) and large packagings, and within the maximum quantities specified in 1.1.3.6. Measures shall be taken to prevent any leakage of contents in normal conditions of carriage. These exemptions do not apply to Class 7.

Carriage undertaken by such enterprises for their supply or external or internal distribution does not fall within the scope of this exemption;

- (d) The carriage undertaken by the competent authorities for the emergency response or under their supervision, insofar as such carriage is necessary in relation to the emergency response, in particular carriage undertaken:
- by breakdown vehicles carrying vehicles which have been involved in accidents or have broken down and contain dangerous goods; or
 - to contain and recover the dangerous goods involved in an incident or accident and move them to the nearest appropriate safe place;
- (e) Emergency transport intended to save human lives or protect the environment provided that all measures are taken to ensure that such transport is carried out in complete safety;
- (f) The carriage of uncleaned empty static storage vessels which have contained gases of Class 2, groups A, O or F, substances of Class 3 or Class 9 belonging to packing group II or III or pesticides of Class 6.1 belonging to packing group II or III, subject to the following conditions:
- All openings with the exception of pressure relief devices (when fitted) are hermetically closed;
 - Measures have been taken to prevent any leakage of contents in normal conditions of carriage; and
 - The load is fixed in cradles or crates or other handling devices or to the vehicle or container in such a way that they will not become loose or shift during normal conditions of carriage.

This exemption does not apply to static storage vessels which have contained desensitized explosives or substances the carriage of which is prohibited by ADR.

NOTE: For radioactive material, see also 1.7.1.4.

1.1.3.2

Exemptions related to the carriage of gases

The provisions laid down in ADR do not apply to the carriage of:

- (a) Gases contained in the fuel tanks or cylinders of a vehicle performing a transport operation and destined for its propulsion or for the operation of any of its equipment used or intended for use during carriage (e.g. refrigerating equipment).

The gases may be carried in fixed fuel tanks or cylinders, directly connected to the vehicle's engine and/or auxiliary equipment or transportable pressure receptacles, which comply with the pertinent legal provisions.

The total capacity of the fuel tanks or cylinders for a transport unit, including those allowed in accordance with 1.1.3.3 (a), shall not exceed the amount of energy (MJ) or mass (kg) corresponding to 54 000 MJ energy-equivalent.

NOTE 1: *The value of 54 000 MJ energy-equivalent corresponds to the fuel limit of 1.1.3.3 (a) (1500 litres). For the energy content of fuels see the following Table:*

Fuel	Energy content
<i>Diesel</i>	<i>36 MJ/litre</i>
<i>Petrol</i>	<i>32 MJ/litre</i>
<i>Natural Gas/Biogas</i>	<i>35 MJ/Nm³ ^a</i>
<i>Liquefied Petroleum Gas (LPG)</i>	<i>24 MJ/litre</i>
<i>Ethanol</i>	<i>21 MJ/litre</i>
<i>Biodiesel</i>	<i>33 MJ/litre</i>
<i>Emulsion fuel</i>	<i>32 MJ/litre</i>
<i>Hydrogen</i>	<i>11 MJ/Nm³ ^a</i>

^a *1 Nm³ refers to a normal cubic metre: the amount of a gas occupying 1 m³ under temperature and pressure conditions of 0 °C and 1.01325 bar (0.101325 MPa).*

The total capacity shall not exceed:

- 1 080 kg for LNG and CNG;
- 2 250 litres for LPG;

NOTE 2: *A container fitted with equipment for use during carriage, secured on a vehicle, is considered as an integral part of the vehicle and benefits from the same exemptions as regards the fuel necessary to operate the equipment.*

- (b) *(Deleted)*
- (c) Gases of Groups A and O (according to 2.2.2.1), if the pressure of the gas in the receptacle or tank at a temperature of 20 °C does not exceed 200 kPa (2 bar) and if the gas is not a liquefied or a refrigerated liquefied gas. This includes every kind of receptacle or tank, e.g. also parts of machinery and apparatus;
- NOTE:** *This exemption does not apply to lamps. For lamps see 1.1.3.10.*
- (d) Gases contained in the equipment used for the operation of the vehicle (e.g. fire extinguishers), including in spare parts (e.g. inflated pneumatic tyres); this exemption also applies to inflated pneumatic tyres carried as a load;
- (e) Gases contained in the special equipment of vehicles and necessary for the operation of this special equipment during transport (cooling systems, fish-tanks, heaters, etc.) as well as spare receptacles for such equipment or uncleaned empty exchange receptacles, transported in the same transport unit;
- (f) Gases contained in foodstuffs (except UN 1950), including carbonated beverages; and
- (g) Gases contained in balls intended for use in sports.
- (h) *(Deleted)*

1.1.3.3 *Exemptions related to the carriage of liquid fuels*

The provisions laid down in ADR do not apply to the carriage of:

- (a) Fuel contained in the tanks of a vehicle performing a transport operation and destined for its propulsion or for the operation of any of its equipment used or intended for use during carriage.

The fuel may be carried in fixed fuel tanks, directly connected to the vehicle's engine and/or auxiliary equipment, which comply with the pertinent legal provisions, or may be carried in portable fuel containers (such as jerricans).

The total capacity of the fixed tanks shall not exceed 1500 litres per transport unit and the capacity of a tank fitted to a trailer shall not exceed 500 litres. A maximum of 60 litres per transport unit may be carried in portable fuel containers. These restrictions shall not apply to vehicles operated by the emergency services.

NOTE 1: *A container fitted with equipment for use during carriage, secured on a vehicle, is considered as an integral part of the vehicle and benefits from the same exemptions as regards the fuel necessary to operate the equipment.*

NOTE 2: *The total capacity of the tanks or cylinders, including those containing gaseous fuels, shall not exceed 54 000 MJ energy-equivalent (see NOTE 1 in 1.1.3.2 (a)).*

- (b) and (c) *(Deleted)*

1.1.3.4 *Exemptions related to special provisions or to dangerous goods packed in limited or excepted quantities*

NOTE: *For radioactive material, see also 1.7.1.4.*

1.1.3.4.1 Certain special provisions of Chapter 3.3 exempt partially or totally the carriage of specific dangerous goods from the requirements of ADR. The exemption applies when the special provision is referred to in Column (6) of Table A of Chapter 3.2 against the dangerous goods entry concerned.

1.1.3.4.2 Certain dangerous goods may be subject to exemptions provided that the conditions of Chapter 3.4 are met.

1.1.3.4.3 Certain dangerous goods may be subject to exemptions provided that the conditions of Chapter 3.5 are met.

1.1.3.5 *Exemptions related to empty uncleaned packagings*

Empty uncleaned packagings (including IBCs and large packagings) which have contained substances of Classes 2, 3, 4.1, 5.1, 6.1, 8 and 9 are not subject to the conditions of ADR if adequate measures have been taken to nullify any hazard. Hazards are nullified if adequate measures have been taken to nullify all hazards of Classes 1 to 9.

1.1.3.6 Exemptions related to quantities carried per transport unit

1.1.3.6.1 For the purposes of this sub-section, dangerous goods are assigned to transport categories 0, 1, 2, 3, or 4, as indicated in Column (15) of Table A of Chapter 3.2. Empty uncleaned packagings having contained substances assigned to transport category "0" are also assigned to transport category "0". Empty uncleaned packagings having contained substances assigned to a transport category other than "0" are assigned to transport category "4".

1.1.3.6.2 Where the quantity of dangerous goods carried on a transport unit does not exceed the values indicated in column (3) of the table in 1.1.3.6.3 for a given transport category (when the dangerous goods carried in the transport unit belong to the same category) or the value calculated in accordance with 1.1.3.6.4 (when the dangerous goods carried in the transport unit belong to different transport categories), they may be carried in packages in one transport unit without application of the following provisions:

- Chapter 1.10 except for high consequence dangerous goods of Class 1 (in accordance with 1.10.3.1) explosives of UN Nos. 0029, 0030, 0059, 0065, 0073, 0104, 0237, 0255, 0267, 0288, 0289, 0290, 0360, 0361, 0364, 0365, 0366, 0439, 0440, 0441, 0455, 0456, 0500, 0511, 0512 and 0513 and except for Class 7 excepted packages of UN Nos. 2910 and 2911 if the activity level exceeds the A₂ value;
- Chapter 5.3;
- Section 5.4.3;
- Chapter 7.2, except for V5 and V8 of 7.2.4;
- CV1 of 7.5.11;
- Part 8 except for
 - 8.1.2.1 (a),
 - 8.1.4.2 to 8.1.4.5,
 - 8.2.3,
 - 8.3.3,
 - 8.3.4,
 - 8.3.5,
 - Chapter 8.4,
 - S1(3) and (6),
 - S2(1),
 - S4; S5,
 - S14 to S21 and
 - S24 of Chapter 8.5;
- Part 9.

1.1.3.6.3 Where the dangerous goods carried in the transport unit belong to the same category, the maximum total quantity per transport unit is indicated in column (3) of the table below:

Transport category (1)	Substances or articles packing group or classification code/group or UN No. (2)	Maximum total quantity per transport unit ^b (3)
0	Class 1: 1.1A/1.1L/1.2L/1.3L and UN No. 0190 Class 3: UN No. 3343 Class 4.2: Substances belonging to packing group I Class 4.3: UN Nos. 1183, 1242, 1295, 1340, 1390, 1403, 1928, 2813, 2965, 2968, 2988, 3129, 3130, 3131, 3132, 3134, 3148, 3396, 3398 and 3399 Class 5.1: UN No. 2426 Class 6.1: UN Nos. 1051, 1600, 1613, 1614, 2312, 3250 and 3294 Class 6.2: UN Nos. 2814, 2900 and 3549 Class 7: UN Nos. 2912 to 2919, 2977, 2978 and 3321 to 3333 Class 8: UN No. 2215 (MALEIC ANHYDRIDE, MOLTEN) Class 9: UN Nos. 2315, 3151, 3152 and 3432 and articles containing such substances or mixtures and empty uncleaned packagings, except those classified under UN No. 2908, having contained substances classified in this transport category.	0
1	Substances and articles belonging to packing group I and not classified in transport category 0 and substances and articles of the following classes: Class 1: 1.1B to 1.1J ^a /1.2B to 1.2J/1.3C/1.3G/1.3H/1.3J/1.5D ^a Class 2: groups T, TC ^a , TO, TF, TOC ^a and TFC aerosols: groups C, CO, FC, T, TF, TC, TO, TFC and TOC chemicals under pressure: UN Nos. 3502, 3503, 3504 and 3505 Class 4.1: UN Nos. 3221 to 3224, 3231 to 3240, 3533 and 3534 Class 5.2: UN Nos. 3101 to 3104 and 3111 to 3120	20
2	Substances belonging to packing group II and not classified in transport categories 0, 1 or 4 and substances and articles of the following classes: Class 1: 1.4B to 1.4G and 1.6N Class 2: group F aerosols: group F chemicals under pressure: UN No. 3501 Class 4.1: UN Nos. 3225 to 3230, 3531 and 3532 Class 4.3: UN Nos. 3292 Class 5.1: UN Nos. 3356 Class 5.2: UN Nos. 3105 to 3110 Class 6.1: UN Nos. 1700, 2016 and 2017 and substances belonging to packing group III <u>Class 6.2: UN No. 3291</u> Class 9: UN Nos. 3090, 3091, 3245, 3480, and 3481 <u>and 3536</u>	333
3	Substances belonging to packing group III and not classified in transport categories 0, 2 or 4 and substances and articles of the following classes: Class 2: groups A and O aerosols: groups A and O chemicals under pressure: UN No. 3500 Class 3: UN No. 3473 Class 4.3: UN No. 3476 Class 8: UN Nos. 2794, 2795, 2800, 3028, 3477 and 3506 Class 9: UN Nos. 2990 and 3072	1 000
4	Class 1: 1.4S Class 2: UN Nos. 3537 to 3539 Class 3: UN No. 3540 Class 4.1: UN Nos. 1331, 1345, 1944, 1945, 2254, 2623 and 3541 Class 4.2: UN Nos. 1361 and 1362 packing group III and UN No. 3542 Class 4.3: UN No. 3543 Class 5.1: UN No. 3544 Class 5.2: UN No. 3545 Class 6.1: UN No. 3546 Class 7: UN Nos. 2908 to 2911 Class 8: UN No. 3547 Class 9: UN Nos. 3268, 3499, 3508, 3509 and 3548 and empty, uncleaned packagings having contained dangerous goods, except for those classified in transport category 0	unlimited

^a For UN Nos. 0081, 0082, 0084, 0241, 0331, 0332, 0482, 1005 and 1017, the total maximum quantity per transport unit shall be 50 kg.

^b The maximum total quantity for each transport category corresponds to a calculated value of "1000" (see also 1.1.3.6.4).

In the above table, "maximum total quantity per transport unit" means:

- For articles, total mass in kilograms of the articles without their packagings (for articles of Class 1, net mass in kilograms of the explosive substance; for dangerous goods in machinery and equipment specified in this Annex, the total quantity of dangerous goods contained therein in kilograms or litres as appropriate);
- For solids, liquefied gases, refrigerated liquefied gases and dissolved gases, net mass in kilograms;
- For liquids, the total quantity of dangerous goods contained in litres;
- For compressed gases, adsorbed gases and chemicals under pressure, the water capacity of the receptacle in litres.

1.1.3.6.4 Where dangerous goods of different transport categories are carried in the same transport unit, the sum of:

- The quantity of substances and articles of transport category 1 multiplied by "50";
- The quantity of substances and articles of transport category 1 referred to in Note a to the table in 1.1.3.6.3 multiplied by "20";
- The quantity of substances and articles of transport category 2 multiplied by "3"; and
- The quantity of substances and articles of transport category 3;

shall not exceed a calculated value of "1 000".

1.1.3.6.5 For the purposes of this sub-section, dangerous goods exempted in accordance with 1.1.3.1 (a) and (d) to (f), 1.1.3.2 to 1.1.3.5, 1.1.3.7, 1.1.3.9 and 1.1.3.10 shall not be taken into account.

1.1.3.7 *Exemptions related to the carriage of electric energy storage and production systems*

The provisions laid down in ADR do not apply to electric energy storage and production systems (e.g., lithium batteries, electric capacitors, asymmetric capacitors, metal hydride storage systems and fuel cells):

- (a) installed in a vehicle, performing a transport operation and destined for its propulsion or for the operation of any of its equipment;
- (b) contained in equipment for the operation of this equipment used or intended for use during carriage (e.g. a laptop), except for equipment such as data loggers and cargo tracking devices attached to or placed in packages, overpacks, containers or load compartments which are only subject to the requirements in 5.5.4.

1.1.3.8 *(Reserved)*

1.1.3.9 *Exemptions related to dangerous goods used as a coolant or conditioner during carriage*

When used in vehicles or containers for cooling or conditioning purposes, dangerous goods that are only asphyxiant (which dilute or replace the oxygen normally in the atmosphere) are only subject to the provisions of section 5.5.3.

1.1.3.10 *Exemptions related to the carriage of lamps containing dangerous goods*

The following lamps are not subject to ADR provided that they do not contain radioactive material and do not contain mercury in quantities above those specified in special provision 366 of Chapter 3.3:

- (a) Lamps that are collected directly from individuals and households when carried to a collection or recycling facility;

NOTE: This also includes lamps brought by individuals to a first collection point, and then carried to another collection point, intermediate processing or recycling facility.

- (b) Lamps each containing not more than 1 g of dangerous goods and packaged so that there is not more than 30 g of dangerous goods per package, provided that:
- (i) the lamps are manufactured according to a certified quality management system;
- NOTE: ISO 9001 may be used for this purpose.*
- and
- (ii) each lamp is either individually packed in inner packagings, separated by dividers, or surrounded with cushioning material to protect the lamps and packed into strong outer packagings meeting the general provisions of 4.1.1.1 and capable of passing a 1.2 m drop test;
- (c) Used, damaged or defective lamps each containing not more than 1 g of dangerous goods with not more than 30 g of dangerous goods per package when carried from a collection or recycling facility. The lamps shall be packed in strong outer packagings sufficient for preventing release of the contents under normal conditions of carriage meeting the general provisions of 4.1.1.1 and that are capable of passing a drop test of not less than 1.2 m;
- (d) Lamps containing only gases of Groups A and O (according to 2.2.2.1) provided they are packaged so that the projectile effects of any rupture of the lamp will be contained within the package.

NOTE: Lamps containing radioactive material are addressed in 2.2.7.2.2.2 (b).

1.1.4 Applicability of other regulations

1.1.4.1 *(Reserved)*

1.1.4.2 Carriage in a transport chain including maritime or air carriage

1.1.4.2.1 Packages, containers, bulk-containers, portable tanks, tank-containers and MEGCs, which do not entirely meet the requirements for packing, mixed packing, marking, labelling of packages or placarding and orange plate marking, of ADR, but are in conformity with the requirements of the IMDG Code or the ICAO Technical Instructions shall be accepted for carriage in a transport chain including maritime or air carriage subject to the following conditions:

- (a) If the packages are not marked and labelled in accordance with ADR, they shall bear marks and danger labels in accordance with the requirements of the IMDG Code or the ICAO Technical Instructions;
- (b) The requirements of the IMDG Code or the ICAO Technical Instructions shall be applicable to mixed packing within a package;
- (c) For carriage in a transport chain including maritime carriage, if the containers, bulk-containers, portable tanks, tank-containers or MEGCs are not marked and placarded in accordance with Chapter 5.3 of this Annex, they shall be marked and placarded in accordance with Chapter 5.3 of the IMDG Code. In such case, only 5.3.2.1.1 of this Annex is applicable to the marking of the vehicle itself. For empty, uncleaned portable tanks, tank-containers and MEGCs, this requirement shall apply up to and including the subsequent transfer to a cleaning station.

This derogation does not apply in the case of goods classified as dangerous goods in classes 1 to 9 of ADR and considered as non-dangerous goods according to the applicable requirements of the IMDG Code or the ICAO Technical Instructions.

1.1.4.2.2 Transport units composed of a vehicle or vehicles other than those carrying containers, portable tanks, tank-containers or MEGCs as provided for in 1.1.4.2.1 (c), which are not placarded in accordance with the provisions of 5.3.1 of ADR but which are marked and placarded in accordance with Chapter 5.3 of the IMDG Code, shall be accepted for carriage in a transport chain including maritime transport provided that the orange-coloured plate marking provisions of 5.3.2 of ADR are complied with.

1.1.4.2.3 For carriage in a transport chain including maritime or air carriage, the information required under 5.4.1 and 5.4.2 and under any special provision of Chapter 3.3 may be substituted by the transport document

and information required by the IMDG Code or the ICAO Technical Instructions respectively provided that any additional information required by ADR is also included.

NOTE: For carriage in accordance with 1.1.4.2.1, see also 5.4.1.1.7. For carriage in containers, see also 5.4.2.

1.1.4.3 Use of IMO type portable tanks approved for maritime transport

IMO type portable tanks (types 1, 2, 5 and 7) which do not meet the requirements of Chapters 6.7 or 6.8, but which were built and approved before 1 January 2003 in accordance with the provisions of the IMDG Code (Amdt. 29-98) may continue to be used provided that they meet the applicable periodic inspection and test provisions of the IMDG Code¹. In addition, they shall meet the provisions corresponding to the instructions set out in columns (10) and (11) of Table A in Chapter 3.2 and the provisions of Chapter 4.2 of ADR. See also 4.2.0.1 of the IMDG Code.

1.1.4.4 (Reserved)

1.1.4.5 Carriage other than by road

1.1.4.5.1 If the vehicle carrying out a transport operation subject to the requirements of ADR is conveyed over a section of the journey otherwise than by road haulage, then any national or international regulations which, on the said section, govern the carriage of dangerous goods by the mode of transport used for conveying the road vehicle shall alone be applicable to the said section of the journey.

1.1.4.5.2 In the cases referred to in 1.1.4.5.1 above, the involved ADR Contracting Parties may agree to apply the requirements of ADR to the section of a journey where a vehicle is conveyed otherwise than by road haulage, supplemented, if they consider it necessary, by additional requirements, unless such agreements between the involved ADR Contracting Parties would contravene clauses of the international conventions governing the carriage of dangerous goods by the mode of transport used for conveying the road vehicle on the said section of the journey, e.g. the International Convention for the Safety of Life at Sea (SOLAS), to which these ADR Contracting Parties would also be contracting parties.

These agreements shall be notified by the Contracting Party which has taken the initiative thereof to the Secretariat of the United Nations Economic Commission for Europe which shall bring them to the attention of the Contracting Parties.

1.1.4.5.3 In cases where a transport operation subject to the provisions of ADR is likewise subject over the whole or a part of the road journey to the provisions of an international convention which regulates the carriage of dangerous goods by a mode of transport other than road carriage by virtue of clauses extending the applicability of that convention to certain motor-vehicle services, then the provisions of that international convention shall apply over the journey in question concurrently with those of ADR which are not incompatible with them; the other clauses of ADR shall not apply over the journey in question.

1.1.4.6 (Reserved)

1.1.4.7 Refillable pressure receptacles authorized by the United States of America Department of Transportation

NOTE: For carriage in accordance with 1.1.4.7, see also 5.4.1.1.24.

1.1.4.7.1 Import of gases

Refillable pressure receptacles authorised by the United States of America Department of Transportation and constructed and tested in accordance with standards listed in Part 178, Specifications for Packagings of Title 49, Transportation, of the Code of Federal Regulations accepted for carriage in a transport chain in accordance with 1.1.4.2 may be carried from the location of the temporary storage at the end point of the transport chain to the end user.

¹ The International Maritime Organization (IMO) has issued "Guidance on the Continued Use of Existing IMO Type Portable Tanks and Road Tank Vehicles for the Transport of Dangerous Goods" as circular CCC.1/Circ.3. The text of this guidance can be found on the IMO website at: www.imo.org.

1.1.4.7.2 Export of gases and empty uncleaned pressure receptacles

Refillable pressure receptacles authorised by the United States of America Department of Transportation and constructed in accordance with standards listed in Part 178, Specifications for Packagings of Title 49, Transportation, of the Code of Federal Regulations may be filled and carried only for the purpose of exporting to countries which are not Contracting Parties to ADR provided the following provisions are met:

- (a) The filling of the pressure receptacle is in accordance with the relevant requirements of the Code of Federal Regulations of the United States of America;
- (b) The pressure receptacles shall be marked and labelled in accordance with Chapter 5.2;
- (c) The provisions of 4.1.6.12 and 4.1.6.13 shall apply to pressure receptacles. Pressure receptacles shall not be filled after they become due for periodic inspection but may be carried after the expiry of the time-limit for purposes of performing inspection, including the intermediate carriage operations.

1.1.5 Application of standards

Where the application of a standard is required and there is any conflict between the standard and the provisions of ADR, the provisions of ADR take precedence. The requirements of the standard that do not conflict with ADR shall be applied as specified, including the requirements of any other standard, or part of a standard, referenced within that standard as normative.

NOTE: A standard provides details on how to meet the provisions of ADR and may include requirements in addition to those set out in ADR.

CHAPTER 1.2

DEFINITIONS ~~AND~~, UNITS OF MEASUREMENT AND ABBREVIATIONS

1.2.1 Definitions

NOTE: *This section contains all general or specific definitions.*

For the purposes of ADR:

A

~~"ADN" means the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways;~~

"Aerosol or aerosol dispenser" means an article consisting of any non-refillable receptacle meeting the requirements of 6.2.6, made of metal, glass or plastics and containing a gas, compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state;

"Animal material" means animal carcasses, animal body parts, foodstuffs or feedstuffs derived from animals;

~~"Applicant" means, in the case of conformity assessment, the manufacturer or its authorised representative in a country Contracting Party. In the case of periodic inspections, intermediate inspections and exceptional checks, applicant means the testing facility, the operator or their authorised representative in a country Contracting Party;~~

NOTE: *Exceptionally a third party (for instance a tank-container operator in accordance with the definition of 1.2.1) may apply for the conformity assessment.*

"Approval"

Multilateral approval, for the carriage of radioactive material, means approval by the relevant competent authority of the country of origin of the design or shipment, as applicable, and by the competent authority of each country through or into which the consignment is to be carried;

Unilateral approval, for the carriage of radioactive material, means an approval of a design which is required to be given by the competent authority of the country of origin of the design only. If the country of origin is not a Contracting Party to ADR, the approval shall require validation by the competent authority of a Contracting Party to ADR (see 6.4.22.8);

~~"ASTM" means the American Society for Testing and Materials (ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959, United States of America);~~

B

"Bag" means a flexible packaging made of paper, plastics film, textiles, woven material or other suitable material;

"Battery-vehicle" means a vehicle containing elements which are linked to each other by a manifold and permanently fixed to this vehicle. The following elements are considered to be elements of a battery-vehicle: cylinders, tubes, bundles of cylinders (also known as frames), pressure drums as well as tanks destined for the carriage of gases as defined in 2.2.2.1.1 with a capacity of more than 450 litres;

"Body" (for all categories of IBC other than composite IBCs) means the receptacle proper, including openings and closures, but does not include service equipment;

"Box" means a packaging with complete rectangular or polygonal faces, made of metal, wood, plywood, reconstituted wood, fibreboard, plastics or other suitable material. Small holes for purposes of ease of handling or opening or to meet classification requirements, are permitted as long as they do not compromise the integrity of the packaging during carriage;

"*Bulk container*" means a containment system (including any liner or coating) intended for the carriage of solid substances which are in direct contact with the containment system. Packagings, intermediate bulk containers (IBCs), large packagings and tanks are not included.

A bulk container is:

- of a permanent character and accordingly strong enough to be suitable for repeated use;
- specially designed to facilitate the carriage of goods by one or more means of transport without intermediate reloading;
- fitted with devices permitting its ready handling;
- of a capacity of not less than 1.0 m³;

Examples of bulk containers are containers, offshore bulk containers, skips, bulk bins, swap bodies, trough-shaped containers, roller containers, load compartments of vehicles;

NOTE: *This definition only applies to bulk containers meeting the requirements of Chapter 6.11.*

"*Closed bulk container*" means a totally closed bulk container having a rigid roof, sidewalls, end walls and floor (including hopper-type bottoms). The term includes bulk containers with an opening roof, side or end wall that can be closed during carriage. Closed bulk containers may be equipped with openings to allow for the exchange of vapours and gases with air and which prevent under normal conditions of carriage the release of solid contents as well as the penetration of rain and splash water;

"*Flexible bulk container*" means a flexible container with a capacity not exceeding 15 m³ and includes liners and attached handling devices and service equipment;

"*Sheeted bulk container*" means an open top bulk container with rigid bottom (including hopper-type bottom), side and end walls and a non-rigid covering;

"*Bundle of cylinders*" means [a pressure receptacle comprising](#) an assembly of cylinders [or cylinder shells](#) that are fastened together and which are interconnected by a manifold and carried as a unit. The total water capacity shall not exceed 3 000 litres except that bundles intended for the carriage of toxic gases of Class 2 (groups starting with letter T according to 2.2.2.1.3) shall be limited to 1 000 litres water capacity;

C

"*Calculation pressure*" means a theoretical pressure at least equal to the test pressure which, according to the degree of danger exhibited by the substance being carried, may to a greater or lesser degree exceed the working pressure. It is used solely to determine the thickness of the walls of the shell, independently of any external or internal reinforcing device (see also "*Discharge pressure*", "*Filling pressure*", "*Maximum working pressure (gauge pressure)*" and "*Test pressure*");

NOTE: *For portable tanks, see Chapter 6.7.*

"*Capacity of shell or shell compartment*" for tanks, means the total inner volume of the shell or shell compartment expressed in litres or cubic metres. When it is impossible to completely fill the shell or the shell compartment because of its shape or construction, this reduced capacity shall be used for the determination of the degree of filling and for the marking of the tank;

"*Cargo transport unit*" means a vehicle, a wagon, a container, a tank-container, a portable tank or an MEGC;

"*Carriage*" means the change of place of dangerous goods, including stops made necessary by transport conditions and including any period spent by the dangerous goods in vehicles, tanks and containers made necessary by traffic conditions before, during and after the change of place.

This definition also covers the intermediate temporary storage of dangerous goods in order to change the mode or means of transport (trans-shipment). This shall apply provided that transport documents showing the place of dispatch and the place of reception are presented on request and provided that

packages and tanks are not opened during intermediate storage, except to be checked by the competent authorities;

"*Carriage in bulk*" means the carriage of unpackaged solids or articles in vehicles, containers or bulk containers. The term does not apply to packaged goods nor to substances carried in tanks;

"*Carrier*" means the enterprise which carries out the transport operation with or without a transport contract;

~~"CGA" means the Compressed Gas Association (CGA, 14501 George Carter Way, Suite 103, Chantilly, VA 20151, United States of America);~~

~~"CIM" means the Uniform Rules Concerning the Contract of International Carriage of Goods by Rail (Appendix B to the Convention concerning International Carriage by Rail (COTIF)), as amended;~~

"*Closed bulk container*", see "*Bulk container*";

"*Closed container*", see "*Container*";

"*Closed cryogenic receptacle*" means a thermally insulated pressure receptacle for refrigerated liquefied gases of a water capacity of not more than 1 000 litres;

"*Closed vehicle*" means a vehicle having a body capable of being closed;

"*Closure*" means a device which closes an opening in a receptacle;

NOTE: For pressure receptacles, closures are, for example, valves, pressure relief devices, pressure gauges or level indicators.

~~"CMR" means the Convention on the Contract for the International Carriage of Goods by Road (Geneva, 19 May 1956), as amended;~~

"*Collective entry*" means an entry for a defined group of substances or articles (see 2.1.1.2, B, C and D);

"*Combination packaging*" means a combination of packagings for carriage purposes, consisting of one or more inner packagings secured in an outer packaging in accordance with 4.1.1.5;

NOTE: The term "*inner packaging*" used for combination packagings shall not be confused with the term "*inner receptacle*" used for composite packagings.

"*Combustion heater*" means a device directly using liquid or gaseous fuel and not using the waste heat from the engine used for propulsion of the vehicle;

"*Competent authority*" means the authority or authorities or any other body or bodies designated as such in each State and in each specific case in accordance with domestic law;

"*Compliance assurance*" (radioactive material) means a systematic programme of measures applied by a competent authority which is aimed at ensuring that the requirements of ADR are met in practice;

"*Composite IBC with plastics inner receptacle*" means an IBC comprising structural equipment in the form of a rigid outer casing encasing a plastics inner receptacle together with any service or other structural equipment. It is so constructed that the inner receptacle and outer casing once assembled form, and are used as, an integrated single unit to be filled, stored, transported or emptied as such;

NOTE: "*Plastics material*", when used in connection with inner receptacles for composite IBCs, is taken to include other polymeric materials such as rubber.

"*Composite packaging*" means a packaging consisting of an outer packaging and an inner receptacle so constructed that the inner receptacle and the outer packaging form an integral packaging. Once assembled it remains thereafter an integrated single unit; it is filled, stored, carried and emptied as such;

NOTE:- The term "*inner receptacle*" used for composite packagings shall not be confused with the term "*inner packaging*" used for combination packagings. For example, the inner of a 6HA1 composite packaging (plastics material) is such an inner receptacle since it is normally not designed to perform a containment function without its outer packaging and is not therefore an inner packaging.

—Where a material is mentioned in brackets after the term "composite packaging", it refers to the inner receptacle.

"Compressed ~~Natural~~ ~~natural~~ Gas (CNG)" means a compressed gas composed of natural gas with a high methane content assigned to UN No. 1971;

"Confinement system", for the carriage of radioactive material, means the assembly of fissile material and packaging components specified by the designer and agreed to by the competent authority as intended to preserve criticality safety;

"Conformity assessment" means the process of verifying the conformity of a product according to the provisions of sections 1.8.6 and 1.8.7 related to type approval examination, supervision of manufacture and initial inspection and testing;

"Consignee" means the consignee according to the contract for carriage. If the consignee designates a third party in accordance with the provisions applicable to the contract for carriage, this person shall be deemed to be the consignee within the meaning of ADR. If the transport operation takes place without a contract for carriage, the enterprise which takes charge of the dangerous goods on arrival shall be deemed to be the consignee;

"Consignment" means any package or packages, or load of dangerous goods, presented by a consignor for carriage;

"Consignor" means the enterprise which consigns dangerous goods either on its own behalf or for a third party. If the transport operation is carried out under a contract for carriage, consignor means the consignor according to the contract for carriage;

"Container" means an article of transport equipment (lift van or other similar structure):

- of a permanent character and accordingly strong enough to be suitable for repeated use;
- specially designed to facilitate the carriage of goods, by one or more means of transport, without breakage of load;
- fitted with devices permitting its ready stowage and handling, particularly when being transloaded from one means of transport to another;
- so designed as to be easy to fill and empty;
- having an internal volume of not less than 1 m³, except for containers for the carriage of radioactive material.

In addition:

"Small container" means a container which has an internal volume of not more than 3 m³;

"Large container" means

- (a) A container which does not meet the definition of a small container;
- (b) In the meaning of the CSC, a container of a size such that the area enclosed by the four outer bottom corners is either
 - (i) at least 14 m² (150 square feet); or
 - (ii) at least 7 m² (75 square feet) if fitted with top corner fittings;

"Closed container" means a totally enclosed container having a rigid roof, rigid side walls, rigid end walls and a floor. The term includes containers with an opening roof where the roof can be closed during transport;

"Open container" means an open top container or a platform based container;

"Sheeted container" means an open container equipped with a sheet to protect the goods loaded;

A "swap body" is a container which, in accordance with EN 283:1991 has the following characteristics:

- from the point of view of mechanical strength, it is only built for carriage on a wagon or a vehicle on land or by roll-on roll-off ship;
- it cannot be stacked;
- it can be removed from vehicles by means of equipment on board the vehicle and on its own supports, and can be reloaded;

NOTE: The term "container" does not cover conventional packagings, IBCs, tank-containers or vehicles. Nevertheless, a container may be used as a packaging for the carriage of radioactive material.

"Containment system", for the carriage of radioactive material, means the assembly of components of the packaging specified by the designer as intended to retain the radioactive material during carriage;

"Control temperature" means the maximum temperature at which the organic peroxide, the self-reactive substance or the polymerizing substance can be safely carried;

"Conveyance" means, for carriage by road or by rail, a vehicle or a wagon;

"Criticality safety index (CSI) assigned to a package, overpack or container containing fissile material", for the carriage of radioactive material, means a number which is used to provide control over the accumulation of packages, overpacks or containers containing fissile material;

~~"CSC" means the International Convention for Safe Containers (Geneva, 1972) as amended and published by the International Maritime Organization (IMO), London;~~

"Crate" means an outer packaging with incomplete surfaces;

"Critical temperature" means the temperature above which the substance cannot exist in the liquid state;

~~"Cryogenic receptacle" means a transportable thermally insulated pressure receptacle for refrigerated liquefied gases of a water capacity of not more than 1 000 litres (see also "Open cryogenic receptacle");~~

"Cylinder" means a transportable pressure receptacle of a water capacity not exceeding 150 litres (see also "Bundle of cylinders");

D

"Dangerous goods" means those substances and articles the carriage of which is prohibited by ADR, or authorized only under the conditions prescribed therein;

"Dangerous reaction" means:

- (a) Combustion or evolution of considerable heat;
- (b) Evolution of flammable, asphyxiant, oxidizing or toxic gases;
- (c) The formation of corrosive substances;
- (d) The formation of unstable substances; or
- (e) Dangerous rise in pressure (for tanks only);

"Demountable tank" means a tank, other than a fixed tank, a portable tank, a tank-container or an element of a battery-vehicle or a MEGC which has a capacity of more than 450 litres, is not designed for the carriage of goods without breakage of load, and normally can only be handled when it is empty;

"Design", for the carriage of radioactive material, means the description of fissile material excepted under 2.2.7.2.3.5 (f), special form radioactive material, low dispersible radioactive material, package or packaging which enables such an item to be fully identified. The description may include specifications, engineering drawings, reports demonstrating compliance with regulatory requirements, and other relevant documentation;

"*Design life*", for composite cylinders and tubes, means the maximum life (in number of years) for which the cylinder or tube is designed and approved in accordance with the applicable standard;

"*Diameter*" (for shells of tanks) means the internal diameter of the shell;

"*Discharge pressure*" means the maximum pressure actually built up in the tank when it is being discharged under pressure (see also "*Calculation pressure*", "*Filling pressure*", "*Maximum working pressure (gauge pressure)*" and "*Test pressure*");

"*Dose rate*" means the ambient dose equivalent or the directional dose equivalent, as appropriate, per unit time, measured at the point of interest;

"*Drum*" means a flat-ended or convex-ended cylindrical packaging made out of metal, fibreboard, plastics, plywood or other suitable materials. This definition also includes packagings of other shapes, e.g. round, taper-necked packagings or pail-shaped packagings. Wooden barrels and jerricans are not covered by this definition;

E

"*EC Directive*" means provisions decided by the competent institutions of the European Community and which are binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods;

"*Emergency temperature*" means the temperature at which emergency procedures shall be implemented in the event of loss of temperature control;

~~"*EN*" (standard) means a European standard published by the European Committee for Standardization (CEN) (CEN, Avenue Marnix 17, B-1000 Brussels);~~

"*Enterprise*" means any natural person, any legal person, whether profit-making or not, any association or group of persons without legal personality, whether profit-making or not, or any official body, whether it has legal personality itself or is dependent upon an authority that has such personality;

"*Exclusive use*", for the carriage of radioactive material, means the sole use, by a single consignor, of a vehicle or of a large container, in respect of which all initial, intermediate and final loading and unloading and shipment are carried out in accordance with the directions of the consignor or consignee, where so required by ADR;

F

"*Fibreboard IBC*" means a fibreboard body with or without separate top and bottom caps, if necessary, an inner liner (but no inner packagings), and appropriate service and structural equipment;

~~"*Fibre-reinforced plastics*" means material consisting of fibrous and/or particulate reinforcement contained within a thermoset or thermoplastic polymer (matrix);~~

"*Filler*" means any enterprise which fills dangerous goods into a tank (tank-vehicle, demountable tank, portable tank or tank-container) and/or into a vehicle, large container or small container for carriage in bulk, or into a battery-vehicle or MEGC;

"*Filling pressure*" means the maximum pressure actually built up in the tank when it is being filled under pressure (see also "*Calculation pressure*", "*Discharge pressure*", "*Maximum working pressure (gauge pressure)*" and "*Test pressure*");

"*Filling ratio*" means the ratio of the mass of gas to the mass of water at 15 °C that would fill completely a pressure receptacle fitted ready for use;

"*Fixed tank*" means a tank having a capacity of more than 1 000 litres which is permanently attached to a vehicle (which then becomes a tank-vehicle) or is an integral part of the frame of such vehicle;

"*Flammable component*" (for aerosols) means flammable liquids, flammable solids or flammable gases and gas mixtures as defined in Notes 1 to 3 of sub-section 31.1.3 of Part III of the Manual of Tests and Criteria. This designation does not cover pyrophoric, self-heating or water-reactive substances. The chemical heat of combustion shall be determined by one of the following methods ASTM D 240, ISO/FDIS 13943:1999 (E/F) 86.1 to 86.3 or NFPA 30B;

"Flash-point" means the lowest temperature of a liquid at which its vapours form a flammable mixture with air;

"Flexible bulk container", see "Bulk container";

"Flexible IBC" means a body constituted of film, woven fabric or any other flexible material or combinations thereof, and if necessary, an inner coating or liner, together with any appropriate service equipment and handling devices;

"Fuel cell" means an electrochemical device that converts the chemical energy of a fuel to electrical energy, heat and reaction products;

"Fuel cell engine" means a device used to power equipment and which consists of a fuel cell and its fuel supply, whether integrated with or separate from the fuel cell, and includes all appurtenances necessary to fulfil its function;

"Full load" means any load originating from one consignor for which the use of a vehicle or of a large container is exclusively reserved and all operations for the loading and unloading of which are carried out in conformity with the instructions of the consignor or of the consignee;

NOTE: The corresponding term for radioactive material is "exclusive use".

G

"Gas" means a substance which:

- (a) At 50 °C has a vapour pressure greater than 300 kPa (3 bar); or
- (b) Is completely gaseous at 20 °C under standard pressure of 101.3 kPa;

"Gas cartridge", see "Small receptacle containing gas";

"Globally Harmonized System of Classification and Labelling of Chemicals GHS" means the ~~eighth~~ ninth revised edition of the ~~Globally Harmonized System of Classification and Labelling of Chemicals, published by the United Nations publication bearing this title as document (ST/SG/AC.10/30/Rev.9)8;~~

H

"Handling device" (for flexible IBCs) means any sling, loop, eye or frame attached to the body of the IBC or formed from the continuation of the IBC body material;

"Hermetically closed tank" means a tank that:

- is not equipped with safety valves, bursting discs, other similar safety devices or vacuum valves; or
- is equipped with safety valves preceded by a bursting disc according to 6.8.2.2.10, but is not equipped with vacuum valves.

A tank intended for the carriage of liquid substances with a calculation pressure of at least 4 bar or intended for the carriage of solid substances (powdery or granular) regardless of its calculation pressure is also considered hermetically closed if it:

- is equipped with safety valves preceded by a bursting disc according to 6.8.2.2.10 and vacuum valves, in accordance with the requirements of 6.8.2.2.3; or,
- is not equipped with safety valves, bursting discs or other similar safety devices, but is equipped with vacuum valves, in accordance with the requirements of 6.8.2.2.3.;

"Holding time" means the time that will elapse from the establishment of the initial filling condition until the pressure has risen due to heat influx to the lowest set pressure of the pressure limiting devices (s) of tanks intended for the carriage of refrigerated liquefied gases;

NOTE: For portable tanks, see 6.7.4.1.

I

~~"IAEA" means the International Atomic Energy Agency (IAEA), (IAEA, P.O. Box 100 — A — 1400 Vienna);~~

"IAEA Regulations for the Safe Transport of Radioactive Material" means one of the editions of those Regulations, as follows:

- (a) For the 1985 and 1985 (as amended 1990) editions: IAEA Safety Series No. 6;
- (b) For the 1996 edition: IAEA Safety Series No. ST-1;
- (c) For the 1996 (revised) edition: IAEA Safety Series No. TS-R-1 (ST-1, Revised);
- (d) For the 1996 (as amended 2003), 2005 and 2009 editions: IAEA Safety Standards Series No. TS-R-1;
- (e) For the 2012 edition: IAEA Safety Standards Series No. SSR-6;
- (f) For the 2018 edition: IAEA Safety Standards Series No. SSR-6 (Rev.1);

~~"IBC", see "Intermediate bulk container";~~

~~"ICAO" means the International Civil Aviation Organization (ICAO, 999 University Street, Montreal, Quebec H3C 5H7, Canada);~~

"ICAO Technical Instructions" means the Technical Instructions for the Safe Transport of Dangerous Goods by Air, which complement Annex 18 to the Chicago Convention on International Civil Aviation (Chicago 1944), published by the International Civil Aviation Organization (ICAO) in Montreal;

"IMDG Code" means the International Maritime Dangerous Goods Code, for the implementation of Chapter VII, Part A, of the International Convention for the Safety of Life at Sea, 1974 (SOLAS Convention), published by the International Maritime Organization (IMO), London;

~~"IMO" means the International Maritime Organization (IMO, 4 Albert Embankment, London SE1 7SR, United Kingdom);~~

"Inner packaging" means a packaging for which an outer packaging is required for carriage;

"Inner receptacle" means a receptacle which requires an outer packaging in order to perform its containment function;

"Inspection body" means an independent inspection and testing body approved by the competent authority;

"Intermediate bulk container" (IBC) means a rigid, or flexible portable packaging, other than those specified in Chapter 6.1, that:

- (a) Has a capacity of:
 - (i) not more than 3 m³ for solids and liquids of packing groups II and III;
 - (ii) not more than 1.5 m³ for solids of packing group I when packed in flexible, rigid plastics, composite, fibreboard and wooden IBCs;
 - (iii) not more than 3 m³ for solids of packing group I when packed in metal IBCs;
 - (iv) not more than 3 m³ for radioactive material of Class 7;

- (b) Is designed for mechanical handling;
- (c) Is resistant to the stresses produced in handling and transport as determined by the tests specified in Chapter 6.5;

(see also "*Composite IBC with plastics inner receptacle*", "*Fibreboard IBC*", "*Flexible IBC*", "*Metal IBC*", "*Rigid plastics IBC*" and "*Wooden IBC*").

NOTE 1: *Portable tanks or tank-containers that meet the requirements of Chapter 6.7 or 6.8 respectively are not considered to be intermediate bulk containers (IBCs).*

NOTE 2: *Intermediate bulk containers (IBCs) which meet the requirements of Chapter 6.5 are not considered to be containers for the purposes of ADR.*

"*Remanufactured IBC*" means a metal, rigid plastics or composite IBC that:

- (a) Is produced as a UN type from a non-UN type; or
- (b) Is converted from one UN design type to another UN design type.

Remanufactured IBCs are subject to the same requirements of ADR that apply to new IBCs of the same type (see also design type definition in 6.5.6.1.1);

"*Repaired IBC*" means a metal, rigid plastics or composite IBC that, as a result of impact or for any other cause (e.g. corrosion, embrittlement or other evidence of reduced strength as compared to the design type) is restored so as to conform to the design type and to be able to withstand the design type tests. For the purposes of ADR, the replacement of the rigid inner receptacle of a composite IBC with a receptacle conforming to the original design type from the same manufacturer is considered repair. However, routine maintenance of rigid IBCs is not considered repair. The bodies of rigid plastics IBCs and the inner receptacles of composite IBCs are not repairable. Flexible IBCs are not repairable unless approved by the competent authority;

"*Routine maintenance of flexible IBCs*" means the routine performance on plastics or textile flexible IBCs of operations, such as:

- (a) Cleaning; or
- (b) Replacement of non-integral components, such as non-integral liners and closure ties, with components conforming to the original manufacturer's specification;

provided that these operations do not adversely affect the containment function of the flexible IBC or alter the design type.

"*Routine maintenance of rigid IBCs*" means the routine performance on metal, rigid plastics or composite IBCs of operations such as:

- (a) Cleaning;
- (b) Removal and reinstallation or replacement of body closures (including associated gaskets), or of service equipment, conforming to the original manufacturer's specifications, provided that the leaktightness of the IBC is verified; or
- (c) Restoration of structural equipment not directly performing a dangerous goods containment or discharge pressure retention function so as to conform to the design type (e.g. the straightening of legs or lifting attachments) provided that the containment function of the IBC is not affected;

"*Inner vessel*", for a closed cryogenic receptacle, means the pressure vessel intended to contain the refrigerated liquefied gas;

"*Intermediate packaging*" means a packaging placed between inner packagings or articles, and an outer packaging;

~~"*ISO*" (standard) means an international standard published by the International Organization for Standardization (ISO) (ISO – 1, rue de Varembé, CH-1204 Geneva 20);~~

J

"*Jerrican*" means a metal or plastics packaging of rectangular or polygonal cross-section with one or more orifices;

L

"*Large container*", see "*Container*";

"*Large packaging*" means a packaging consisting of an outer packaging which contains articles or inner packagings and which

- (a) Is designed for mechanical handling;
- (b) Exceeds 400 kg net mass or 450 litres capacity but has a volume of not more than 3 m³;

"*Large salvage packaging*" means a special packaging which

- (a) is designed for mechanical handling; and
- (b) exceeds 400 kg net mass or 450 litres capacity but has a volume of not more than 3 m³;

into which damaged, defective, leaking or non-conforming dangerous goods packages, or dangerous goods that have spilled or leaked are placed for purposes of carriage for recovery or disposal;

"*Leakproofness test*" means a test to determine the leakproofness of a tank, a packaging or an IBC and of the equipment and closure devices;

NOTE: For portable tanks, see Chapter 6.7.

"*Light-gauge metal packaging*" means a packaging of circular, elliptical, rectangular or polygonal cross-section (also conical) and taper-necked and pail-shaped packaging made of metal, having a wall thickness of less than 0.5 mm (e.g. tinplate), flat or convex bottomed and with one or more orifices, which is not covered by the definitions for drums or jerricans;

"*Liner*" means a tube or bag inserted into a packaging, including large packagings or IBCs, but not forming an integral part of it, including the closures of its openings;

"*Liquid*" means a substance which at 50 °C has a vapour pressure of not more than 300 kPa (3 bar), which is not completely gaseous at 20 °C and 101.3 kPa, and which

- (a) Has a melting point or initial melting point of 20 °C or less at a pressure of 101.3 kPa; or
- (b) Is liquid according to the ASTM D 4359-90 test method; or
- (c) Is not pasty according to the criteria applicable to the test for determining fluidity (penetrometer test) described in 2.3.4;

NOTE: "*Carriage in the liquid state*", for the purpose of tank requirements, means:

- *Carriage of liquids according to the above definition; or*
- *Solids handed over for carriage in the molten state.*

"*Liquefied ~~Natural~~-natural Gas (LNG)*" means a refrigerated liquefied gas composed of natural gas with a high methane content assigned to UN No. 1972;

"*Liquefied ~~Petroleum~~-petroleum Gas (LPG)*" means a low pressure liquefied gas composed of one or more light hydrocarbons which are assigned to UN Nos. 1011, 1075, 1965, 1969 or 1978 only and which consists mainly of propane, propene, butane, butane isomers, butene with traces of other hydrocarbon gases;

NOTE 1: *Flammable gases assigned to other UN numbers shall not be regarded as LPG.*

NOTE 2: *For UN No. 1075 see NOTE 2 under 2F, UN No. 1965, in the table for Liquefied gases in 2.2.2.3.*

"Loader" means any enterprise which:

- (a) Loads packaged dangerous goods, small containers or portable tanks into or onto a vehicle or a container; or
- (b) Loads a container, bulk-container, MEGC, tank-container or portable tank onto a vehicle.

"Loading" means all actions carried out by the loader, in accordance with the definition of loader;

M

"Management system", for the carriage of radioactive material, means a set of interrelated or interacting elements (system) for establishing policies and objectives and enabling the objectives to be achieved in an efficient and effective manner;

"Manual of Tests and Criteria" means the seventh revised edition of the [Manual of Tests and Criteria, published by the United Nations publication bearing this title \(ST/SG/AC.10/11/Rev.7 and Amend.1\)](#);

"Mass of package" means gross mass of the package unless otherwise stated. The mass of containers and tanks used for the carriage of goods is not included in the gross mass;

"Maximum capacity" means the maximum inner volume of receptacles or packagings including intermediate bulk containers (IBCs) and large packagings expressed in cubic metres or litres;

"Maximum net mass" means the maximum net mass of contents in a single packaging or maximum combined mass of inner packagings and the contents thereof expressed in kilograms;

"Maximum normal operating pressure", for the carriage of radioactive material, means the maximum pressure above atmospheric pressure at mean sea-level that would develop in the containment system in a period of one year under the conditions of temperature and solar radiation corresponding to environmental conditions in the absence of venting, external cooling by an ancillary system, or operational controls during carriage;

"Maximum permissible gross mass"

- (a) (for IBCs) means the mass of the IBC and any service or structural equipment together with the maximum net mass;
- (b) (for tanks) means the tare of the tank and the heaviest load authorized for carriage;

NOTE: *For portable tanks, see Chapter 6.7.*

"Maximum working pressure (gauge pressure)" means the highest of the following three pressures that may occur at the top of the tank in the operating position:

- (a) The highest effective pressure allowed in the tank during filling (maximum filling pressure allowed);
- (b) The highest effective pressure allowed in the tank during discharge (maximum discharge pressure allowed); and
- (c) The effective gauge pressure to which the tank is subjected by its contents (including such extraneous gases as it may contain) at the maximum working temperature.

Unless the special requirements prescribed in Chapter 4.3 provide otherwise, the numerical value of this working pressure (gauge pressure) shall not be lower than the vapour pressure (absolute pressure) of the filling substance at 50 °C.

For tanks equipped with safety valves (with or without bursting disc) other than tanks for the carriage of compressed, liquefied or dissolved gases of Class 2, the maximum working pressure (gauge pressure) shall however be equal to the prescribed opening pressure of such safety valves.

(See also "Calculation pressure", "Discharge pressure", "Filling pressure" and "Test pressure");

NOTE 1: *Maximum working pressure is not applicable to gravity-discharge tanks according to 6.8.2.1.14 (a).*

NOTE 2: *For portable tanks, see Chapter 6.7.*

NOTE 3: *For closed cryogenic receptacles, see NOTE to 6.2.1.3.6.5.*

"MEGC", see "Multiple element gas container";

"Member of a vehicle crew" means a driver or any other person accompanying the driver for safety, security, training or operational reasons;

"MEMU", see "Mobile explosives manufacturing unit";

"Metal hydride storage system" means a single complete hydrogen storage system, including a [pressure receptacle shell](#)~~receptacle~~, metal hydride, pressure relief device, shut-off valve, service equipment and internal components used for the carriage of hydrogen only;

"Metal IBC" means a metal body together with appropriate service and structural equipment;

"Mild steel" means a steel having a minimum tensile strength between 360 N/mm² and 440 N/mm²;

NOTE: *For portable tanks, see Chapter 6.7.*

"Mobile explosives manufacturing unit" (MEMU) means a unit, or a vehicle mounted with a unit, for manufacturing and charging explosives from dangerous goods that are not explosives. The unit consists of various tanks and bulk containers and process equipment as well as pumps and related equipment. The MEMU may have special compartments for packaged explosives;

NOTE: *Even though the definition of MEMU includes the expression "manufacturing and charging explosives" the requirements for MEMUs apply only to carriage and not to manufacturing and charging of explosives.*

"Multiple-element gas container" (MEGC) means a unit containing elements which are linked to each other by a manifold and mounted on a frame. The following elements are considered to be elements of a multiple-element gas container: cylinders, tubes, pressure drums or bundles of cylinders as well as tanks for the carriage of gases as defined in 2.2.2.1.1 having a capacity of more than 450 litres;

NOTE: *For UN MEGCs, see Chapter 6.7.*

N

"Net explosive mass (NEM)" means the total mass of the explosive substances, without the packagings, casings, etc. (~~Net-net explosive quantity (NEQ)~~, *net explosive contents (NEC)*, *net explosive weight (NEW)* or *net mass of explosive contents* are often used to convey the same meaning);

"Neutron radiation detector" means a device that detects neutron radiation. In such a device, a gas may be contained in a hermetically sealed electron tube transducer that converts neutron radiation into a measurable electric signal;

"N.O.S. entry (not otherwise specified entry)" means a collective entry to which substances, mixtures, solutions or articles may be assigned if they:

- (a) Are not mentioned by name in Table A of Chapter 3.2; and
- (b) Exhibit chemical, physical and/or dangerous properties corresponding to the Class, classification code, packing group and the name and description of the n.o.s. entry;

O

"Offshore bulk container" means a bulk container specially designed for repeated use for carriage to, from and between offshore facilities. An offshore bulk container is designed and constructed in accordance with the guidelines for the approval of offshore containers handled in open seas specified by the International Maritime Organization (IMO) in document MSC/Circ.860;

"Open container", see "Container";

"Open cryogenic receptacle" means a transportable thermally insulated receptacle for refrigerated liquefied gases maintained at atmospheric pressure by continuous venting of the refrigerated liquefied gas;

"Open vehicle" means a vehicle the platform of which has no superstructure or is merely provided with side boards and a tailboard;

"Outer packaging" means the outer protection of the composite or combination packaging together with any absorbent materials, cushioning and any other components necessary to contain and protect inner receptacles or inner packagings;

"Over-moulded cylinder" means a cylinder intended for the carriage of LPG with a water capacity not exceeding 13 litres made of a coated welded steel inner cylinder shell with an over-moulded protective case made from cellular plastic, which is non-removable and bonded to the outer surface of the steel cylinder shell wall;

"Overpack" means an enclosure used (by a single consignor in the case of radioactive material) to contain one or more packages, consolidated into a single unit easier to handle and stow during carriage;

Examples of overpacks:

- (a) A loading tray such as a pallet, on which several packages are placed or stacked and secured by a plastics strip, shrink or stretch wrapping or other appropriate means; or
- (b) An outer protective packaging such as a box or a crate;

P

"Package" means the complete product of the packing operation, consisting of the packaging or large packaging or IBC and its contents prepared for dispatch. The term includes receptacles for gases as defined in this section as well as articles which, because of their size, mass or configuration may be carried unpackaged or carried in cradles, crates or handling devices. Except for the carriage of radioactive material, the term does not apply to goods which are carried in bulk, nor to substances carried in tanks;

NOTE: For radioactive material, see 2.2.7.2, 4.1.9.1.1 and Chapter 6.4.

"Packaging" means one or more receptacles and any other components or materials necessary for the receptacles to perform their containment and other safety functions (see also "Combination packaging", "Composite packaging", "Inner packaging", "Intermediate bulk container (IBC)", "Intermediate packaging", "Large packaging", "Light-gauge metal packaging", "Outer packaging", "Reconditioned packaging", "Remanufactured packaging", "Reused packaging", "Salvage packaging" and "Sift-proof packaging");

"Packer" means any enterprise which puts dangerous goods into packagings, including large packagings and intermediate bulk containers (IBCs) and, where necessary, prepares packages for carriage;

"Packing group" means a group to which, for packing purposes, certain substances may be assigned in accordance with their degree of danger. The packing groups have the following meanings which are explained more fully in Part 2:

Packing group I: Substances presenting high danger;

Packing group II: Substances presenting medium danger; and

Packing group III: Substances presenting low danger;

NOTE: *Certain articles containing dangerous goods are assigned to a packing group.*

"Portable tank" means a multimodal tank having, when used for the carriage of gases as defined in 2.2.2.1.1, a capacity of more than 450 litres in accordance with the definitions in Chapter 6.7 or the IMDG Code and indicated by a portable tank instruction (T-Code) in Column (10) of Table A of Chapter 3.2;

"Portable tank operator", see "Tank-container/portable tank operator";

"Pressure drum" means a welded ~~transportable~~ pressure receptacle of a water capacity exceeding 150 litres and of not more than 1 000 litres, (e.g. cylindrical receptacles equipped with rolling hoops, spheres on skids);"

"Pressure receptacle" means a transportable receptacle intended for holding substances under pressure including its closure(s) and other service equipment and is a collective term that includes cylinders, tubes, pressure drums, closed cryogenic receptacles, metal hydride storage systems, bundles of cylinders and salvage pressure receptacles;

"Pressure receptacle shell" means a cylinder, a tube, a pressure drum or a salvage pressure receptacle without its closures or other service equipment, but including any permanently attached device(s) (e.g. neck ring, foot ring);

NOTE: The terms "cylinder shell", "pressure drum shell" and "tube shell" are also used.

"Pressurized gas cartridge", see "Aerosol or aerosol dispenser";

"Protected IBC" (for metal IBCs) means an IBC provided with additional protection against impact, the protection taking the form of, for example, a multi-layer (sandwich) or double-wall construction, or a frame with a metal lattice-work casing;

"Protective lining" (for tanks) means a lining or coating protecting the metallic tank material against the substances to be carried;

NOTE: This definition does not apply to a lining or coating used only to protect the substance to be carried.

Q

"Quality assurance" means a systematic programme of controls and inspections applied by any organization or body which is aimed at providing confidence that the safety prescriptions in ADR are met in practice;

R

"Radiation detection system" means an apparatus that contains radiation detectors as components;

"Radioactive contents", for the carriage of radioactive material, mean the radioactive material together with any contaminated or activated solids, liquids, and gases within the packaging;

"Receptacle" (Class 1) includes boxes, bottles, cans, drums, jars and tubes, including any means of closure used in the inner or intermediate packaging;

"Receptacle" means a containment vessel for receiving and holding substances or articles, including any means of closing. This definition does not apply to shells (see also "Closed cryogenic receptacle", "Open cryogenic receptacles"~~"Cryogenic receptacle"~~, "Inner receptacle", "Pressure receptacle", "Rigid inner receptacle" and "Gas cartridge");

"Reconditioned packaging" means in particular

- (a) Metal drums that are:
- (i) cleaned to original materials of construction, with all former contents, internal and external corrosion, and external coatings and labels removed;
 - (ii) restored to original shape and contour, with chimes (if any) straightened and sealed and all non-integral gaskets replaced; and
 - (iii) inspected after cleaning but before painting, with rejection of packagings with visible pitting, significant reduction in the material thickness, metal fatigue, damaged threads or closures or other significant defects;

- (b) Plastics drums and jerricans that:
- (i) are cleaned to original materials of construction, with all former contents, external coatings and labels removed;
 - (ii) have all non-integral gaskets replaced; and
 - (iii) are inspected after cleaning with rejection of packagings with visible damage such as tears, creases or cracks, or damaged threads or closures or other significant defects;

"Recycled plastics material" means material recovered from used industrial packagings that has been cleaned and prepared for processing into new packagings; The specific properties of the recycled material used for production of new packagings shall be assured and documented regularly as part of a quality assurance programme recognized by the competent authority. The quality assurance programme shall include a record of proper pre-sorting and verification that each batch of recycled plastics material has the proper melt flow rate, density, and tensile yield strength, consistent with that of the design type manufactured from such recycled material. This necessarily includes knowledge about the packaging material from which the recycled plastics have been derived, as well as awareness of the prior contents of those packagings if those prior contents might reduce the capability of new packagings produced using that material. In addition, the packaging manufacturer's quality assurance programme under 6.1.1.4 shall include performance of the mechanical design type test in 6.1.5 on packagings manufactured from each batch of recycled plastics material. In this testing, stacking performance may be verified by appropriate dynamic compression testing rather than static load testing;

***NOTE:** ISO 16103:2005 "Packaging – Transport packages for dangerous goods – Recycled plastics material", provides additional guidance on procedures to be followed in approving the use of recycled plastics material. These guidelines have been developed based on the experience of the manufacturing of drums and jerricans from recycled plastics material and as such may need to be adapted for other types of packagings, IBCs and large packagings made of recycled plastics material.*

"Reel" (Class 1) means a device made of plastics, wood, fibreboard, metal or other suitable material comprising a central spindle with, or without, side walls at each end of the spindle. Articles and substances can be wound onto the spindle and may be retained by side walls;

"Reference steel" means a steel with a tensile strength of 370 N/mm² and an elongation at fracture of 27 %;

"Remanufactured IBC", see *"Intermediate Bulk Container (IBC)"*;

"Remanufactured large packaging" means a metal or rigid plastics large packaging that:

- (a) Is produced as a UN type from a non-UN type; or
- (b) Is converted from one UN design type to another UN design type.

Remanufactured large packagings are subject to the same requirements of ADR that apply to new large packagings of the same type (see also design type definition in 6.6.5.1.2);

"Remanufactured packaging" means in particular

- (a) Metal drums that:
 - (i) are produced as a UN type complying with the requirements of Chapter 6.1 from a non-UN type;
 - (ii) are converted from one UN type complying with the requirements of Chapter 6.1 to another UN type; or
 - (iii) undergo the replacement of integral structural components (such as non-removable heads);
- (b) Plastics drums that:
 - (i) are converted from one UN type to another UN type (e.g. 1H1 to 1H2); or

- (ii) undergo the replacement of integral structural components.

Remanufactured drums are subject to the requirements of Chapter 6.1 which apply to new drums of the same type;

"Repaired IBC", see *"Intermediate Bulk Container (IBC)"*;

"Reused large packaging" means a large packaging to be refilled which has been examined and found free of defects affecting the ability to withstand the performance tests; the term includes those which are refilled with the same or similar compatible contents and are carried within distribution chains controlled by the consignor of the product;

"Reused packaging" means a packaging which has been examined and found free of defects affecting the ability to withstand the performance tests. The term includes those which are refilled with the same or similar compatible contents and are carried within distribution chains controlled by the consignor of the product;

"RID" means *Regulations concerning the International Carriage of Dangerous Goods by Rail (Appendix C of COTIF (Convention concerning international carriage by rail))*;

"Rigid inner receptacle" (for composite IBCs) means a receptacle which retains its general shape when empty without its closures in place and without benefit of the outer casing. Any inner receptacle that is not "rigid" is considered to be "flexible";

"Rigid plastics IBC" means a rigid plastics body, which may have structural equipment together with appropriate service equipment;

"Routine maintenance of flexible IBCs", see *"Intermediate Bulk Container (IBC)"*;

"Routine maintenance of rigid IBCs", see *"Intermediate Bulk Container (IBC)"*;

S

"Safety valve" means a spring-loaded device which is activated automatically by pressure the purpose of which is to protect the tank against unacceptable excess internal pressure;

"SADT" see *"Self-accelerating decomposition temperature"*;

"Salvage packaging" means a special packaging into which damaged, defective, leaking or non-conforming dangerous goods packages, or dangerous goods that have spilled or leaked are placed for purposes of carriage for recovery or disposal;

"Salvage pressure receptacle" means a pressure receptacle with a water capacity not exceeding 3 000 litres into which are placed damaged, defective, leaking or non-conforming pressure receptacle(s) for the purpose of carriage e.g. for recovery or disposal;

"SAPT", see *"Self-accelerating polymerization temperature"*;

"Self-accelerating decomposition temperature" (SADT), means the lowest temperature at which self-accelerating decomposition may occur in a substance in the packaging, IBC or tank as offered for carriage. The SADT shall be determined in accordance with the test procedures given in Part II, Section 28 of the Manual of Tests and Criteria;

"Self-accelerating polymerization temperature (SAPT)" means the lowest temperature at which self-accelerating polymerization may occur with a substance in the packaging, IBC or tank as offered for carriage. The SAPT shall be determined in accordance with the test procedures established for the self-accelerating decomposition temperature for self-reactive substances in accordance with Part II, section 28 of the Manual of Tests and Criteria;

"Service equipment"

- (a) Of the tank means filling and discharge, breather, safety, heating, heat insulating and additive devices and measuring instruments;

- (b) Of the elements of a battery-vehicle or of a MEGC means filling and discharge devices, including the manifold, safety devices and measuring instruments;
- (c) Of an IBC means the filling and discharge devices and any pressure-relief or venting, safety, heating and heat insulating devices and measuring instruments;
- (d) Of a pressure receptacle, means closures, manifolds, piping, porous, absorbent or adsorbent material and any structural devices, e.g. for handling;

NOTE: For portable tanks, see Chapter 6.7.

"Service life", for composite cylinders and tubes, means the number of years the cylinder or tube is permitted to be in service;

"Settled pressure" means the pressure of the contents of a pressure receptacle in thermal and diffusive equilibrium;

"Sheeted bulk container", see "Bulk container";

"Sheeted container", see "Container";

"Sheeted vehicle" means an open vehicle provided with a sheet to protect the load;

"Shell" (for tanks), means the part of the tank which retains the substance intended for carriage, including openings and their closures, but does not include service equipment or external structural equipment;

NOTE: For portable tanks, see Chapter 6.7.

"Sift-proof packaging" means a packaging impermeable to dry contents, including fine solid material produced during carriage;

"Small container", see "Container";

"Small receptacle containing gas (gas cartridge)" means a non-refillable receptacle having a water capacity not exceeding 1000 ml for receptacles made of metal and not exceeding 500 ml for receptacles made of synthetic material or glass, containing, under pressure, a gas or a mixture of gases. It may be fitted with a valve;

"Solid" means:

- (a) A substance with a melting point or initial melting point of more than 20 °C at a pressure of 101.3 kPa; or
- (b) A substance which is not liquid according to the ASTM D 4359-90 test method or which is pasty according to the criteria applicable to the test for determining fluidity (penetrometer test) described in 2.3.4;

"Structural equipment"

- (a) For tanks of a tank-vehicle or demountable tank, means the external or internal reinforcing, fastening, protective or stabilizing members of the shell;
- (b) For tanks of a tank-container, means the external or internal reinforcing, fastening, protective or stabilizing members of the shell;
- (c) For elements of a battery-vehicle or an MEGC means the external or internal reinforcing, fastening, protective or stabilizing members of the shell or receptacle;
- (d) For IBCs other than flexible IBCs means the reinforcing, fastening, handling, protective or stabilizing members of the body (including the base pallet for composite IBCs with plastics inner receptacle);

NOTE: For portable tanks, see Chapter 6.7.

"Swap body", see "Container";

T

"Tank" means a shell, including its service and structural equipment. When used alone, the term tank means a tank-container, portable tank, demountable tank or fixed tank as defined in this Section, including tanks forming elements of battery-vehicles or MEGCs (see also "Demountable tank", "Fixed tank", "Portable tank" and "Multiple-element gas container");

NOTE: For portable tanks, see 6.7.4.1.

"Tank-container" means an article of transport equipment meeting the definition of a container, and comprising a shell and items of equipment, including the equipment to facilitate movement of the tank-container without significant change of attitude, used for the carriage of gases, liquid, powdery or granular substances and, when used for the carriage of gases as defined in 2.2.2.1.1, having a capacity of more than 0.45 m³ (450 litres);

NOTE: IBCs which meet the requirements of Chapter 6.5 are not considered to be tank-containers.

"Tank-container or portable tank operator" means any enterprise in whose name the tank-container or portable tank is ~~registered~~operated;

In addition:

"Extra-large tank-container" means a tank-container with a capacity of more than 40 000 litres.

"Tank record" means a file containing all the important technical information concerning a tank, a battery-vehicle or a MEGC, such as certificates referred to in 6.8.2.3, 6.8.2.4 and 6.8.3.4;

"Tank swap body" is considered to be a tank-container;

"Tank-vehicle" means a vehicle built to carry liquids, gases or powdery or granular substances and comprising one or more fixed tanks. In addition to the vehicle proper, or the units of running gear used in its stead, a tank-vehicle comprises one or more shells, their items of equipment and the fittings for attaching them to the vehicle or to the running-gear units;

"Technical name" means a recognized chemical name, if relevant a biological name, or other name currently used in scientific and technical handbooks, journals and texts (see 3.1.2.8.1.1);

"Test pressure" means the required pressure applied during a pressure test for initial or periodic inspection (see also "Calculation pressure", "Discharge pressure", "Filling pressure" and "Maximum working pressure (gauge pressure)");

NOTE: For portable tanks, see Chapter 6.7.

"Through or into", for the carriage of radioactive material, means through or into the countries in which a consignment is carried but specifically excludes countries "over" which a consignment is carried by air provided that there are no scheduled stops in those countries;

"Transport index (TI)" assigned to a package, overpack or container, or to unpackaged LSA-I or SCO-I or SCO-III, for the carriage of radioactive material, means a number which is used to provide control over radiation exposure;

"Transport unit" means a motor vehicle without an attached trailer, or a combination consisting of a motor vehicle and an attached trailer;

"Tray" (Class 1) means a sheet of metal, plastics, fibreboard or other suitable material which is placed in the inner, intermediate or outer packaging and achieves a close-fit in such packaging. The surface of the tray may be shaped so that packagings or articles can be inserted, held secure and separated from each other;

"Tube" (Class 2) means a ~~transportable~~pressure receptacle of seamless or composite construction having a water capacity exceeding 150 litres and of not more than 3 000 litres;

U

~~"UIC" means the International Union of Railways (UIC, 16 rue Jean Rey, F 75015 Paris, France);~~

~~"UNECE" means the United Nations Economic Commission for Europe (UNECE, Palais des Nations, 8 14 avenue de la Paix, CH 1211 Geneva 10, Switzerland);~~

~~"Undertaking", see "Enterprise";~~

~~"Unloader" means any enterprise which:~~

- ~~(a) Removes a container, bulk-container, MEGC, tank-container or portable tank from a vehicle; or~~
- ~~(b) Unloads packaged dangerous goods, small containers or portable tanks out of or from a vehicle or a container; or~~
- ~~(c) Discharges dangerous goods from a tank (tank-vehicle, demountable tank, portable tank or tank-container) or from a battery-vehicle, MEMU or MEGC or from a vehicle, large container or small container for carriage in bulk or a bulk-container;~~

~~"Unloading" means all actions carried out by the unloader, in accordance with the definition of unloader;~~

~~"UN Model Regulations" means the Model Regulations annexed to the twenty-first-second revised edition of the Recommendations on the Transport of Dangerous Goods published by the United Nations (ST/SG/AC.10/1/Rev.224);~~

~~"UN number" means the four-figure identification number of the substance or article taken from the UN Model Regulations;~~

~~"UN Regulation" means a regulation annexed to the Agreement concerning the adoption of uniform technical prescriptions for wheeled vehicles equipment and parts which can be fitted and or used on wheeled vehicles and the conditions for reciprocal recognition of approvals granted on the basis of these prescriptions (1958 Agreement, as amended);~~

V

~~"Vacuum-operated waste tank" means a fixed tank, demountable tank, tank-container or tank swap body primarily used for the carriage of dangerous wastes, with special constructional features and/or equipment to facilitate the filling and discharging of wastes as specified in Chapter 6.10. A tank which fully complies with the requirements of Chapter 6.7 or 6.8 is not considered to be a vacuum-operated waste tank;~~

~~"Vacuum valve" means a spring-loaded device which is activated automatically by pressure the purpose of which is to protect the tank against unacceptable negative internal pressure;~~

~~"Vehicle" see "Battery-vehicle", "Closed vehicle", "Open vehicle", "Sheeted vehicle" and "Tank-vehicle";~~

W

~~"Wastes" means substances, solutions, mixtures or articles for which no direct use is envisaged but which are transported for reprocessing, dumping, elimination by incineration or other methods of disposal;~~

~~"Wooden barrel" means a packaging made of natural wood, of round cross-section, having convex walls, consisting of staves and heads and fitted with hoops;~~

~~"Wooden IBC" means a rigid or collapsible wooden body, together with an inner liner (but no inner packaging) and appropriate service and structural equipment;~~

~~"Working pressure" means the settled pressure of a compressed gas at a reference temperature of 15 °C in a full pressure receptacle;~~

- ~~(a) For a compressed gas, means the settled pressure at a reference temperature of 15 °C in a full pressure receptacle;~~

(b) For UN 1001 acetylene, dissolved, means the calculated settled pressure at a uniform reference temperature of 15 °C in an acetylene cylinder containing the specified solvent content and the maximum acetylene content;

(c) For UN 3374 acetylene, solvent free, means the working pressure which was calculated for the equivalent cylinder for UN 1001 acetylene, dissolved;

NOTE: For tanks, see "*Maximum working pressure*".

"Woven plastics" (for flexible IBCs) means a material made from stretch tapes or monofilaments of suitable plastics material.

1.2.2 Units of measurement

1.2.2.1 The following units of measurement ^a are applicable in ADR:

Measurement of	SI Unit ^b	Acceptable alternative unit	Relationship between units
Length	m (metre)	-	-
Area	m ² (square metre)	-	-
Volume	m ³ (cubic metre)	l ^c (litre)	1 l = 10 ⁻³ m ³
Time	s (second)	min (minute) h (hour) d (day)	1 min = 60 s 1 h = 3 600 s 1 d = 86 400 s
Mass	kg (kilogram)	g (gram) t (ton)	1 g = 10 ⁻³ kg 1 t = 10 ³ kg
Mass density	kg/m ³	kg/l	1 kg/l = 10 ³ kg/m ³
Temperature	K (kelvin)	°C (degree Celsius)	0 °C = 273.15 K
Temperature difference	K (kelvin)	°C (degree Celsius)	1 °C = 1 K
Force	N (newton)	-	1 N = 1 kg.m/s ²
Pressure	Pa (pascal)	bar (bar)	1 Pa = 1 N/m ² 1 bar = 10 ⁵ Pa
Stress	N/m ²	N/mm ²	1 N/mm ² = 1 MPa
Work		kWh (kilowatt hours)	1 kWh = 3.6 MJ
Energy	J (joule)		1 J = 1 N.m = 1 W.s
Quantity of heat		eV (electronvolt)	1 eV = 0.1602 H 10 ⁻¹⁸ J
Power	W (watt)	-	1 W = 1 J/s = 1 N.m/s
<u>Electrical resistance</u>	<u>Ω (ohm)</u>	-	<u>1 Ω = 1 kg · m² / s³ / A²</u>
Kinematic viscosity	m ² /s	mm ² /s	1 mm ² /s = 10 ⁻⁶ m ² /s
Dynamic viscosity	Pa.s	mPa.s	1 mPa.s = 10 ⁻³ Pa.s
Activity	Bq (becquerel)		
Dose equivalent	Sv (sievert)		

^a The following round figures are applicable for the conversion of the units hitherto used into SI Units.

<u>Force</u>		<u>Stress</u>	
1 kg	= 9.807 N	1 kg/mm ²	= 9.807 N/mm ²
1 N	= 0.102 kg	1 N/mm ²	= 0.102 kg/mm ²

<u>Pressure</u>				
1 Pa	= 1 N/m ²	= 10 ⁻⁵ bar	= 1.02 × 10 ⁻⁵ kg/cm ²	= 0.75 × 10 ⁻² torr
1 bar	= 10 ⁵ Pa	= 1.02 kg/cm ²	= 750 torr	
1 kg/cm ²	= 9.807 × 10 ⁴ Pa	= 0.9807 bar	= 736 torr	
1 torr	= 1.33 × 10 ² Pa	= 1.33 × 10 ⁻³ bar	= 1.36 × 10 ⁻³ kg/cm ²	

<u>Energy, Work, Quantity of heat</u>				
1 J	= 1 N.m	= 0.278 × 10 ⁻⁶ kWh	= 0.102 kgm	= 0.239 × 10 ⁻³ kcal
1 kWh	= 3.6 × 10 ⁶ J	= 367 × 10 ³ kgm	= 860 kcal	
1 kgm	= 9.807 J	= 2.72 × 10 ⁻⁶ kWh	= 2.34 × 10 ⁻³ kcal	
1 kcal	= 4.19 × 10 ³ J	= 1.16 × 10 ⁻³ kWh	= 427 kgm	

<u>Power</u>			<u>Kinematic viscosity</u>	
1 W	= 0.102 kgm/s	= 0.86 kcal/h	1 m ² /s	= 10 ⁴ St (Stokes)
1 kgm/s	= 9.807 W	= 8.43 kcal/h	1 St	= 10 ⁻⁴ m ² /s
1 kcal/h	= 1.16 W	= 0.119 kgm/s		

<u>Dynamic viscosity</u>				
1 Pa.s	= 1 N.s/m ²	= 10 P (poise)	= 0.102 kg.s/m ²	
1 P	= 0.1 Pa.s	= 0.1 N.s/m ²	= 1.02 × 10 ⁻² kg.s/m ²	
1 kg.s/m ²	= 9.807 Pa.s	= 9.807 N.s/m ²	= 98.07 P	

^b The International System of Units (SI) is the result of decisions taken at the General Conference on Weights and Measures (Address: Pavillon de Breteuil, Parc de St-Cloud, F-92 310 Sèvres).

^c The abbreviation "L" for litre may also be used in place of the abbreviation "l" when a typewriter cannot distinguish between figure "1" and letter "l".

The decimal multiples and sub-multiples of a unit may be formed by prefixes or symbols, having the following meanings, placed before the name or symbol of the unit:

<u>Factor</u>			<u>Prefix</u>	<u>Symbol</u>
1 000 000 000 000 000 000	= 10 ¹⁸	quintillion	exa	E
1 000 000 000 000 000	= 10 ¹⁵	quadrillion	peta	P
1 000 000 000 000	= 10 ¹²	trillion	tera	T
1 000 000 000	= 10 ⁹	billion	giga	G
1 000 000	= 10 ⁶	million	mega	M
1 000	= 10 ³	thousand	kilo	k
100	= 10 ²	hundred	hecto	h
10	= 10 ¹	ten	deca	da
0.1	= 10 ⁻¹	tenth	deci	d
0.01	= 10 ⁻²	hundredth	centi	c
0.001	= 10 ⁻³	thousandth	milli	m
0.000 001	= 10 ⁻⁶	millionth	micro	μ
0.000 000 001	= 10 ⁻⁹	billionth	nano	n
0.000 000 000 001	= 10 ⁻¹²	trillionth	pico	p
0.000 000 000 000 001	= 10 ⁻¹⁵	quadrillionth	femto	f
0.000 000 000 000 000 001	= 10 ⁻¹⁸	quintillionth	atto	a

NOTE: 10⁹ billion is United Nations usage in English. By analogy, so is 10⁹ = 1 billionth.

1.2.2.2 Unless expressly stated otherwise, the sign "%" in ADR represents:

- In the case of mixtures of solids or of liquids, and also in the case of solutions and of solids wetted by a liquid, a percentage mass based on the total mass of the mixture, the solution or the wetted solid;
- In the case of mixtures of compressed gases, when filled by pressure, the proportion of the volume indicated as a percentage of the total volume of the gaseous mixture, or, when filled by mass, the proportion of the mass indicated as a percentage of the total mass of the mixture;
- In the case of mixtures of liquefied gases and dissolved gases, the proportion of the mass indicated as a percentage of the total mass of the mixture.

1.2.2.3 Pressures of all kinds relating to receptacles (such as test pressure, internal pressure, safety valve opening pressure) are always indicated in gauge pressure (pressure in excess of atmospheric pressure); however, the vapour pressure of substances is always expressed in absolute pressure.

1.2.2.4 Where ADR specifies a degree of filling for receptacles, this is always related to a reference temperature of the substances of 15 °C, unless some other temperature is indicated.

1.2.3 List of abbreviations

In ADR, abbreviations, acronyms and abbreviated designations of regulatory texts are used, with the following meaning:

A

"ADN"* means the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways;

"ASTM" means the American Society for Testing and Materials (ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959, United States of America), www.astm.org;

* The acronym "ADN" corresponds to the French term "Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures".

C

"CGA" means the Compressed Gas Association, 8484 Westpark Drive, Suite 220, McLean, Virginia 22102, United States of America, www.cganet.com;

"CIM"^{**} means the Uniform Rules Concerning the Contract of International Carriage of Goods by Rail (Appendix B to the Convention concerning International Carriage by Rail (COTIF)), as amended;

"CMR"^{***} means the Convention on the Contract for the International Carriage of Goods by Road (Geneva, 19 May 1956), as amended;

"CNG" means compressed natural gas (see 1.2.1);

"CSC" means the International Convention for Safe Containers (Geneva, 1972) as amended and published by the International Maritime Organization (IMO), London;

"CSI" means criticality safety index (see 1.2.1);

E

"EIGA" means European Industrial Gas Association, 30 Avenue de l'Astronomie, 1210 Brussels (Belgium), www.eiga.eu;

"EN" (standard) means a European standard published by the European Committee for Standardization (CEN) (CEN, Avenue Marnix 17, B-1000 Brussels, Belgium), www.cen.eu;

F

"FRP" means fibre-reinforced plastics (see 1.2.1);

G

"GHS" means Globally Harmonized System of Classification and Labelling of Chemicals (see 1.2.1);

I

"IAEA" means the International Atomic Energy Agency, P.O. Box 100, 1400 Vienna, Austria, www.iaea.org;

"IBC" means intermediate bulk container (see 1.2.1);

"ICAO" means the International Civil Aviation Organization, 999 University Street, Montreal, Quebec H3C 5H7, Canada, www.icao.org;

"IMDG" see definition of "IMDG Code" in 1.2.1;

"IMO" means the International Maritime Organization, 4 Albert Embankment, London SE1 7SR, United Kingdom, www.imo.org;

"ISO" (standard) means an international standard published by the International Organization for Standardization, 1, rue de Varembé, 1204 Geneva 20, Switzerland, www.iso.org;

L

"LNG" means liquefied natural gas (see 1.2.1);

"LPG" means liquefied petroleum gas (see 1.2.1);

^{**} The acronym "CIM" corresponds to the French term "Contrat de transport international ferroviaire de marchandises".

^{***} The acronym "CMR" corresponds to the French term "Convention relative au contrat de transport international de marchandises par route".

"LSA" (material) means low specific activity material (see 2.2.7.1.3);

M

"MEGC" means multiple-element gas container (see 1.2.1);

"MEMU" means mobile explosives manufacturing unit (see 1.2.1);

N

"N.O.S." means not otherwise specified entry (see 1.2.1);

R

"RID" means Regulations concerning the International Carriage of Dangerous Goods by Rail (Appendix C of COTIF (Convention concerning international carriage by rail));

S

"SADT" means self-accelerating decomposition temperature (see 1.2.1);

"SAPT" means self-accelerating polymerization temperature (see 1.2.1);

"SCO" means surface contaminated object (see 2.2.7.1.3);

T

"TI" means transport index (see 1.2.1);

U

"UIC"[†] means the International Union of Railways, 16 rue Jean Rey, 75015 Paris, France, www.uic.org;

"UNECE" means the United Nations Economic Commission for Europe, Palais des Nations, 8-14 avenue de la Paix, 1211 Geneva 10, Switzerland, www.uncece.org.

[†] The acronym "UIC" corresponds to the French term "Union internationale des chemins de fer".

CHAPTER 1.3

TRAINING OF PERSONS INVOLVED IN THE CARRIAGE OF DANGEROUS GOODS

1.3.1 Scope and applicability

Persons employed by the participants referred to in Chapter 1.4, whose duties concern the carriage of dangerous goods, shall be trained in the requirements governing the carriage of such goods appropriate to their responsibilities and duties. Employees shall be trained in accordance with 1.3.2 before assuming responsibilities and shall only perform functions, for which required training has not yet been provided, under the direct supervision of a trained person. Training requirements specific to security of dangerous goods in Chapter 1.10 shall also be addressed.

NOTE 1: With regard to the training for the safety adviser, see 1.8.3 instead of this section.

NOTE 2: With regard to the training of the vehicle crew, see Chapter 8.2 instead of this section.

NOTE 3: For training with regard to Class 7, see also 1.7.2.5.

1.3.2 Nature of the training

The training shall take the following form, appropriate to the responsibility and duties of the individual concerned.

1.3.2.1 General awareness training

Personnel shall be familiar with the general requirements of the provisions for the carriage of dangerous goods.

1.3.2.2 Function-specific training

Personnel shall be trained, commensurate directly with their duties and responsibilities in the requirements of the regulations concerning the carriage of dangerous goods.

Where the carriage of dangerous goods involves a multimodal transport operation, the personnel shall be aware of the requirements concerning other transport modes.

1.3.2.3 Safety training

Commensurate with the degree of risk of injury or exposure arising from an incident involving the carriage of dangerous goods, including loading and unloading, personnel shall be trained in the hazards and dangers presented by dangerous goods.

The training provided shall aim to make personnel aware of the safe handling and emergency response procedures.

1.3.2.4 The training shall be periodically supplemented with refresher training to take account of changes in regulations.

1.3.3 Documentation

Records of training received according to this Chapter shall be kept by the employer and made available to the employee or competent authority, upon request. Records shall be kept by the employer for a period of time established by the competent authority. Records of training shall be verified upon commencing a new employment.

CHAPTER 1.4

SAFETY OBLIGATIONS OF THE PARTICIPANTS

1.4.1 General safety measures

1.4.1.1 The participants in the carriage of dangerous goods shall take appropriate measures according to the nature and the extent of foreseeable dangers, so as to avoid damage or injury and, if necessary, to minimize their effects. They shall, in all events, comply with the requirements of ADR in their respective fields.

1.4.1.2 When there is an immediate risk that public safety may be jeopardized, the participants shall immediately notify the emergency services and shall make available to them the information they require to take action.

1.4.1.3 ADR may specify certain of the obligations falling to the various participants.

If a Contracting Party considers that no lessening of safety is involved, it may in its domestic legislation transfer the obligations falling to a specific participant to one or several other participants, provided that the obligations of 1.4.2 and 1.4.3 are met. These derogations shall be communicated by the Contracting Party to the Secretariat of the United Nations Economic Commission for Europe which will bring them to the attention of the Contracting Parties.

The requirements of 1.2.1, 1.4.2 and 1.4.3 concerning the definitions of participants and their respective obligations shall not affect the provisions of domestic law concerning the legal consequences (criminal nature, liability, etc.) stemming from the fact that the participant in question is e.g. a legal entity, a self-employed worker, an employer or an employee.

1.4.2 Obligations of the main participants

NOTE 1: Several participants to which safety obligations are assigned in this section may be one and the same enterprise. Also, the activities and the corresponding safety obligations of a participant can be assumed by several enterprises.

NOTE 2: For radioactive material, see also 1.7.6.

1.4.2.1 Consignor

1.4.2.1.1 The consignor of dangerous goods is required to hand over for carriage only consignments which conform to the requirements of ADR. In the context of 1.4.1, he shall in particular:

- (a) Ascertain that the dangerous goods are classified and authorized for carriage in accordance with ADR;
- (b) Furnish the carrier with information and data in a traceable form and, if necessary, the required transport documents and accompanying documents (authorizations, approvals, notifications, certificates, etc.), taking into account in particular the requirements of Chapter 5.4 and of the tables in Part 3;
- (c) Use only packagings, large packagings, intermediate bulk containers (IBCs) and tanks (tank-vehicles, demountable tanks, battery-vehicles, MEGCs, portable tanks and tank-containers) approved for and suited to the carriage of the substances concerned and bearing the marks prescribed by ADR;
- (d) Comply with the requirements on the means of dispatch and on forwarding restrictions;
- (e) Ensure that even empty uncleaned and not degassed tanks (tank-vehicles, demountable tanks, battery-vehicles, MEGCs, portable tanks and tank-containers) or empty uncleaned vehicles and bulk containers are placarded, marked and labelled in accordance with Chapter 5.3 and that empty uncleaned tanks are closed and present the same degree of leakproofness as if they were full.

1.4.2.1.2 If the consignor uses the services of other participants (packer, loader, filler, etc.), he shall take appropriate measures to ensure that the consignment meets the requirements of ADR. He may, however,

in the case of 1.4.2.1.1 (a), (b), (c) and (e), rely on the information and data made available to him by other participants.

1.4.2.1.3 When the consignor acts on behalf of a third party, the latter shall inform the consignor in writing that dangerous goods are involved and make available to him all the information and documents he needs to perform his obligations.

1.4.2.2 *Carrier*

1.4.2.2.1 In the context of 1.4.1, where appropriate, the carrier shall in particular:

- (a) Ascertain that the dangerous goods to be carried are authorized for carriage in accordance with ADR;
- (b) Ascertain that all information prescribed in ADR related to the dangerous goods to be carried has been provided by the consignor before carriage, that the prescribed documentation is on board the transport unit or if electronic data processing (EDP) or if electronic data interchange (EDI) techniques are used instead of paper documentation, that data is available during transport in a manner at least equivalent to that of paper documentation;
- (c) Ascertain visually that the vehicles and loads have no obvious defects, leakages or cracks, missing equipment, etc.;
- (d) Ascertain that the deadline-date specified for the next inspection for tank-vehicles, battery-vehicles, demountable tanks, portable tanks, tank-containers and MEGCs has not expired;
NOTE: Tanks, battery-vehicles and MEGCs may however be carried after the expiry of this deadline under the conditions of 4.1.6.10 (in the case of battery-vehicles and MEGCs containing pressure receptacles as elements), 4.2.4.4, 4.3.2.3.7, 4.3.2.4.4, 6.7.2.19.6, 6.7.3.15.6 or 6.7.4.14.6.
- (e) verify that the vehicles are not overloaded;
- (f) ascertain that the placards, marks and orange-coloured plates prescribed for the vehicles in Chapter 5.3 have been affixed;
- (g) ascertain that the equipment prescribed in ADR for the transport unit, vehicle crew and certain classes is on board the transport unit.

Where appropriate, this shall be done on the basis of the transport documents and accompanying documents, by a visual inspection of the vehicle or the containers and, where appropriate, the load.

1.4.2.2.2 The carrier may, however, in the case of 1.4.2.2.1 (a), (b), (e) and (f), rely on information and data made available to him by other participants. In the case of 1.4.2.2.1 (c) he may rely on what is certified in the "container/vehicle packing certificate" provided in accordance with 5.4.2.

1.4.2.2.3 If the carrier observes an infringement of the requirements of ADR, in accordance with 1.4.2.2.1, he shall not forward the consignment until the matter has been rectified.

1.4.2.2.4 If, during the journey, an infringement which could jeopardize the safety of the operation is observed, the consignment shall be halted as soon as possible bearing in mind the requirements of traffic safety, of the safe immobilisation of the consignment, and of public safety. The transport operation may only be continued once the consignment complies with applicable regulations. The competent authority(ies) concerned by the rest of the journey may grant an authorization to pursue the transport operation.

In case the required compliance cannot be achieved and no authorization is granted for the rest of the journey, the competent authority(ies) shall provide the carrier with the necessary administrative assistance. The same shall apply in case the carrier informs this/these competent authority(ies) that the dangerous nature of the goods carried was not communicated to him by the consignor and that he wishes, by virtue of the law applicable in particular to the contract of carriage, to unload, destroy or render the goods harmless.

1.4.2.2.5 *(Reserved)*

1.4.2.2.6 The carrier shall provide the vehicle crew with the instructions in writing as prescribed in ADR.

1.4.2.3 *Consignee*

1.4.2.3.1 The consignee has the obligation not to defer acceptance of the goods without compelling reasons and to verify, after unloading, that the requirements of ADR concerning him have been complied with.

1.4.2.3.2 If, in the case of a container, this verification brings to light an infringement of the requirements of ADR, the consignee shall return the container to the carrier only after the infringement has been remedied.

1.4.2.3.3 If the consignee makes use of the services of other participants (unloader, cleaner, decontamination facility, etc.) he shall take appropriate measures to ensure that the requirements of 1.4.2.3.1 and 1.4.2.3.2 of ADR have been complied with.

1.4.3 **Obligations of the other participants**

A non-exhaustive list of the other participants and their respective obligations is given below. The obligations of the other participants flow from section 1.4.1 above insofar as they know or should have known that their duties are performed as part of a transport operation subject to ADR.

1.4.3.1 *Loader*

1.4.3.1.1 In the context of 1.4.1, the loader has the following obligations in particular:

- (a) He shall hand the dangerous goods over to the carrier only if they are authorized for carriage in accordance with ADR;
- (b) He shall, when handing over for carriage packed dangerous goods or uncleaned empty packagings, check whether the packaging is damaged. He shall not hand over a package the packaging of which is damaged, especially if it is not leakproof, and there are leakages or the possibility of leakages of the dangerous substance, until the damage has been repaired; this obligation also applies to empty uncleaned packagings;
- (c) He shall comply with the special requirements concerning loading and handling;
- (d) He shall, after loading dangerous goods into a container comply with the requirements concerning placarding, marking and orange-coloured plates conforming to Chapter 5.3;
- (e) He shall, when loading packages, comply with the prohibitions on mixed loading taking into account dangerous goods already in the vehicle or large container and requirements concerning the separation of foodstuffs, other articles of consumption or animal feedstuffs.

1.4.3.1.2 The loader may, however, in the case of 1.4.3.1.1 (a), (d) and (e), rely on information and data made available to him by other participants.

1.4.3.2 *Packer*

In the context of 1.4.1, the packer shall comply with in particular:

- (a) The requirements concerning packing conditions, or mixed packing conditions; and
- (b) When he prepares packages for carriage, the requirements concerning marking and labelling of the packages.

1.4.3.3 *Filler*

In the context of 1.4.1, the filler has the following obligations in particular:

- (a) He shall ascertain prior to the filling of tanks that both they and their equipment are technically in a satisfactory condition;
- (b) He shall ascertain that the date ~~of~~ specified for the next inspection for tank-vehicles, battery-vehicles, demountable tanks, portable tanks, tank-containers and MEGCs has not expired;
- (c) He shall only fill tanks with the dangerous goods authorized for carriage in those tanks;
- (d) He shall, in filling the tank, comply with the requirements concerning dangerous goods in adjoining compartments;

- (e) He shall, during the filling of the tank, observe the permissible degree of filling or the permissible mass of contents per litre of capacity for the substance being filled;
- (f) He shall, after filling the tank, ensure that all closures are in a closed position and that there is no leakage;
- (g) He shall ensure that no dangerous residue of the filling substance adheres to the outside of the tanks filled by him;
- (h) He shall, in preparing the dangerous goods for carriage, ensure that the placards, marks, orange-coloured plates and labels are affixed on the tanks, on the vehicles and on the containers for carriage in bulk in accordance with Chapter 5.3;
- (i) *(Reserved)*;
- (j) He shall, when filling vehicles or containers with dangerous goods in bulk, ascertain that the relevant provisions of Chapter 7.3 are complied with.

1.4.3.4 Tank-container/portable tank operator

In the context of 1.4.1, the tank-container/portable tank operator shall in particular:

- (a) Ensure compliance with the requirements for construction, equipment, inspections and tests and marking;
- (b) Ensure that the maintenance of shells and their equipment is carried out in such a way as to ensure that, under normal operating conditions, the tank-container/portable tank satisfies the requirements of ADR until the next inspection;
- (c) Have an exceptional [check-inspection](#) made when the safety of the shell or its equipment is liable to be impaired by a repair, an alteration or an accident.

1.4.3.5 and 1.4.3.6 *(Reserved)*

1.4.3.7 Unloader

1.4.3.7.1 In the context of 1.4.1, the unloader shall in particular:

- (a) Ascertain that the correct goods are unloaded by comparing the relevant information on the transport document with the information on the package, container, tank, MEMU, MEGC or vehicle;
- (b) Before and during unloading, check whether the packagings, the tank, the vehicle or container have been damaged to an extent which would endanger the unloading operation. If this is the case, ascertain that unloading is not carried out until appropriate measures have been taken;
- (c) Comply with all relevant requirements concerning unloading and handling;
- (d) Immediately following the unloading of the tank, vehicle or container:
 - (i) Remove any dangerous residues which have adhered to the outside of the tank, vehicle or container during the process of unloading; and
 - (ii) Ensure the closure of valves and inspection openings;
- (e) Ensure that the prescribed cleaning and decontamination of the vehicles or containers is carried out; and
- (f) Ensure that the containers once completely unloaded, cleaned and decontaminated, no longer display the placards, marks and orange-coloured plates that had been displayed in accordance with Chapter 5.3.

1.4.3.7.2 If the unloader makes use of the services of other participants (cleaner, decontamination facility, etc.) he shall take appropriate measures to ensure that the requirements of ADR have been complied with.

CHAPTER 1.5

DEROGATIONS

1.5.1 Temporary derogations

- 1.5.1.1 In accordance with Article 4, paragraph 3 of ADR, the competent authorities of the Contracting Parties may agree directly among themselves to authorize certain transport operations in their territories by temporary derogation from the requirements of ADR, provided that safety is not compromised thereby. The authority which has taken the initiative with respect to the temporary derogation shall notify such derogations to the Secretariat of the United Nations Economic Commission for Europe which shall bring them to the attention of the Contracting Parties¹.

NOTE: "Special arrangement" in accordance with 1.7.4 is not considered to be a temporary derogation in accordance with this section.

- 1.5.1.2 The period of validity of the temporary derogation shall not be more than five years from the date of its entry into force. The temporary derogation shall automatically cease as from the date of the entry into force of a relevant amendment to ADR.

- 1.5.1.3 Transport operations on the basis of temporary derogations shall constitute transport operations in the sense of ADR.

1.5.2 *(Reserved)*

¹ *Note by the Secretariat: The special agreements concluded under this Chapter may be consulted on the web site of the Secretariat of the United Nations Economic Commission for Europe (<http://www.unece.org/adr-multilateral-agreements/trans/danger/danger.htm>).*

CHAPTER 1.6

TRANSITIONAL MEASURES

1.6.1 General

- 1.6.1.1 Unless otherwise provided, the substances and articles of ADR may be carried until 30 June ~~2021~~2023 in accordance with the requirements of ADR applicable up to 31 December ~~2020~~2022.
- 1.6.1.2 *(Deleted)*
- 1.6.1.3 Substances and articles of Class 1, belonging to the armed forces of a Contracting Party, that were packaged prior to 1 January 1990 in accordance with the requirements of ADR in effect at that time may be carried after 31 December 1989 provided the packagings maintain their integrity and are declared in the transport document as military goods packaged prior to 1 January 1990. The other requirements applicable as from 1 January 1990 for this class shall be complied with.
- 1.6.1.4 Substances and articles of Class 1 that were packaged between 1 January 1990 and 31 December 1996 in accordance with the requirements of ADR in effect at that time may be carried after 31 December 1996, provided the packagings maintain their integrity and are declared in the transport document as goods of Class 1 packaged between 1 January 1990 and 31 December 1996.
- 1.6.1.5 *(Reserved)*
- 1.6.1.6 Intermediate bulk containers (IBCs) manufactured before 1 January 2003 in accordance with the requirements of marginal 3612 (1) applicable up to 30 June 2001 and which do not conform to the requirements of 6.5.2.1.1 regarding the height of letters, numerals and symbols applicable as from 1 July 2001 may continue to be used.
- 1.6.1.7 Type approvals for drums, jerricans and composite packagings made of high or medium molecular mass polyethylene issued before 1 July 2005 in accordance with the requirements of 6.1.5.2.6 in force up to 31 December 2004, but which are not in accordance with the requirements of 4.1.1.21, continue to be valid until 31 December 2009. Any such packagings manufactured and marked on the basis of these type approvals may be used until the end of their period of use determined in 4.1.1.15.
- 1.6.1.8 Existing orange-coloured plates which meet the requirements of sub-section 5.3.2.2 applicable up to 31 December 2004 may continue to be used provided that the requirements of 5.3.2.2.1 and 5.3.2.2.2 that the plate, numbers and letters shall remain affixed irrespective of the orientation of the vehicle are met.
- 1.6.1.9 and 1.6.1.10 *(Deleted)*
- 1.6.1.11 Type approvals for drums, jerricans and composite packagings made of high or medium molecular mass polyethylene, and for high molecular mass polyethylene IBCs, issued before 1 July 2007 in accordance with the requirements of 6.1.6.1 (a) in force up to 31 December 2006, but which are not in accordance with the requirements of 6.1.6.1 (a) applicable as from 1 January 2007, continue to be valid.
- 1.6.1.12 and 1.6.1.13 *(Deleted)*
- 1.6.1.14 IBCs manufactured before 1 January 2011 and conforming to a design type which has not passed the vibration test of 6.5.6.13 or which was not required to meet the criteria of 6.5.6.9.5 (d) at the time it was subjected to the drop test, may still be used.
- 1.6.1.15 IBCs manufactured, remanufactured or repaired before 1 January 2011 need not be marked with the maximum permitted stacking load in accordance with 6.5.2.2.2. Such IBCs, not marked in accordance with 6.5.2.2.2, may still be used after 31 December 2010 but must be marked in accordance with 6.5.2.2.2 if they are remanufactured or repaired after that date. IBCs manufactured, remanufactured or repaired between 1 January 2011 and 31 December 2016 and marked with the maximum permitted stacking load in accordance with 6.5.2.2.2 in force up to 31 December 2014 may continue to be used.
- 1.6.1.16 to 1.6.1.22 *(Deleted)*
- 1.6.1.23 Fire extinguishers constructed before 1 July 2011 in accordance with the requirements of 8.1.4.3 applicable until 31 December 2010 may continue to be used.

1.6.1.24 and 1.6.1.25 *(Deleted)*

1.6.1.26 Large packagings manufactured or remanufactured before 1 January 2014 and which do not conform to the requirements of 6.6.3.1 regarding the height of letters, numerals and symbols applicable as from 1 January 2013 may continue to be used. Those manufactured or remanufactured before 1 January 2015 need not be marked with the maximum permitted stacking load in accordance with 6.6.3.3. Such large packagings not marked in accordance with 6.6.3.3 may still be used after 31 December 2014 but must be marked in accordance with 6.6.3.3 if they are remanufactured after that date. Large packagings manufactured or remanufactured between 1 January 2011 and 31 December 2016 and marked with the maximum permitted stacking load in accordance with 6.6.3.3 in force up to 31 December 2014 may continue to be used.

1.6.1.27 Means of containment integral to equipment or machinery containing liquid fuels of UN Nos. 1202, 1203, 1223, 1268, 1863 and 3475 constructed before 1 July 2013, which do not conform to the requirements of paragraph (a) of special provision 363 of Chapter 3.3 applicable as from 1 January 2013, may still be used.

1.6.1.28 *(Deleted)*

1.6.1.29 Lithium cells and batteries manufactured according to a type meeting the requirements of sub-section 38.3 of the Manual of Tests and Criteria, Revision 3, Amendment 1 or any subsequent revision and amendment applicable at the date of the type testing may continue to be carried, unless otherwise provided in ADR.

Lithium cells and batteries manufactured before 1 July 2003 meeting the requirements of the Manual of Tests and Criteria, Revision 3, may continue to be carried if all other applicable requirements are fulfilled.

1.6.1.30 to 1.6.1.32 *(Deleted)*

1.6.1.33 Electric double layer capacitors of UN No. 3499, manufactured before 1 January 2014, need not be marked with the energy storage capacity in Wh as required by sub-paragraph (e) of special provision 361 of Chapter 3.3.

1.6.1.34 Asymmetric capacitors of UN No. 3508, manufactured before 1 January 2016, need not be marked with the energy storage capacity in Wh as required by sub-paragraph (c) of special provision 372 of Chapter 3.3.

1.6.1.35 and 1.6.1.36 *(Deleted)*

1.6.1.37 *(Reserved)*

1.6.1.38 Contracting Parties may continue to issue training certificates for dangerous goods safety advisers conforming to the model applicable until 31 December 2016, instead of those conforming to the requirements of 1.8.3.18 applicable from 1 January 2017, until 31 December 2018. Such certificates may continue in use to the end of their five year validity.

1.6.1.39 ~~and to~~ 1.6.1.42 *(Deleted)*

~~1.6.1.41 Notwithstanding the requirements of ADR applicable as from 1 January 2017, large packagings conforming to the packing group III performance level in accordance with special packing provision L2 of packing instruction LP02 of 4.1.4.3 applicable until 31 December 2016 may continue to be used until 31 December 2022 for UN No. 1950.~~

~~1.6.1.42 (Deleted)~~

1.6.1.43 Vehicles registered or brought into service before 1 July 2017, as defined in special provisions 388 and 669 of Chapter 3.3, and their equipment intended for use during carriage, which conform to the requirements of ADR applicable until 31 December 2016 but containing lithium cells and batteries which do not conform to the provisions of 2.2.9.1.7 may continue to be carried as a load in accordance with the requirements of special provision 666 of Chapter 3.3.

1.6.1.44 ~~Undertakings which participate in the carriage of dangerous goods only as consignors and which did not have to appoint a safety adviser on the basis of the provisions applicable until 31 December 2018~~

~~shall, by derogation from the provisions of 1.8.3.1 applicable from 1 January 2019, appoint a safety adviser no later than 31 December 2022. (Deleted)~~

1.6.1.45 Contracting Parties may, until 31 December 2020, continue to issue training certificates for dangerous goods safety advisers conforming to the model applicable until 31 December 2018, instead of those conforming to the requirements of 1.8.3.18 applicable from 1 January 2019. Such certificates may continue in use to the end of their five-year validity.

~~1.6.1.46 The carriage of machinery or equipment not specified in this annex and which happen to contain dangerous goods in their internal or operational equipment and which are therefore assigned to UN Nos 3363, 3537, 3538, 3539, 3540, 3541, 3542, 3543, 3544, 3545, 3546, 3547 or 3548, which was exempted from the provisions of ADR according to 1.1.3.1 (b) applicable until 31 December 2018, may continue to be exempted from the provisions of ADR until 31 December 2022 provided that measures have been taken to prevent any leakage of contents in normal conditions of carriage.~~

~~and 1.6.1.47 (Deleted)~~

1.6.1.48 Certificates of approval for vehicles carrying certain dangerous goods conforming to the model in 9.1.3.5 applicable until 31 December 2020, issued before 1 July 2021, may still be used.

~~1.6.1.49 The mark shown in Figure 5.2.1.9.2 applicable until 31 December 2022, may continue to be applied until 31 December 2026.~~

~~1.6.1.50 For articles that meet the definition for DETONATORS, ELECTRONIC as described in 2.2.1.4 Glossary of names, and assigned to UN Nos. 0511, 0512 and 0513, the entries for DETONATORS, ELECTRIC (UN Nos. 0030, 0255 and 0456) may continue to be used until 30 June 2025.~~

~~1.6.1.51 Adhesives, paint and paint related materials, printing inks and printing ink related materials and resin solutions assigned to UN 3082 environmentally hazardous substance, liquid, N.O.S., packing group III in accordance with 2.2.9.1.10.6 as a consequence of 2.2.9.1.10.5¹ containing 0.025 % or more of the following substances, on their own or in combination:~~

~~- 4,5-dichloro-2-octyl-2H-isothiazol-3-one (DCOIT);~~

~~- octhilinone (OIT); and~~

~~- zinc pyrithione (ZnPT);~~

~~may be carried until 30 June 2025 in steel, aluminium, other metal or plastic packagings, which do not meet the requirements of 4.1.1.3, when carried in quantities of 30 litres or less per packaging as follows:~~

~~(a) In palletized loads, a pallet box or unit load device, e.g. individual packagings placed or stacked and secured by strapping, shrink or stretch-wrapping or other suitable means to a pallet; or~~

~~(b) As inner packagings of combination packagings with a maximum net mass of 40 kg.~~

~~1.6.1.52 Inner receptacles of composite IBCs manufactured before 1 July 2021 in accordance with the requirements of 6.5.2.2.4 in force up to 31 December 2020 and which are not in accordance with the requirements of 6.5.2.2.4 regarding the marks on the inner receptacles that are not readily accessible for inspection due to the design of the outer casing applicable as from 1 January 2021 may continue be used until the end of their period of use determined in 4.1.1.15.~~

~~1.6.1.53 High consequence dangerous goods of Class 1 carried in packages on a transport unit in quantities not exceeding those of 1.1.3.6 which, in accordance with the first indent of 1.1.3.6.2 in force until 31 December 2022, could be transported without applying the requirements of Chapter 1.10 may still be carried without applying the requirements of Chapter 1.10 until 31 December 2024.~~

¹ Commission Delegated Regulation (EU) 2020/1182 of 19 May 2020 amending, for the purposes of its adaptation to technical and scientific progress, Part 3 of Annex VI to Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures (fifteenth ATP to the CLP), applicable from 1 March 2022.

1.6.2 Pressure receptacles and receptacles for Class 2

- 1.6.2.1 Receptacles built before 1 January 1997 and which do not conform to the requirements of ADR applicable as from 1 January 1997, but the carriage of which was permitted under the requirements of ADR applicable up to 31 December 1996, may continue to be transported after that date if the periodic test requirements in packing instructions P200 and P203 are complied with.
- 1.6.2.2 *(Deleted)*
- 1.6.2.3 Receptacles intended for the carriage of Class 2 substances constructed before 1 January 2003, may continue to bear, after 1 January 2003, the marks conforming to the requirements applicable until 31 December 2002.
- 1.6.2.4 Pressure receptacles designed and constructed in accordance with technical codes no longer recognized according to 6.2.5 may still be used.
- 1.6.2.5 Pressure receptacles and their closures designed and constructed in accordance with standards applicable at the time of their construction (see 6.2.4) according to the provisions of ADR which were applicable at that time may still be used unless restricted by a specific transitional measure.
- 1.6.2.6 Pressure receptacles for substances other than those of Class 2, built before 1 July 2009 in accordance with the requirements of 4.1.4.4 in force up to 31 December 2008, but which do not conform to the requirements of 4.1.3.6 applicable as from 1 January 2009, may continue to be used provided that the requirements of 4.1.4.4 in force up to 31 December 2008 are complied with.
- 1.6.2.7 and 1.6.2.8 *(Deleted)*
- 1.6.2.9 The provisions of packing instruction P200 (10), special packing provision v of 4.1.4.1 applicable until 31 December 2010 may be applied by Contracting Parties to ADR to cylinders constructed before 1 January 2015.
- 1.6.2.10 Refillable welded steel cylinders for the carriage of gases of UN Nos. 1011, 1075, 1965, 1969 or 1978, granted 15 year intervals for periodic inspection in accordance with packing instruction P200 (10), special packing provision v of 4.1.4.1 as applicable until 31 December 2010 by the competent authority of the country (countries) of carriage, may continue to be periodically inspected according to those provisions.
- 1.6.2.11 Gas cartridges constructed and prepared for carriage before 1 January 2013 for which the requirements of 1.8.6, 1.8.7 or 1.8.8 for the conformity assessment of gas cartridges have not been applied may still be carried after this date, provided all the other applicable provisions of ADR are met.
- 1.6.2.12 Salvage pressure receptacles may continue to be constructed and approved according to national regulations up to 31 December 2013. Salvage pressure receptacles constructed and approved in accordance with national regulations before 1 January 2014 may continue to be used with the approval of the competent authorities of the countries of use.
- 1.6.2.13 Bundles of cylinders manufactured before 1 July 2013 which are not marked in accordance with 6.2.3.9.7.2 and 6.2.3.9.7.3 applicable from 1 January 2013 or 6.2.3.9.7.2 applicable from 1 January 2015 may be used until the next periodic inspection after 1 July 2015.
- 1.6.2.14 Cylinders constructed before 1 January 2016 in accordance with 6.2.3 and a specification approved by the competent authorities of the countries of transport and use, but not in accordance with ISO 11513:2011 or ISO 9809-1:2010 as required in 4.1.4.1, packing instruction P208 (1), may be used for the carriage of adsorbed gases provided the general packing requirements of 4.1.6.1 are met.
- 1.6.2.15 Bundles of cylinders periodically inspected before 1 July 2015 which are not marked in accordance with 6.2.3.9.7.3 applicable from 1 January 2015 may be used until the next periodic inspection after 1 July 2015.
- 1.6.2.16 *The requirements of Note 3 of 6.2.3.5.1 applicable until 31 December 2020 may continue to be applied until 31 December 2022. (Deleted)*
- 1.6.2.17 The requirements of Note 3 of 6.2.1.6.1 applicable until 31 December 2022 may continue to be applied until 31 December 2024.

- 1.6.2.18 Closed cryogenic receptacles constructed before 1 July 2023 which were subject to the initial inspection and test requirements of 6.2.1.5.2 applicable until 31 December 2022 but which do not however conform to the requirements of 6.2.1.5.2 relating to the initial inspection and test applicable as from 1 January 2023, may continue to be used.
- 1.6.2.19 Acetylene cylinders constructed before 1 July 2023 which are not marked in accordance with 6.2.2.7.3 (k) or (l) applicable from 1 January 2023 may continue to be used until the next periodic inspection and test after 1 July 2023.
- 1.6.2.20 Closures of refillable pressure receptacles constructed before 1 July 2023 which are not marked in accordance with 6.2.2.11 or 6.2.3.9.8 applicable from 1 January 2023 may continue to be used.
- 1.6.2.21 Standard 14912:2005 referenced in packing instruction P200 (12) 3.4 of 4.1.4.1 in force up to 31 December 2022 may continue to be used for valve refurbishing or inspection until 31 December 2024.
- 1.6.2.22 Standard EN ISO 22434:2011 referenced in packing instruction P200 (13) 3.4 of 4.1.4.1 in force up to 31 December 2022 may continue to be used for valve refurbishing or inspection until 31 December 2024.

1.6.3 Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles

- 1.6.3.1 Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles built before the entry into force of the requirements applicable as from 1 October 1978 may be kept in service if the equipment of the shell meets the requirements of Chapter 6.8. The thickness of the shell wall, except in the case of shells intended for the carriage of refrigerated liquefied gases of Class 2, shall be appropriate to a calculation pressure of not less than 0.4 MPa (4 bar) (gauge pressure) in the case of mild steel or of not less than 200 kPa (2 bar) (gauge pressure) in the case of aluminium and aluminium alloys. For other than circular cross-sections of tanks, the diameter to be used as a basis for calculation shall be that of a circle whose area is equal to that of the actual cross-section of the tank.
- 1.6.3.2 The periodic inspections for fixed tanks (tank-vehicles), demountable tanks and battery-vehicles kept in service under these transitional requirements shall be conducted in accordance with the requirements of 6.8.2.4 and 6.8.3.4 and with the pertinent special requirements for the various classes. Unless the earlier requirements prescribed a higher test pressure, a test pressure of 200 kPa (2 bar) (gauge pressure) shall suffice for aluminium shells and aluminium alloy shells.
- 1.6.3.3 Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles which meet the transitional requirements in 1.6.3.1 and 1.6.3.2 may be used until 30 September 1993 for the carriage of the dangerous goods for which they have been approved. This transitional period shall not apply to fixed tanks (tank-vehicles), demountable tanks and battery-vehicles intended for the carriage of substances of Class 2, or to fixed tanks (tank-vehicles), demountable tanks and battery-vehicles whose wall thickness and items of equipment meet the requirements of Chapter 6.8.
- 1.6.3.4 (a) Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles constructed before 1 May 1985 in accordance with the requirements of ADR in force between 1 October 1978 and 30 April 1985 but not conforming to the requirements applicable as from 1 May 1985 may continue to be used after that date;
- (b) Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles, constructed between 1 May 1985 and the entry into force of the requirements applicable as from 1 January 1988 which do not conform to those requirements but were constructed according to the requirements of ADR in force until that date, may continue to be used after that date.
- 1.6.3.5 Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles, constructed before 1 January 1993 in accordance with the requirements in force up to 31 December 1992 but which do not conform to the requirements applicable as from 1 January 1993 may still be used.
- 1.6.3.6 (a) Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles constructed between 1 January 1978 and 31 December 1984, if used after 31 December 2004, shall conform to the requirements of marginal 211 127 (5), applicable as from 1 January 1990, concerning shell thickness and protection against damage;
- (b) Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles constructed between 1 January 1985 and 31 December 1989, if used after 31 December 2010, shall conform to the

requirements of marginal 211 127 (5), applicable as from 1 January 1990, concerning shell thickness and protection against damage.

- 1.6.3.7 Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles constructed before 1 January 1999 in accordance with the requirements in force up to 31 December 1998 but which do not, however, conform to the requirements applicable as from 1 January 1999 may still be used.
- 1.6.3.8 When, because of amendments to ADR, some proper shipping names of gases have been modified, it is not necessary to modify the names on the plate or on the shell itself (see 6.8.3.5.2 or 6.8.3.5.3), provided that the names of the gases on the fixed tanks (tank-vehicles), demountable tanks and battery-vehicles or on the plates (see 6.8.3.5.6 (b) or (c)) are adapted at the first periodic inspection thereafter.
- 1.6.3.9 and 1.6.3.10 *(Reserved)*
- 1.6.3.11 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 January 1997 in accordance with the requirements in force up to 31 December 1996 but which do not, however, conform to the requirements of marginals 211 332 and 211 333 applicable as from 1 January 1997, may still be used.
- 1.6.3.12 *(Reserved)*
- 1.6.3.13 *(Deleted)*
- 1.6.3.14 *(Reserved)*
- 1.6.3.15 *(Deleted)*
- 1.6.3.16 For fixed tanks (tank-vehicles), demountable tanks and battery-vehicles constructed before 1 January 2007 which do not conform to the requirements of 4.3.2, 6.8.2.3, 6.8.2.4 and 6.8.3.4 concerning the tank record, the retention of files for the tank record shall start at the latest at the first periodic inspection after 30 June 2007.
- 1.6.3.17 *(Deleted)*
- 1.6.3.18 Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles constructed before 1 January 2003 in accordance with the requirements in force up to 30 June 2001, but which do not, however, conform to the requirements applicable as from 1 July 2001, may still be used provided that the assignment to the relevant tank code has been carried out.
- 1.6.3.19 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 January 2003 in accordance with the requirements of 6.8.2.1.21 in force up to 31 December 2002 but which do not, however, conform to the requirements applicable as from 1 January 2003 may still be used.
- 1.6.3.20 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2003 in accordance with the requirements in force up to 31 December 2002 but which do not, however, conform to the requirements of 6.8.2.1.7 applicable as from 1 January 2003 and special provision TE15 of 6.8.4 (b) applicable from 1 January 2003 to 31 December 2006 may still be used.
- 1.6.3.21 *(Deleted)*
- 1.6.3.22 to 1.6.3.24 *(Reserved)*
- 1.6.3.25 *(Deleted)*
- 1.6.3.26 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 January 2007 in accordance with the requirements in force up to 31 December 2006 but which do not, however, conform to the requirements applicable as from 1 January 2007 regarding the marking of the external design pressure in accordance with 6.8.2.5.1, may still be used.
- 1.6.3.27 to 1.6.3.29 *(Reserved)*
- 1.6.3.30 Vacuum-operated waste fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2005 in accordance with the requirements applicable up to 31 December 2004 but which do not conform to the requirements of 6.10.3.9 applicable as from 1 January 2005, may still be used.

- 1.6.3.31 Fixed tanks (tank-vehicles), demountable tanks and tanks forming elements of battery-vehicles designed and constructed in accordance with a technical code which was recognized at the time of their construction according to the provisions of 6.8.2.7 which were applicable at that time may still be used.
- 1.6.3.32 Fixed tanks (tank vehicles) and demountable tanks constructed before 1 July 2007 in accordance with the requirements in force up to 31 December 2006, equipped with manhole cover assemblies in accordance with the provisions of standard EN 13317:2002 referred to in the table of paragraph 6.8.2.6, applicable until 31 December 2006, including those of the figure and table B.2 of annex B of the said standard which are no longer accepted as from 1 January 2007, or the material of which does not meet the requirements of EN 13094:2004, paragraph 5.2, may still be used.
- 1.6.3.33 *When the shell of a fixed tank (tank-vehicle) or demountable tank was already divided by partitions or surge plates into sections of not more than 7 500 litres capacity before 1 January 2009, the capacity of the shell need not be supplemented with the symbol "S" in the particulars required by 6.8.2.5.1 until the next periodic inspection according to 6.8.2.4.2 is performed. (Reserved)*
- 1.6.3.34 Notwithstanding the provisions of 4.3.2.2.4, fixed tanks (tank-vehicles) and demountable tanks intended for the carriage of liquefied gases or refrigerated liquefied gases, which meet the applicable construction requirements of ADR but which were divided, before 1 July 2009, by partitions or surge plates into sections of more than 7 500 litres capacity may still be filled to more than 20 % and less than 80 % of their capacity.
- 1.6.3.35 *(Deleted)*
- 1.6.3.36 Fixed tanks (tank-vehicles) intended for the carriage of liquefied non-toxic flammable gases constructed before 1 July 2011 and which are equipped with non-return valves instead of internal stop-valves and which do not conform to the requirements of 6.8.3.2.3, may still be used.
- 1.6.3.37 *(Deleted)*
- 1.6.3.38 Fixed tanks (tank-vehicles), demountable tanks and battery-vehicles designed and constructed in accordance with standards applicable at the time of their construction (see 6.8.2.6 and 6.8.3.6) according to the provisions of ADR which were applicable at that time may still be used unless restricted by a specific transitional measure.
- 1.6.3.39 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2011 in accordance with the requirements of 6.8.2.2.3 in force up to 31 December 2010 but which do not, however, conform to the requirements of 6.8.2.2.3, third paragraph, concerning the position of the flame trap or flame arrester may still be used.
- 1.6.3.40 *(Deleted)*
- 1.6.3.41 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2013 in accordance with the requirements in force up to 31 December 2012, but which do not, however, meet the marking provisions of 6.8.2.5.2 or 6.8.3.5.6 applicable as from 1 January 2013, may continue to be marked in accordance with the requirements applicable up to 31 December 2012 until the next periodic inspection after 1 July 2013.
- 1.6.3.42 *(Deleted)*
- 1.6.3.43 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 January 2012 in accordance with the requirements in force up to 31 December 2012, but which do not however conform to the requirements of 6.8.2.6 relating to standards EN 14432:2006 and EN 14433:2006 applicable as from 1 January 2011, may still be used.
- 1.6.3.44 Fixed tanks (tank-vehicles) and demountable tanks intended for the carriage of UN Nos. 1202, 1203, 1223, 3475 and aviation fuel classified under UN Nos. 1268 or 1863, equipped with additive devices designed and constructed before 1 July 2015 in accordance with national provisions, but which do not, however, conform to the construction, approval and testing requirements of special provision 664 of Chapter 3.3 applicable as from 1 January 2015 shall only be used with the agreement of the competent authorities in the countries of use.
- 1.6.3.45 *(Reserved)*

- 1.6.3.46 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2017 in accordance with the requirements in force up to 31 December 2016 but which do not however conform to the requirements of 6.8.2.1.23 applicable as from 1 January 2017 may still be used.
- 1.6.3.47 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2019, fitted with safety valves meeting the requirements in force up to 31 December 2018 but which do not meet the requirements of 6.8.3.2.9 last sub-paragraph concerning their design or protection applicable from 1 January 2019 may continue to be used until the next intermediate or periodic inspection after 1 January 2021.
- 1.6.3.48 Notwithstanding the requirements of special provision TU42 of 4.3.5 applicable from 1 January 2019, fixed tanks (tank vehicles) and demountable tanks with a shell constructed of aluminium alloy, including those with protective lining, which were used before 1 January 2019 for the carriage of substances with a pH value less than 5.0 or more than 8.0, may continue to be used for the carriage of such substances until 31 December 2026.
- 1.6.3.49 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2019 in accordance with the requirements in force up to 31 December 2018 but which do not conform to the requirements of 6.8.2.2.10 concerning the burst pressure of the bursting disc applicable as from 1 January 2019 may continue to be used.
- 1.6.3.50 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2019 in accordance with the requirements of 6.8.2.2.3 in force up to 31 December 2018 but which however do not conform to the requirements of 6.8.2.2.3 last paragraph concerning the flame arresters on breather devices applicable from 1 January 2019 may continue to be used.
- 1.6.3.51 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2019 in accordance with the requirements in force up to 31 December 2018 but which do not however conform to the requirements of 6.8.2.1.23 concerning the check of the welds in the knuckle area of the tank ends applicable as from 1 January 2019 may continue to be used.
- 1.6.3.52 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2019 in accordance with the requirements in force up to 31 December 2018 but which however do not conform to the requirements of 6.8.2.2.11 applicable from 1 January 2019 may continue to be used.
- 1.6.3.53 Type approval certificates issued for fixed tanks (tank-vehicles), demountable tanks and battery-vehicles before 1 July 2019 in accordance with the requirements of 6.8.2.3.1 in force up to 31 December 2018 but which do not, however, conform to the requirements of 6.8.2.3.1 to show the distinguishing sign used on vehicles in international road traffic² of the state whose territory the approval was granted and a registration number applicable as from 1 January 2019 may continue to be used.
- 1.6.3.54 Procedures used by the competent authority for the approval of experts performing activities concerning fixed tanks (tank vehicles) and demountable tanks intended for the carriage of substances other than those for which TA4 and TT9 of 6.8.4 apply which conform to the requirements of Chapter 6.8 in force up to 31 December 2022 but which do not conform to the requirements of 1.8.6 applicable to inspection bodies from 1 January 2023 may continue to be used until 31 December 2032.
- NOTE: The term "expert" has been replaced by the term "inspection body".*
- 1.6.3.55 Type approval certificates issued for fixed tanks (tank vehicles) and demountable tanks intended for the carriage of substances other than those for which TA4 and TT9 of 6.8.4 apply, issued before 1 July 2023 in compliance with Chapter 6.8 which not comply with 1.8.7 as applicable from 1 January 2023 may continue to be used until the end of their validity.
- 1.6.3.56 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2033 in accordance with the requirements of Chapter 6.9 in force up to 31 December 2022 but which do not however conform to the requirements of Chapter 6.13 applicable as from 1 January 2023, may still be used.
- 1.6.3.57 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 January 2024 in accordance with the requirements in force up to 31 December 2022 but which do not, however, conform to the

² Distinguishing sign of the state of registration used on motor vehicles and trailers in international road traffic, e.g. in accordance with the Geneva Convention on Road Traffic of 1949 or the Vienna Convention on Road Traffic of 1968.

requirements applicable as from 1 January 2023 regarding the fitting of safety valves in accordance with 6.8.3.2.9 may still be used.

1.6.3.58 (Reserved)

1.6.3.59 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2023 in accordance with the requirements in force up to 31 December 2022, but which do not, however, meet the requirements of special provision TE26 of 6.8.4 (b) applicable as from 1 January 2023 may continue to be used.

1.6.3.60 Fixed tanks (tank-vehicles) and demountable tanks that are already fitted with safety valves meeting the requirements of 6.8.3.2.9 as applicable from 1 January 2023 do not need to display the marks in accordance with 6.8.3.2.9.6 until the next intermediate or periodic inspection after 31 December 2023.

1.6.3.5461 to 1.6.3.99 (Reserved)

1.6.3.100 Fibre-reinforced plastics (FRP) tanks

1.6.3.100.1 FRP tanks which have been constructed before 1 July 2002 in conformity with a design type approved before 1 July 2001 in accordance with the requirements of Appendix B.1c which were in force until 30 June 2001 may continue to be used until the end of their lifetime provided that all the requirements in force up to 30 June 2001 have been and continue to be complied with. However, as from 1 July 2001, no new design type may be approved in accordance with the requirements in force until 30 June 2001.

1.6.3.100.2 FRP tanks constructed before 1 July 2021 in accordance with the requirements in force up to 31 December 2020 but which do not, however, meet the requirements for the marking of the tank code of 6.9.6.1 applicable as from 1 January 2021 to 31 December 2022 or 6.13.6.1 applicable as from 1 January 2023 may continue to be marked in accordance with the requirements applicable up to 31 December 2020 until the next periodic inspection after 1 July 2021.

1.6.4 Tank-containers, portable tanks and MEGCs

1.6.4.1 Tank-containers constructed before 1 January 1988 in accordance with the requirements in force up to 31 December 1987 but which do not, however, conform to the requirements applicable as from 1 January 1988, may still be used.

1.6.4.2 Tank-containers constructed before 1 January 1993 in accordance with the requirements in force up to 31 December 1992 but which do not, however, conform to the requirements applicable as from 1 January 1993, may still be used.

1.6.4.3 Tank-containers constructed before 1 January 1999 in accordance with the requirements in force up to 31 December 1998 but which do not, however, conform to the requirements applicable as from 1 January 1999, may still be used.

1.6.4.4 (Reserved)

1.6.4.5 When, because of amendments to ADR, some proper shipping names of gases have been modified, it is not necessary to modify the names on the plate or on the shell itself (see 6.8.3.5.2 or 6.8.3.5.3), provided that the names of the gases on the tank-containers and MEGCs or on the plates [see 6.8.3.5.6 (b) or (c)] are adapted at the first periodic inspection thereafter.

1.6.4.6 Tank-containers constructed before 1 January 2007 in accordance with the requirements in force up to 31 December 2006 but which do not, however, conform to the requirements applicable as from 1 January 2007 regarding the marking of the external design pressure in accordance with 6.8.2.5.1, may still be used.

1.6.4.7 Tank-containers constructed before 1 January 1997 in accordance with the requirements in force up to 31 December 1996 but which do not, however, conform to the requirements of marginals 212 332 and 212 333 applicable as from 1 January 1997, may still be used.

1.6.4.8 (Reserved)

1.6.4.9 Tank-containers and MEGCs designed and constructed in accordance with a technical code which was recognized at the time of their construction according to the provisions of 6.8.2.7 which were applicable at that time may still be used.

- 1.6.4.10 *(Deleted)*
- 1.6.4.11 *(Reserved)*
- 1.6.4.12 Tank-containers and MEGCs constructed before 1 January 2003 in accordance with the requirements applicable up to 30 June 2001, but which do not, however, conform to the requirements applicable as from 1 July 2001, may still be used.
- However, they shall be marked with the relevant tank code and if applicable the relevant alphanumeric codes of special provisions TC and TE in accordance with 6.8.4.
- 1.6.4.13 Tank-containers constructed before 1 July 2003 in accordance with the requirements in force up to 31 December 2002 but which do not, however, conform to the requirements of 6.8.2.1.7 applicable as from 1 January 2003 and special provision TE15 of 6.8.4 (b) applicable from 1 January 2003 to 31 December 2006 may still be used.
- 1.6.4.14 *(Reserved)*
- 1.6.4.15 to 1.6.4.17 *(Deleted)*
- 1.6.4.18 For tank-containers and MEGCs constructed before 1 January 2007 which do not conform to the requirements of 4.3.2, 6.8.2.3, 6.8.2.4 and 6.8.3.4 concerning the tank record, the retention of files for the tank record shall start at the latest at the first periodic inspection after 30 June 2007.
- 1.6.4.19 *(Deleted)*
- 1.6.4.20 Vacuum-operated waste tank-containers constructed before 1 July 2005 in accordance with the requirements applicable up to 31 December 2004 but which do not conform to the requirements of 6.10.3.9 applicable as from 1 January 2005, may still be used.
- 1.6.4.21 to 1.6.4.29 *(Reserved)*
- 1.6.4.30 Portable tanks and UN MEGCs which do not meet the design requirements applicable as from 1 January 2007 but which have been constructed according to a design approval certificate which has been issued before 1 January 2008 may continue to be used.
- 1.6.4.31 ~~*(Deleted)*~~
- and 1.6.4.32 ~~*When the shell of a tank container was already divided by partitions or surge plates into sections of not more than 7 500 litres capacity before 1 January 2009, the capacity of the shell need not be supplemented with the symbol "S" in the particulars required by 6.8.2.5.1 until the next periodic inspection according to 6.8.2.4.2 is performed.*~~*(Deleted)*
- 1.6.4.33 Notwithstanding the provisions of 4.3.2.2.4, tank-containers intended for the carriage of liquefied gases or refrigerated liquefied gases, which meet the applicable construction requirements of ADR but which were divided, before 1 July 2009, by partitions or surge plates into sections of more than 7 500 litres capacity may still be filled to more than 20 % and less than 80 % of their capacity.
- 1.6.4.34 to 1.6.4.36 *(Deleted)*
- 1.6.4.37 Portable tanks and MEGCs manufactured before 1 January 2012, that conform to the marking requirements of 6.7.2.20.1, 6.7.3.16.1, 6.7.4.15.1 or 6.7.5.13.1 applicable up to 31 December 2010, as relevant, may continue to be used if they comply with all other relevant requirements of ADR applicable as from 1 January 2011 including, when applicable, the requirement of 6.7.2.20.1 (g) for marking the symbol "S" on the plate when the shell or the compartment is divided by surge plates into sections of not more than 7 500 litres capacity.
- 1.6.4.38 *(Deleted)*
- 1.6.4.39 Tank-containers and MEGCs designed and constructed in accordance with standards applicable at the time of their construction (see 6.8.2.6 and 6.8.3.6) according to the provisions of ADR which were applicable at that time may still be used unless restricted by a specific transitional measure.

- 1.6.4.40 Tank-containers constructed before 1 July 2011 in accordance with the requirements of 6.8.2.2.3 in force up to 31 December 2010 but which do not, however, conform to the requirements of 6.8.2.2.3, third paragraph, concerning the position of the flame trap or flame arrester may still be used.
- 1.6.4.41 *(Deleted)*
- 1.6.4.42 Tank-containers constructed before 1 July 2013 in accordance with the requirements in force up to 31 December 2012, but which do not, however, meet the marking provisions of 6.8.2.5.2 or 6.8.3.5.6 applicable as from 1 January 2013, may continue to be marked in accordance with the requirements applicable up to 31 December 2012 until the next periodic inspection after 1 July 2013.
- 1.6.4.43 Portable tanks and MECGs manufactured before 1 January 2014 need not comply with the requirements of 6.7.2.13.1 (f), 6.7.3.9.1 (e), 6.7.4.8.1 (e) and 6.7.5.6.1 (d) concerning the marking of the pressure relief devices.
- 1.6.4.44 and 1.6.4.45 *(Deleted)*
- 1.6.4.46 Tank-containers constructed before 1 January 2012 in accordance with the requirements in force up to 31 December 2012, but which do not however conform to the requirements of 6.8.2.6 relating to standards EN 14432:2006 and EN 14433:2006 applicable as from 1 January 2011, may still be used.
- 1.6.4.47 Tank containers for refrigerated liquefied gases constructed before 1 July 2017 in accordance with the requirements in force up to 31 December 2016 but which do not conform to the requirements of 6.8.3.4.10, 6.8.3.4.11 and 6.8.3.5.4 applicable from 1 January 2017 may continue to be used until the next inspection after 1 July 2017. Until this time, to meet the requirements of 4.3.3.5 and 5.4.1.2.2(d), the actual holding times may be estimated without recourse to the reference holding time.
- 1.6.4.48 Tank-containers constructed before 1 July 2017 in accordance with the requirements in force up to 31 December 2016 but which do not however conform to the requirements of 6.8.2.1.23 applicable as from 1 January 2017 may still be used.
- 1.6.4.49 Tank-containers constructed before 1 July 2019, fitted with safety valves meeting the requirements in force up to 31 December 2018 but which do not meet the requirements of 6.8.3.2.9 last sub-paragraph concerning their design or protection applicable from 1 January 2019 may continue to be used until the next intermediate or periodic inspection after 1 January 2021.
- 1.6.4.50 Notwithstanding the requirements of special provision TU42 of 4.3.5 applicable from 1 January 2019, tank-containers with a shell constructed of aluminium alloy, including those with a protective lining, which were used before 1 January 2019 for the carriage of substances with a pH value less than 5.0 or more than 8.0, may continue to be used for the carriage of such substances until 31 December 2026.
- 1.6.4.51 Tank-containers constructed before 1 July 2019 in accordance with the requirements in force up to 31 December 2018 but which do not conform to the requirements of 6.8.2.2.10 concerning the burst pressure of the bursting disc applicable as from 1 January 2019 may continue to be used.
- 1.6.4.52 Tank-containers constructed before 1 July 2019 in accordance with the requirements of 6.8.2.2.3 in force up to 31 December 2018 but which however do not conform to the requirements of 6.8.2.2.3 last paragraph concerning the flame arresters on breather devices applicable from 1 January 2019 may continue to be used.
- 1.6.4.53 Tank-containers constructed before 1 July 2019 in accordance with the requirements in force up to 31 December 2018 but which do not however conform to the requirements of 6.8.2.1.23 concerning the check of the welds in the knuckle area of the tank ends applicable as from 1 January 2019 may continue to be used.
- 1.6.4.54 Tank-containers constructed before 1 July 2019 in accordance with the requirements in force up to 31 December 2018 but which however do not conform to the requirements of 6.8.2.2.11 applicable from 1 January 2019 may continue to be used.
- 1.6.4.55 *(Reserved)*
- 1.6.4.56 Tank-containers which do not comply with the requirements of 6.8.3.4.6 (b) applicable from 1 January 2023, may continue to be used if an intermediate inspection takes place at least six years after each periodic inspection performed after 1 July 2023.

1.6.4.57 Except in relation to 6.8.1.5, second paragraph, second indent, procedures used by the competent authority for the approval of experts performing activities concerning tank-containers intended for the carriage of substances other than those for which TA4 and TT9 of 6.8.4 apply which conform to the requirements of Chapter 6.8 in force up to 31 December 2022 but which do not conform to the requirements of 1.8.6 applicable to inspection bodies from 1 January 2023 may continue to be used until 31 December 2032.

NOTE: The term "expert" has been replaced by the term "inspection body".

1.6.4.58 Type approval certificates issued for tank-containers intended for the carriage of substances other than those for which TA4 and TT9 of 6.8.4 apply, issued before 1 July 2023 in compliance with Chapter 6.8, but which do not comply with 1.8.7 as applicable from 1 January 2023, may continue to be used until the end of their validity.

1.6.4.59 Tank-containers constructed before 1 July 2033 in accordance with the requirements of Chapter 6.9 in force up to 31 December 2022, may still be used.

1.6.4.60 Tank-containers constructed before 1 January 2024 in accordance with the requirements in force up to 31 December 2022 but which do not, however, conform to the requirements applicable as from 1 January 2023 regarding the fitting of safety valves in accordance with 6.8.3.2.9, may still be used.

1.6.4.61 Tank-containers constructed before 1 July 2023 in accordance with the requirements in force up to 31 December 2022, but which do not meet the requirements of 6.8.2.2.4, second and third paragraph, applicable from 1 January 2023, may still be used.

1.6.4.62 Extra-large tank-containers constructed before 1 July 2023 in accordance with the requirements in force up to 31 December 2022, but which do not meet the requirements of 6.8.2.1.18, third paragraph, concerning the minimum thickness of the shell applicable as from 1 January 2023 may still be used.

1.6.4.63 Tank-containers constructed before 1 July 2023 in accordance with the requirements in force up to 31 December 2022, but which do not, however, meet the requirements of special provision TE26 of 6.8.4 (b) applicable as from 1 January 2023 may continue to be used.

1.6.4.64 Tank-containers that are already fitted with safety valves meeting the requirements of 6.8.3.2.9 as applicable from 1 January 2023 do not need to display the marks in accordance with 6.8.3.2.9.6 until the next intermediate or periodic inspection after 31 December 2023.

1.6.5 Vehicles

1.6.5.1 and 1.6.5.2 (Reserved)

1.6.5.3 (Deleted)

1.6.5.4 (Reserved)

1.6.5.5 Vehicles registered or entering into service before 1 January 2003 the electric equipment of which does not comply with the requirements of 9.2.2, 9.3.7 or 9.7.8 but complies with the requirements applicable until 30 June 2001 may still be used.

1.6.5.6 (Deleted)

1.6.5.7 Complete or completed vehicles which have been type-approved before 31 December 2002 according to UN Regulation No. 105² as amended by the 01 series of amendments or the corresponding provisions of Directive 98/91/EC³ and which do not comply with the requirements of Chapter 9.2 but comply with the requirements applicable to the construction of base vehicles (marginals 220 100 to 220 540 of

² UN Regulation No. 105 (Uniform provisions concerning the approval of vehicles intended for the carriage of dangerous goods with regard to their specific constructional features).

³ Directive 98/91/EC of the European Parliament and of the Council of 14 December 1998 relating to motor vehicles and their trailers intended for the transport of dangerous goods by road and amending Directive 70/156/EEC relating to the type approval of motor vehicles and their trailers (Official Journal of the European Communities No. L 011 of 16 January 1999, pp. 0025-0036).

Appendix B.2) applicable until 30 June 2001 may continue to be approved and used provided they are first registered or they entered into service before 1 July 2003.

- 1.6.5.8 EX/II and EX/III vehicles which have been first approved before 1 July 2005 and which comply with the requirements of Part 9 in force up to 31 December 2004 but which do not however conform to the requirements applicable as from 1 January 2005 may still be used.
- 1.6.5.9 Tank-vehicles with fixed tanks with a capacity of more than 3 m³ intended for the carriage of dangerous goods in the liquid or molten state tested with a pressure of less than 4 bar, which do not comply with the requirements of 9.7.5.2, first registered (or which entered into service if the registration is not mandatory) before 1 July 2004, may still be used.
- 1.6.5.10 Certificates of approval which conform to the model shown in 9.1.3.5 applicable up to 31 December 2006 and those which conform to the model shown in 9.1.3.5 applicable from 1 January 2007 to 31 December 2008 may continue to be used. Certificates of approval which conform to the model shown in 9.1.3.5 applicable from 1 January 2009 up to 31 December 2014 may continue to be used.
- 1.6.5.11 MEMUs which have been constructed and approved before 1 July 2009 in accordance with the provisions of national law but which do not, however, conform to the construction and approval requirements applicable as from 1 January 2009 may be used with the approval of the competent authorities in the countries of use.
- 1.6.5.12 EX/III and FL vehicles registered or entering into service before 1 April 2012, the electrical connections of which do not comply with the requirements of 9.2.2.6.3, but comply with the requirements applicable until 31 December 2010, may still be used.
- 1.6.5.13 Trailers first registered (or which entered into service if registration was not mandatory) before 1 July 1995 equipped with anti-lock braking system in conformity with UN Regulation No. 13, 06 series of amendments but which do not comply with the technical requirements for category A anti-lock braking system may still be used.
- 1.6.5.14 MEMUs which have been approved before 1 July 2013 in accordance with the provisions of ADR in force up to 31 December 2012, but which do not conform to the requirements of 6.12.3.1.2 or 6.12.3.2.2 applicable as from 1 January 2013, may still be used.
- 1.6.5.15 As regards the application of the provisions of Part 9, vehicles first registered or entered into service before 1 November 2014 and which have been approved according to the provisions of the directives repealed by the Regulation (EC) No. 661/2009⁴, may continue to be used.
- 1.6.5.16 EX/II, EX/III, FL and OX vehicles registered before 1 April 2018, fitted with fuel tanks not approved according to UN Regulation No. 34 may still be used.
- 1.6.5.17 Vehicles first registered or entering into service before 1 April 2018 that do not comply with subsection 9.2.2.8.5 or standards ISO 6722-1:2011 + Cor 01:2012 or ISO 6722-2:2013 for cables of subsection 9.2.2.2.1, but comply with the requirements applicable until 31 December 2016, may continue to be used.
- 1.6.5.18 Vehicles first registered or entering into service before 1 April 2018 approved specifically as OX vehicle may continue to be used for the carriage of substances of UN No. 2015.
- 1.6.5.19 As regards the annual technical inspection of the vehicles first registered or entering into service before 1 April 2018 approved specifically as OX vehicle, the requirements of Part 9 in force up to 31 December 2016 may still be applied.
- 1.6.5.20 Certificates of approval for OX vehicles which conform to the model shown in 9.1.3.5 applicable up to 31 December 2016 may continue to be used.
- 1.6.5.21 *(Deleted)*

⁴ Regulation (EC) 661/2009 of 13 July 2009 concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor (Official Journal L 200 of 31.7.2009, p. 1).

1.6.5.22 Vehicles first registered (or which entered into service if registration is not mandatory) before 1 January 2021 in compliance with the requirements of 9.7.3 applicable until 31 December 2018, but not in compliance with the requirements of 9.7.3 applicable as from 1 January 2019, may continue to be used.

1.6.5.23 EX/III vehicles first registered or entering into service before 1 January 2029, in accordance with the requirements of 9.7.9.2 applicable until 31 December 2022, but which do not conform to the requirements of 9.7.9.2 applicable as from 1 January 2023, may continue to be used.

1.6.5.24 FL vehicles first registered or entering into service before 1 January 2029, which do not conform to the requirements of 9.7.9.1 applicable as from 1 January 2023, may continue to be used.

1.6.5.25 FL vehicles first registered or entering into service before 1 January 2029, which do not conform to the requirements of 9.7.9.2 applicable as from 1 January 2023, may continue to be used.

1.6.6 Class 7

1.6.6.1 ***Packages not requiring competent authority approval of design under the 1985, 1985 (as amended 1990), 1996, 1996 (revised), 1996 (as amended 2003), 2005, 2009 ~~and~~ or 2012 editions of the IAEA Regulations for the Safe Transport of Radioactive Material***

Packages not requiring competent authority approval of design (excepted packages, Type IP-1, Type IP-2, Type IP-3 and Type A packages) shall meet the requirements of ADR in full, except that:

- (a) Packages that meet the requirements of the 1985 or 1985 (as amended 1990) editions of the IAEA Regulations for the Safe Transport of Radioactive Material:
 - (i) May continue to be carried provided that they were prepared for carriage prior to 31 December 2003 and are subject to the requirements of 1.6.6.2.3, if applicable; or
 - (ii) May continue to be used, provided that all the following conditions are met:
 - They were not designed to contain uranium hexafluoride;
 - The applicable requirements of 1.7.3 are applied;
 - The activity limits and classification in 2.2.7 are applied;
 - The requirements and controls for carriage in Parts 1, 3, 4, 5 and 7 are applied; and
 - The packaging was not manufactured or modified after 31 December 2003;
- (b) Packages that meet the requirements of the 1996, 1996 (revised), 1996 (as amended 2003), 2005, 2009 or 2012 editions of the IAEA Regulations for the Safe Transport of Radioactive Material:
 - (i) May continue to be carried provided that they were prepared for carriage prior to 31 December 2025 and are subject to the requirements of 1.6.6.2.3, if applicable; or
 - (ii) May continue to be used, provided that all the following conditions are met:
 - The applicable requirements of 1.7.3 are applied;
 - The activity limits and classification in 2.2.7 are applied;
 - The requirements and controls for carriage in Parts 1, 3, 4, 5 and 7 are applied; and
 - The packaging was not manufactured or modified after 31 December 2025.

1.6.6.2 *Package designs approved under the 1985, 1985 (as amended 1990), 1996, 1996 (revised), 1996 (as amended 2003), 2005, 2009 ~~and~~ or 2012 editions of the IAEA Regulations for the Safe Transport of Radioactive Material*

1.6.6.2.1 Packages requiring competent authority approval of the design shall meet the requirements of ADR in full except that:

- (a) Packagings that were manufactured to a package design approved by the competent authority under the provisions of the 1985 or 1985 (as amended 1990) editions of the IAEA Regulations for the Safe Transport of Radioactive Material may continue to be used provided that all of the following conditions are met:
 - (i) The package design is subject to multilateral approval;
 - (ii) The applicable requirements of 1.7.3 are applied;
 - (iii) The activity limits and classification in 2.2.7 are applied; and
 - (iv) The requirements and controls for carriage in Parts 1, 3, 4, 5 and 7 are applied;
 - (v) *(Reserved)*;
- (b) Packagings that were manufactured to a package design approved by the competent authority under the provisions of the 1996, 1996 (revised), 1996 (as amended 2003), 2005, 2009 or 2012 editions of the IAEA Regulations for the Safe Transport of Radioactive Material may continue to be used provided that all of the following conditions are met:
 - (i) The package design is subject to multilateral approval after 31 December 2025;
 - (ii) The applicable requirements of 1.7.3 are applied;
 - (iii) The activity limits and material restrictions of 2.2.7 are applied;
 - (iv) The requirements and controls for carriage in Parts 1, 3, 4, 5 and 7 are applied.

1.6.6.2.2 No new manufacture of packagings to a package design meeting the provisions of the 1985 and 1985 (as amended 1990) editions of the IAEA Regulations for the Safe Transport of Radioactive Material shall be permitted to commence.

1.6.6.2.3 No new manufacture of packagings of a package design meeting the provisions of the 1996, 1996 (revised), 1996 (as amended 2003), 2005, 2009 or 2012 editions of the IAEA Regulations for the Safe Transport of Radioactive Material shall be permitted to commence after 31 December 2028.

1.6.6.3 *Packages excepted from the requirements for fissile materials under the 2011 and 2013 editions of ADR (2009 edition of the IAEA Regulations for the Safe Transport of Radioactive Material)*

Packages containing fissile material that is excepted from classification as "FISSILE" according to 2.2.7.2.3.5 (a) (i) or (iii) of the 2011 and 2013 editions of ADR (paras. 417 (a) (i) or (iii) of the 2009 ~~E~~dition of the IAEA Regulations for the Safe Transport of Radioactive Material) prepared for carriage before 31 December 2014 may continue in carriage and may continue to be classified as non-fissile or fissile-excepted except that the consignment limits in Table 2.2.7.2.3.5 of these editions shall apply to the vehicle. The consignment shall be carried under exclusive use.

1.6.6.4 *Special form radioactive material approved under the 1985, 1985 (as amended 1990), 1996, 1996 (revised), 1996 (as amended 2003), 2005, 2009 ~~and~~ or 2012 editions of the IAEA Regulations for the Safe Transport of Radioactive Material*

Special form radioactive material manufactured to a design that had received unilateral approval by the competent authority under the 1985, 1985 (as amended 1990), 1996, 1996 (revised), 1996 (as amended 2003), 2005, 2009 ~~and~~ or 2012 editions of the IAEA Regulations for the Safe Transport of Radioactive Material may continue to be used when in compliance with the mandatory management system in accordance with the applicable requirements of 1.7.3. There shall be no new manufacture of special form radioactive material to a design that had received unilateral approval by the competent authority under the 1985 or 1985 (as amended 1990) editions of the IAEA Regulations for the Safe Transport of Radioactive Material. No new manufacture of special form radioactive material to a design that had

| received unilateral approval by the competent authority under the 1996, 1996 (revised), 1996 (as amended 2003), 2005, 2009 ~~and or~~ 2012 editions of the IAEA Regulations for the Safe Transport of Radioactive Material shall be permitted to commence after 31 December 2025.

CHAPTER 1.7

GENERAL PROVISIONS CONCERNING RADIOACTIVE MATERIAL

1.7.1 Scope and application

NOTE 1: *In the event of a nuclear or radiological emergency during the carriage of radioactive material, provisions as established by relevant national and/or international organizations shall be observed to protect ~~persons~~people, property and the environment. This includes arrangements for preparedness and response established in accordance with the national and/or international requirements and in a consistent and coordinated manner with the national and/or international emergency arrangements.*

NOTE 2: *The arrangements for preparedness and response shall be based on the graded approach and take into consideration the identified hazards and their potential consequences, including the formation of other dangerous substances that may result from the reaction between the contents of a consignment and the environment in the event of a nuclear or radiological emergency. Guidance for the establishment of such arrangements is contained in “Preparedness and Response for a Nuclear or Radiological Emergency”, IAEA Safety Standards Series No. GSR Part 7, IAEA, Vienna (2015); “Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency”, IAEA Safety Standards Series No. GSG-2, IAEA, Vienna (2011); “Arrangements for Preparedness for a Nuclear or Radiological Emergency”, IAEA Safety Standards Series No. GS-G-2.1, IAEA, Vienna (2007), and “Arrangements for the Termination of a Nuclear or Radiological Emergency”, IAEA Safety Standards Series No. GSG-11, IAEA, Vienna (2018).*

1.7.1.1 ADR establishes standards of safety which provide an acceptable level of control of the radiation, criticality and thermal hazards to people, property and the environment that are associated with the carriage of radioactive material. ~~These standards are~~ADR is based on the 2018 edition of the IAEA Regulations for the Safe Transport of Radioactive Material. Explanatory material can be found in “Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material (2018 Edition)”, Safety Standards Series No. SSG-26 (Rev.1), IAEA, Vienna (2019).

1.7.1.2 The objective of ADR is to establish requirements that shall be satisfied to ensure safety and to protect people, property and the environment from harmful effects of ionizing radiation during the carriage of radioactive material. This protection is achieved by requiring:

- (a) Containment of the radioactive contents;
- (b) Control of external dose rate;
- (c) Prevention of criticality; and
- (d) Prevention of damage caused by heat.

These requirements are satisfied firstly by applying a graded approach to contents limits for packages and vehicles and to performance standards applied to package designs depending upon the hazard of the radioactive contents. Secondly, they are satisfied by imposing conditions on the design and operation of packages and on the maintenance of packagings, including a consideration of the nature of the radioactive contents. Thirdly, they are satisfied by requiring administrative controls including, where appropriate, approval by competent authorities. Finally, further protection is provided by making arrangements for planning and preparing emergency response to protect people, property and the environment.

1.7.1.3 ADR applies to the carriage of radioactive material by road including carriage which is incidental to the use of the radioactive material. Carriage comprises all operations and conditions associated with and involved in the movement of radioactive material; these include the design, manufacture, maintenance and repair of packaging, and the preparation, consigning, loading, carriage including in-transit storage, unloading and receipt at the final destination of loads of radioactive material and packages. A graded approach is applied to the performance standards in ADR that are characterized by three general severity levels:

- (a) Routine conditions of carriage (incident free);
- (b) Normal conditions of carriage (minor mishaps);
- (c) Accident conditions of carriage.

1.7.1.4 The provisions laid down in ADR do not apply to any of the following:

- (a) Radioactive material that is an integral part of the means of transport;
- (b) Radioactive material moved within an establishment which is subject to appropriate safety regulations in force in the establishment and where the movement does not involve public roads or railways;
- (c) Radioactive material implanted or incorporated into a person or live animal for diagnosis or treatment;
- (d) Radioactive material in or on a person who is to be transported for medical treatment because the person has been subject to accidental or deliberate intake of radioactive material or to contamination;
- (e) Radioactive material in consumer products which have received regulatory approval, following their sale to the end user;
- (f) Natural material and ores containing naturally occurring radionuclides (which may have been processed), provided the activity concentration of the material does not exceed 10 times the values specified in Table 2.2.7.2.2.1, or calculated in accordance with 2.2.7.2.2.2 (a) and 2.2.7.2.2.3 to 2.2.7.2.2.6. For natural materials and ores containing naturally occurring radionuclides that are not in secular equilibrium the calculation of the activity concentration shall be performed in accordance with 2.2.7.2.2.4;
- (g) Non-radioactive solid objects with radioactive substances present on any surfaces in quantities not in excess of the limit set out in the definition for "contamination" in 2.2.7.1.2.

1.7.1.5 *Specific provisions for the carriage of excepted packages*

1.7.1.5.1 Excepted packages which may contain radioactive material in limited quantities, instruments, manufactured articles or empty packagings as specified in 2.2.7.2.4.1 shall be subject only to the following provisions of Parts 5 to 7:

- (a) The applicable provisions specified in 5.1.2.1, 5.1.3.2, 5.1.5.2.2, 5.1.5.2.3, 5.1.5.4, 5.2.1.10, 5.4.1.2.5.1 (f) (i) and (ii), 5.4.1.2.5.1 (i), 7.5.11 CV33 (3.1), (4.3), (5.1) to (5.4) and (6); and
- (b) The requirements for excepted packages specified in 6.4.4.

except when the radioactive material possesses other hazardous properties and has to be classified in a class other than Class 7 in accordance with special provision 290 or 369 of Chapter 3.3, where the provisions listed in (a) and (b) above apply only as relevant and in addition to those relating to the main class.

1.7.1.5.2 Excepted packages are subject to the relevant provisions of all other parts of ADR.

1.7.2 Radiation protection programme

1.7.2.1 The carriage of radioactive material shall be subject to a Radiation protection programme which shall consist of systematic arrangements aimed at providing adequate consideration of radiation protection measures.

1.7.2.2 Doses to persons shall be below the relevant dose limits. Protection and safety shall be optimized in order that the magnitude of individual doses, the number of persons exposed and the likelihood of incurring exposure shall be kept as low as reasonably achievable, economic and social factors being taken into account within the restriction that the doses to individuals be subject to dose constraints. A structured and systematic approach shall be adopted and shall include consideration of the interfaces between carriage and other activities.

1.7.2.3 The nature and extent of the measures to be employed in the programme shall be related to the magnitude and likelihood of radiation exposures. The programme shall incorporate the requirements in 1.7.2.2, 1.7.2.4, 1.7.2.5 and 7.5.11 CV33 (1.1). Programme documents shall be available, on request, for inspection by the relevant competent authority.

1.7.2.4 For occupational exposures arising from transport activities, where it is assessed that the effective dose either:

- (a) Is likely to be between 1 mSv and 6 mSv in a year, a dose assessment programme via work place monitoring or individual monitoring shall be conducted; or
- (b) Is likely to exceed 6 mSv in a year, individual monitoring shall be conducted.

When workplace monitoring or individual monitoring is conducted, appropriate records shall be kept.

NOTE: For occupational exposures arising from transport activities, where it is assessed that the effective dose is most unlikely to exceed 1 mSv in a year, no special work patterns, detailed monitoring, dose assessment programmes or individual record keeping need be required.

1.7.2.5 Workers (see 7.5.11, CV33 Note 3) shall be appropriately trained in radiation protection including the precautions to be observed in order to restrict their occupational exposure and the exposure of other ~~persons~~ people who might be affected by their actions.

1.7.3 Management system

A management system based on international, national or other standards acceptable to the competent authority shall be established and implemented for all activities within the scope of ADR, as identified in 1.7.1.3, to ensure compliance with the relevant provisions of ADR. Certification that the design specification has been fully implemented shall be available to the competent authority. The manufacturer, consignor or user shall be prepared:

- (a) To provide facilities for inspection during manufacture and use; and
- (b) To demonstrate compliance with ADR to the competent authority.

Where competent authority approval is required, such approval shall take into account and be contingent upon the adequacy of the management system.

1.7.4 Special arrangement

1.7.4.1 Special arrangement shall mean those provisions, approved by the competent authority, under which consignments which do not satisfy all the requirements of ADR applicable to radioactive material may be transported.

NOTE: Special arrangement is not considered to be a temporary derogation in accordance with 1.5.1.

1.7.4.2 Consignments for which conformity with any provision applicable to radioactive material is impracticable shall not be transported except under special arrangement. Provided the competent authority is satisfied that conformity with the radioactive material provisions of ADR is impracticable and that the requisite standards of safety established by ADR have been demonstrated through means alternative to the other provisions of ADR, the competent authority may approve special arrangement transport operations for a single consignment or a planned series of multiple consignments. The overall level of safety in carriage shall be at least equivalent to that which would be provided if all the applicable requirements of ADR had been met. For international consignments of this type, multilateral approval shall be required.

1.7.5 Radioactive material possessing other dangerous properties

In addition to the radioactive and fissile properties, any subsidiary hazard of the contents of the package, such as explosiveness, flammability, pyrophoricity, chemical toxicity and corrosiveness, shall also be taken into account in the documentation, packing, labelling, marking, placarding, stowage, segregation and carriage, in order to be in compliance with all relevant provisions for dangerous goods of ADR.

1.7.6 Non-compliance

1.7.6.1 In the event of non-compliance with any limit in ADR applicable to dose rate or contamination,

- (a) The consignor, carrier, consignee and any organization involved during carriage who may be affected, as appropriate, shall be informed of the non-compliance by:
 - (i) the carrier if the non-compliance is identified during carriage; or
 - (ii) the consignee if the non-compliance is identified at receipt;
- (b) The consignor, carrier or consignee, as appropriate shall:
 - (i) take immediate steps to mitigate the consequences of the non-compliance;
 - (ii) investigate the non-compliance and its causes, circumstances and consequences;
 - (iii) take appropriate action to remedy the causes and circumstances that led to the non-compliance and to prevent a recurrence of the causes and circumstances similar to those that led to the non-compliance; and
 - (iv) communicate to the competent authority(ies) on the causes of the non-compliance and the corrective or preventive actions taken or to be taken;
- (c) The communication of the non-compliance to the consignor and competent authority(ies), respectively, shall be made as soon as practicable and it shall be immediate whenever an emergency exposure situation has developed or is developing.

CHAPTER 1.8

CHECKS AND OTHER SUPPORT MEASURES TO ENSURE COMPLIANCE WITH SAFETY REQUIREMENTS

1.8.1 Administrative controls of dangerous goods

1.8.1.1 The competent authorities of the Contracting Parties may, on their national territory, at any time, conduct spot checks to verify whether the requirements concerning the carriage of dangerous goods have been met including, in accordance with 1.10.1.5, those concerning security measures.

These checks shall, however, be made without endangering persons, property or the environment and without major disruption of road services.

1.8.1.2 Participants in the carriage of dangerous goods (Chapter 1.4) shall, without delay, in the context of their respective obligations, provide the competent authorities and their agents with the necessary information for carrying out the checks.

1.8.1.3 The competent authorities may also, for the purposes of carrying out checks on the premises of the enterprises participating in the carriage of dangerous goods (Chapter 1.4), make inspections, consult the necessary documents and remove samples of dangerous goods or packagings for examination, provided that safety is not jeopardized thereby. The participants in the carriage of dangerous goods (Chapter 1.4) shall also make the vehicles or parts of vehicles and the equipment and installations accessible for the purpose of checking where this is possible and reasonable. They may, if they deem necessary, designate a person from the enterprise to accompany the representative of the competent authority.

1.8.1.4 If the competent authorities observe that the requirements of ADR have not been met, they may prohibit a consignment or interrupt a transport operation until the defects observed are rectified, or they may prescribe other appropriate measures. Immobilization may take place on the spot or at another place selected by the authorities for safety reasons. These measures shall not cause a major disruption in road services.

1.8.2 Mutual administrative support

1.8.2.1 The Contracting Parties shall agree on mutual administrative support for the implementation of ADR.

1.8.2.2 When a Contracting Party has reasons to observe that the safety of the carriage of dangerous goods on its territory is compromised as a result of very serious or repeated infringements by an enterprise which has its headquarters on the territory of another Contracting Party, it shall notify the competent authorities of this Contracting Party of such infringements. The competent authorities of the Contracting Party on the territory of which the very serious or repeated infringements were observed may request the competent authorities of the Contracting Party on the territory of which the enterprise has its headquarters to take appropriate measures against the offender(s). The transmission of data referring to persons shall not be permitted unless it is necessary for the prosecution of very serious or repeated infringements.

1.8.2.3 The authorities notified shall communicate to the competent authorities of the Contracting Party on the territory of which the infringements were observed, the measures which have, if necessary, been taken with respect to the enterprise.

1.8.3 Safety adviser

1.8.3.1 Each undertaking, the activities of which include the consigning or the carriage of dangerous goods by road, or the related packing, loading, filling or unloading shall appoint one or more safety advisers for the carriage of dangerous goods, responsible for helping to prevent the risks inherent in such activities with regard to persons, property and the environment.

1.8.3.2 The competent authorities of the Contracting Parties may provide that these requirements shall not apply to undertakings:

- (a) The activities of which concern quantities in each transport unit not exceeding those referred to in 1.1.3.6, 1.7.1.4 and in Chapters 3.3, 3.4 and 3.5; or
- (b) The main or secondary activities of which are not the carriage or the related packing, filling, loading or unloading of dangerous goods but which occasionally engage in the national carriage or the related packing, filling, loading or unloading of dangerous goods posing little danger or risk of pollution.

1.8.3.3

The main task of the adviser shall be, under the responsibility of the head of the undertaking, to seek by all appropriate means and by all appropriate action, within the limits of the relevant activities of that undertaking, to facilitate the conduct of those activities in accordance with the requirements applicable and in the safest possible way.

With regard to the undertaking's activities, the adviser has the following duties in particular:

- monitoring compliance with the requirements governing the carriage of dangerous goods;
- advising his undertaking on the carriage of dangerous goods;
- preparing an annual report to the management of his undertaking or a local public authority, as appropriate, on the undertaking's activities in the carriage of dangerous goods. Such annual reports shall be preserved for five years and made available to the national authorities at their request.

The adviser's duties also include monitoring the following practices and procedures relating to the relevant activities of the undertaking:

- the procedures for compliance with the requirements governing the identification of dangerous goods being transported;
- the undertaking's practice in taking account, when purchasing means of transport, of any special requirements in connection with the dangerous goods being transported;
- the procedures for checking the equipment used in connection with the carriage, packing, filling, loading or unloading of dangerous goods;
- the proper training of the undertaking's employees, including on the changes to the regulations, and the maintenance of records of such training;
- the implementation of proper emergency procedures in the event of any accident or incident that may affect safety during the carriage, packing, filling, loading or unloading of dangerous goods;
- investigating and, where appropriate, preparing reports on serious accidents, incidents or serious infringements recorded during the carriage, packing, filling, loading or unloading of dangerous goods;
- the implementation of appropriate measures to avoid the recurrence of accidents, incidents or serious infringements;
- the account taken of the legal prescriptions and special requirements associated with the carriage of dangerous goods in the choice and use of sub-contractors or third parties;
- verification that employees involved in the consigning, carriage, packing, filling, loading or unloading of dangerous goods have detailed operational procedures and instructions;
- the introduction of measures to increase awareness of the risks inherent in the carriage, packing, filling, loading and unloading of dangerous goods;
- the implementation of verification procedures to ensure the presence on board the means of transport of the documents and safety equipment which must accompany transport and the compliance of such documents and equipment with the regulations;
- the implementation of verification procedures to ensure compliance with the requirements governing packing, filling, loading and unloading;
- the existence of the security plan indicated in 1.10.3.2.

1.8.3.4

The adviser may also be the head of the undertaking, a person with other duties in the undertaking, or a person not directly employed by that undertaking, provided that that person is capable of performing the duties of adviser.

- 1.8.3.5 Each undertaking concerned shall, on request, inform the competent authority or the body designated for that purpose by each Contracting Party of the identity of its adviser.
- 1.8.3.6 Whenever an accident affects persons, property or the environment or results in damage to property or the environment during carriage, packing, filling, loading or unloading carried out by the undertaking concerned, the adviser shall, after collecting all the relevant information, prepare an accident report to the management of the undertaking or to a local public authority, as appropriate. That report shall not replace any report by the management of the undertaking which might be required under any other international or national legislation.
- 1.8.3.7 An adviser shall hold a vocational training certificate, valid for transport by road. That certificate shall be issued by the competent authority or the body designated for that purpose by each Contracting Party.
- 1.8.3.8 To obtain a certificate, a candidate shall undergo training and pass an examination approved by the competent authority of the Contracting Party.
- 1.8.3.9 The main aims of the training shall be to provide candidates with sufficient knowledge of the risks inherent in the carriage, packing, filling, loading or unloading of dangerous goods, of the applicable laws, regulations and administrative provisions and of the duties listed in 1.8.3.3.
- 1.8.3.10 The examination shall be organized by the competent authority or by an examining body designated by the competent authority. The examining body shall not be a training provider.
- The examining body shall be designated in writing. This approval may be of limited duration and shall be based on the following criteria:
- competence of the examining body;
 - specifications of the form of the examinations the examining body is proposing, including, if necessary, the infrastructure and organisation of electronic examinations in accordance with 1.8.3.12.5, if these are to be carried out;
 - measures intended to ensure that examinations are impartial;
 - independence of the body from all natural or legal persons employing safety advisers.
- 1.8.3.11 The aim of the examination is to ascertain whether candidates possess the necessary level of knowledge to carry out the duties incumbent upon a safety adviser as listed in 1.8.3.3, for the purpose of obtaining the certificate prescribed in sub-section 1.8.3.7, and it shall cover at least the following subjects:
- (a) Knowledge of the types of consequences which may be caused by an accident involving dangerous goods and knowledge of the main causes of accidents;
 - (b) Requirements under national law, international conventions and agreements, with regard to the following in particular:
 - classification of dangerous goods (procedure for classifying solutions and mixtures, structure of the list of substances, classes of dangerous goods and principles for their classification, nature of dangerous goods transported, physical, chemical and toxicological properties of dangerous goods);
 - general packing provisions, provisions for tanks and tank-containers (types, code, marking, construction, initial and periodic inspection and testing);
 - marking and labelling, placarding and orange-coloured plate marking (marking and labelling of packages, placing and removal of placards and orange-coloured plates);
 - particulars in transport documents (information required);
 - method of consignment and restrictions on dispatch (full load, carriage in bulk, carriage in intermediate bulk containers, carriage in containers, carriage in fixed or demountable tanks);
 - transport of passengers;

- prohibitions and precautions relating to mixed loading;
- segregation of goods;
- limitation of the quantities carried and quantities exemptions;
- handling and stowage (packing, filling, loading and unloading - filling ratios -, stowage and segregation);
- cleaning and/or degassing before packing, filling, loading and after unloading;
- crews, vocational training;
- vehicle documents (transport documents, instructions in writing, vehicle approval certificate, driver training certificate, copies of any derogations, other documents);
- instructions in writing (implementation of the instructions and crew protection equipment);
- supervision requirements (parking);
- traffic regulations and restrictions;
- operational discharges or accidental leaks of pollutants;
- requirements relating to transport equipment.

1.8.3.12 Examinations

1.8.3.12.1 The examination shall consist of a written test which may be supplemented by an oral examination.

1.8.3.12.2 The competent authority or an examining body designated by the competent authority shall invigilate every examination. Any manipulation and deception shall be ruled out as far as possible. Authentication of the candidate shall be ensured. The use in the written test of documentation other than international or national regulations is not permitted. All examination documents shall be recorded and kept as a print-out or electronically as a file.

1.8.3.12.3 Electronic media may be used only if provided by the examining body. There shall be no means of a candidate introducing further data to the electronic media provided; the candidate may only answer the questions posed.

1.8.3.12.4 The written test shall consist of two parts:

- (a) Candidates shall receive a questionnaire. It shall include at least 20 open questions covering at least the subjects mentioned in the list in 1.8.3.11. However, multiple choice questions may be used. In this case, two multiple choice questions count as one open question. Amongst these subjects particular attention shall be paid to the following subjects:
- general preventive and safety measures;
 - classification of dangerous goods;
 - general packing provisions, including tanks, tank-containers, tank-vehicles, etc.;
 - danger marking, labelling and placardings;
 - information in transport document;
 - handling and stowage;
 - crew, vocational training;
 - vehicle documents and transport certificates;
 - instructions in writing;

- requirements concerning transport equipment;

(b) Candidates shall undertake a case study in keeping with the duties of the adviser referred to in 1.8.3.3, in order to demonstrate that they have the necessary qualifications to fulfil the task of adviser.

1.8.3.12.5 Written examinations may be performed, in whole or in part, as electronic examinations, where the answers are recorded and evaluated using electronic data processing (EDP) processes, provided the following conditions are met:

(a) The hardware and software shall be checked and accepted by the competent authority or by an examining body designated by the competent authority;

(b) Proper technical functioning shall be ensured. Arrangements as to whether and how the examination can be continued shall be made for a failure of the devices and applications. No aids shall be available on the input devices (e.g. electronic search function), the equipment provided according to 1.8.3.12.3 shall not allow the candidates to communicate with any other device during the examination;

(c) Final inputs of each candidate shall be logged. The determination of the results shall be transparent.

1.8.3.13 The Contracting Parties may decide that candidates who intend working for undertakings specializing in the carriage of certain types of dangerous goods need only be questioned on the substances relating to their activities. These types of goods are:

- Class 1;
- Class 2;
- Class 7;
- Classes 3, 4.1, 4.2, 4.3, 5.1, 5.2, 6.1, 6.2, 8 and 9;
- UN Nos. 1202, 1203, 1223, 3475, and aviation fuel classified under UN Nos. 1268 or 1863.

The certificate prescribed in 1.8.3.7 shall clearly indicate that it is only valid for one type of the dangerous goods referred to in this sub-section and on which the adviser has been questioned under the conditions defined in 1.8.3.12.

1.8.3.14 The competent authority or the examining body shall keep a running list of the questions that have been included in the examination.

1.8.3.15 The certificate prescribed in 1.8.3.7 shall take the form laid down in 1.8.3.18 and shall be recognized by all Contracting Parties.

1.8.3.16 *Validity and renewal of certificates*

1.8.3.16.1 The certificate shall be valid for five years. The period of the validity of a certificate shall be extended from the date of its expiry for five years at a time where, during the year before its expiry, its holder has passed an examination. The examination shall be approved by the competent authority.

1.8.3.16.2 The aim of the examination is to ascertain that the holder has the necessary knowledge to carry out the duties set out in 1.8.3.3. The knowledge required is set out in 1.8.3.11 (b) and shall include the amendments to the regulations introduced since the award of the last certificate. The examination shall be held and supervised on the same basis as in 1.8.3.10 and 1.8.3.12 to 1.8.3.14. However, holders need not undertake the case study specified in 1.8.3.12.4 (b).

1.8.3.17 *(Deleted)*

1.8.3.18 *Form of certificate*

Certificate of training as safety adviser for the transport of dangerous goods

Certificate No:

Distinguishing sign of the State issuing the certificate:

Surname:

Forename(s):

Date and place of birth:

Nationality:

Signature of holder:

Valid until for undertakings which transport dangerous goods and for undertakings which carry out related consigning, packing, filling, loading or unloading:

by road by rail by inland waterway

Issued by:

Date: Signature:

1.8.3.19 *Extension of the certificate*

Where an adviser extends the scope of his certificate during its period of validity by meeting the requirements of 1.8.3.16.2, the period of validity of a new certificate shall remain that of the previous certificate.

1.8.4 **List of competent authorities and bodies designated by them**

The Contracting Parties shall communicate to the Secretariat of the United Nations Economic Commission for Europe the addresses of the authorities and bodies designated by them which are competent in accordance with national law to implement ADR, referring in each case to the relevant requirement of ADR and giving the addresses to which the relevant applications should be made.

The Secretariat of the United Nations Economic Commission for Europe shall establish a list on the basis of the information received and shall keep it up-to-date. It shall communicate this list and the amendments thereto to the Contracting Parties.

1.8.5 **Notifications of occurrences involving dangerous goods**

1.8.5.1 If a serious accident or incident takes place during loading, filling, carriage or unloading of dangerous goods on the territory of a Contracting Party, the loader, filler, carrier, unloader or consignee, respectively, shall ascertain that a report conforming to the model prescribed in 1.8.5.4 is made to the competent authority of the Contracting Party concerned at the latest one month after the occurrence.

1.8.5.2 The Contracting Party shall in turn, if necessary, make a report to the Secretariat of the United Nations Economic Commission for Europe with a view to informing the other Contracting Parties.

1.8.5.3 An occurrence subject to report in accordance with 1.8.5.1 has occurred if dangerous goods were released or if there was an imminent risk of loss of product, if personal injury, material or environmental damage occurred, or if the authorities were involved and one or more of the following criteria has/have been met:

Personal injury means an occurrence in which death or injury directly relating to the dangerous goods carried has occurred, and where the injury

- (a) Requires intensive medical treatment;
- (b) Requires a stay in hospital of at least one day; or
- (c) Results in the inability to work for at least three consecutive days.

Loss of product means the release of dangerous goods

- (a) Of transport category 0 or 1 in quantities of 50 kg / 50 l or more;
- (b) Of transport category 2 in quantities of 333 kg / 333 l or more; or
- (c) Of transport category 3 or 4 in quantities of 1 000 kg / 1 000 l or more.

The loss of product criterion also applies if there was an imminent risk of loss of product in the above-mentioned quantities. As a rule, this has to be assumed if, owing to structural damage, the means of containment is no longer suitable for further carriage or if, for any other reason, a sufficient level of safety is no longer ensured (e.g. owing to distortion of tanks or containers, overturning of a tank or fire in the immediate vicinity).

If dangerous goods of Class 6.2 are involved, the obligation to report applies without quantity limitation.

In occurrences involving radioactive material, the criteria for loss of product are:

- (a) Any release of radioactive material from the packages;
- (b) Exposure leading to a breach of the limits set out in the regulations for protection of workers and members of the public against ionizing radiation ("Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards", IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014)); or
- (c) Where there is reason to believe that there has been a significant degradation in any package safety function (containment, shielding, thermal protection or criticality) that may have rendered the package unsuitable for continued carriage without additional safety measures.

NOTE: See the requirements of 7.5.11 CV33 (6) for undeliverable consignments.

Material damage or environmental damage means the release of dangerous goods, irrespective of the quantity, where the estimated amount of damage exceeds 50,000 Euros. Damage to any directly involved means of carriage containing dangerous goods and to the modal infrastructure shall not be taken into account for this purpose.

Involvement of authorities means the direct involvement of the authorities or emergency services during the occurrence involving dangerous goods and the evacuation of persons or closure of public traffic routes (roads/railways) for at least three hours owing to the danger posed by the dangerous goods.

If necessary, the competent authority may request further relevant information.

1.8.5.4

Model for report on occurrences during the carriage of dangerous goods

**Report on occurrences during the carriage of dangerous goods
in accordance with RID/ADR section 1.8.5**

Carrier/Railway infrastructure operator:
Address:
Contact name: Telephone: Fax:

(The competent authority shall remove this cover sheet before forwarding the report)

1.8.6 Administrative controls for the activities described in 1.8.7 and 1.8.8

NOTE 1: *For the purpose of this section the terms:*

- *"approved inspection body" means an inspection body approved by the competent authority to perform different activities according to 1.8.6.1; and*
- *"recognized inspection body" means an approved inspection body recognized by another competent authority.*

NOTE 2: *An inspection body may be designated by the competent authority to act as the competent authority (see the definition of competent authority in 1.2.1).*

1.8.6.1 General rules

The competent authority of a Contracting Party to ADR may approve inspection bodies for the following activities: conformity assessments, periodic inspections, intermediate inspections, exceptional inspections, entry into service verifications and surveillance of the in-house inspection service as relevant in Chapters 6.2 and 6.8.

1.8.6.2 Obligations of the competent authority

1.8.6.2.1 When the competent authority approves an inspection body to perform the activities specified in 1.8.6.1, the accreditation of the inspection body shall be according to EN ISO/IEC 17020:2012 (except clause 8.1.3) type A requirements.

When the competent authority approves an inspection body to perform periodic inspections of pressure receptacles according to Chapter 6.2, the accreditation of the inspection body shall be according to EN ISO/IEC 17020:2012 (except clause 8.1.3) type A requirements or type B requirements.

The accreditation shall clearly cover the activities of the approval.

When the competent authority does not approve inspection bodies, but performs these tasks itself, the competent authority shall comply with the provisions of 1.8.6.3.

1.8.6.2.2 Approval of inspection bodies

1.8.6.2.2.1 Type A inspection bodies shall be established under domestic law and be a legal entity in the Contracting Party to ADR where the application for approval is made.

Type B inspection bodies shall be established under domestic law and be part of a legal entity supplying gas in the Contracting Party to ADR where the application for approval is made.

1.8.6.2.2.2 The competent authority shall ensure that the inspection body continuously meets the conditions for its approval and shall end it if these conditions are not met. However, in the case of suspension of the accreditation, the approval is only suspended during the suspension period of the accreditation.

1.8.6.2.2.3 An inspection body starting a new activity may be approved temporarily. Before temporary approval, the competent authority shall ensure that the inspection body meets the requirements of 1.8.6.3.1. The inspection body shall be accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) in its first year of activity to be able to continue this new activity.

1.8.6.2.3 Monitoring of inspection bodies

1.8.6.2.3.1 Wherever the activities of an inspection body are performed, the competent authority that approved this body shall ensure the monitoring of the activities of this body, including on-site monitoring. The competent authority shall revoke or restrict the approval given if this body is no longer in compliance with the approval, the requirements of 1.8.6.3.1 or does not follow the procedures specified in the provisions of ADR.

NOTE: *Monitoring of subcontractors as mentioned in 1.8.6.3.3 by the inspection body shall also be included in the monitoring of the inspection body.*

1.8.6.2.3.2 If the approval of the inspection body is revoked or restricted or if the inspection body ceased activity, the competent authority shall take the appropriate steps to ensure that the files are either processed by another inspection body or kept available.

1.8.6.2.4 *Information obligations*

1.8.6.2.4.1 Contracting Parties to ADR shall publish their national procedures for the assessment, approval and monitoring of inspection bodies and of any changes to that information.

1.8.6.2.4.2 The competent authority of the Contracting Party to ADR shall publish an up-to-date list of all the inspection bodies it has approved, including inspection bodies approved temporarily as described in 1.8.6.2.2.3. This list shall at least contain the following information:

- (a) Name, address(es) of the office(s) of the inspection body;
- (b) The scope of activities for which the inspection body is approved;
- (c) Confirmation that the inspection body is accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) by the national accreditation body and that the accreditation covers the scope of activities for which the inspection body is approved;
- (d) The identity mark or stamp, as specified in Chapters 6.2 and 6.8, of the inspection body and the mark of any in-house inspection service authorized by the inspection body.

A reference to this list shall be made on the website of the UNECE secretariat.

1.8.6.2.4.3 An inspection body approved by a competent authority may be recognized by another competent authority.

Where a competent authority wishes to engage the services of an inspection body already approved by another competent authority to carry out activities related to conformity assessments and inspections on its behalf, then that competent authority shall add this inspection body, the scope of activities for which it is recognized, and the competent authority that approved the inspection body, to the list mentioned in 1.8.6.2.4.2 and inform the UNECE secretariat. If the approval is withdrawn or suspended, the recognition is no longer valid.

NOTE: *In that context, reciprocal recognition agreements between Contracting Parties to ADR shall be respected.*

1.8.6.3 *Obligations of the inspection bodies*

1.8.6.3.1 *General rules*

The inspection body shall:

- (a) Have a staff with an organizational structure, capable, trained, competent and skilled, to satisfactorily perform its technical functions;
- (b) Have access to suitable and adequate facilities and equipment;
- (c) Operate in an impartial manner and be free from any influence which could prevent it from doing so;
- (d) Ensure commercial confidentiality of the commercial and proprietary activities of the manufacturer and other bodies;
- (e) Maintain clear demarcation between actual inspection body functions and unrelated functions;
- (f) Have a documented quality ~~management~~ system, equivalent to that set out in EN ISO/IEC 17020:2012 (except clause 8.1.3);
- (g) Ensure that the tests and inspections specified in the relevant standards and in ADR are performed;
- (h) Maintain an effective and appropriate report and record system in accordance with 1.8.7 and 1.8.8;

(i) Be free from any commercial or financial pressure and not remunerate its personnel depending on the number of the inspections carried out or on the results of those inspections;

(j) Have a liability insurance covering the risks in relation to the conducted activities;

NOTE: This is not necessary if the Contracting Party to ADR assumes liability in accordance with domestic law.

(k) Have person(s) responsible for carrying out the inspections who shall:

(i) Not be directly involved in the design, manufacture, supply, installation, purchase, ownership, use or maintenance of the product (pressure receptacle, tank, battery-vehicle or MEGC) to be inspected;

(ii) Have been trained in all aspects of the activities in relation to which the inspection body has been approved;

(iii) Have appropriate knowledge, technical skills and understanding of the applicable requirements, of the applicable standards and of the relevant provisions of Parts 4 and 6;

(iv) Have the ability to draw up certificates, records and reports demonstrating that assessments have been carried out;

(v) Observe professional secrecy with regard to information obtained in carrying out their tasks or any provision of domestic law giving effect to it, except in relation to the competent authorities of the Contracting Party to ADR in which its activities are carried out. At the request of other inspection bodies, information may be shared as far as necessary for the performance of inspections and tests.

The inspection body shall additionally be accredited according to the standard EN ISO/IEC 17020:2012 (except clause 8.1.3).

1.8.6.3.2 Operational obligations

1.8.6.3.2.1 The competent authority or inspection body shall carry out conformity assessments, periodic inspections, intermediate inspections, exceptional inspections and entry into service verifications in a proportionate manner, avoiding unnecessary burdens. The competent authority or inspection body shall perform its activities taking into consideration the size, the sector and the structure of the undertakings involved, the relative complexity of the technology and the serial character of production.

1.8.6.3.2.2 The competent authority or inspection body shall respect the degree of rigour and the level of protection required for the compliance with the provisions of Parts 4 and 6 as applicable.

1.8.6.3.2.3 Where a competent authority or inspection body finds out that requirements laid down in Parts 4 or 6 have not been met by the manufacturer, it shall require the manufacturer to take appropriate corrective measures and it shall not issue any type approval certificate or initial inspection and test certificate until the appropriate corrective measures have been implemented.

1.8.6.3.3 Delegation of inspection tasks

NOTE: The following provisions only apply to type A inspection bodies. Type B inspection bodies are not allowed to delegate the activities for which they are approved. For in-house inspection services see 1.8.7.7.2.

1.8.6.3.3.1 Where an inspection body uses the services of a subcontractor to carry out specific tasks connected with its activities, the subcontractor shall be assessed and monitored by the inspection body, or it shall be accredited separately. In the case of separate accreditation, the subcontractor shall be duly accredited according to EN ISO/IEC 17025:2017 (except clause 8.1.3) or EN ISO/IEC 17020:2012 (except clause 8.1.3) as an independent and impartial testing laboratory or inspection body in order to perform testing tasks in accordance with its accreditation. The inspection body shall ensure that this subcontractor meets the requirements set out for the tasks given to it with the same level of competence and safety as laid down for inspection bodies (see 1.8.6.3.1) and the inspection body shall monitor it. The inspection body shall inform the competent authority about the above-mentioned arrangements.

1.8.6.3.3.2 The inspection body shall take full responsibility for the tasks performed by such subcontractors wherever the tasks are performed by them.

1.8.6.3.3.3 The type A inspection body may delegate only a part of each of its activities. In any case, the assessment and the issue of certificates shall be carried out by the inspection body itself.

1.8.6.3.3.4 Activities shall not be delegated without the agreement of the manufacturer, owner or operator as appropriate.

1.8.6.3.3.5 The inspection body shall keep at the disposal of the competent authority the relevant documents concerning the assessment of the qualifications and the work carried out by the above-mentioned subcontractors.

1.8.6.3.4 Information obligations

Any inspection body shall inform the competent authority, which had approved it, of the following:

(a) Except when the provisions of 1.8.7.2.2.2 apply, any refusal, restriction, suspension or withdrawal of type approval certificates;

(b) Any circumstance(s) affecting the scope of and conditions for the approval as granted by the competent authority;

(c) Any refusal of inspection certificates;

(d) Any request for information on activities performed which they have received from competent authorities monitoring compliance according to this section;

(e) On request, all activities performed within the scope of their approval, including delegation of tasks

(f) Any authorization or suspension or withdrawal of an in-house inspection service.

1.8.7 Procedures for conformity assessment, type approval certificate issue and inspections

NOTE 1: In this section, "relevant body" means a body as assigned in Chapters 6.2 and 6.8.

NOTE 2: In this section, "manufacturer" means the enterprise who is responsible to the competent authority for all aspects of the conformity assessment and for ensuring the conformity of construction whose name and mark appear in the approvals and on the markings. It is not essential that the enterprise is directly involved in all stages of the construction of the product (see 1.8.7.1.5) which is subject of the conformity assessment.

1.8.7.1 General provisions

1.8.7.1.1 The procedures in section 1.8.7 shall be applied as specified in Chapters 6.2 and 6.8.

If the competent authority performs the tasks itself, the competent authority shall meet the provisions of this section.

1.8.7.1.2 Each application for:

(a) The type examination in accordance with 1.8.7.2.1;

(b) The type approval certificate issue in accordance with 1.8.7.2.2;

(c) The supervision of manufacture in accordance with 1.8.7.3; or

(d) The initial inspection and tests in accordance with 1.8.7.4

shall be lodged by the manufacturer with a competent authority or an inspection body, as applicable, in conformity with Chapters 6.2 and 6.8.

Each application for:

(e) The entry into service verification in accordance with 1.8.7.5; or

(f) The periodic inspection, intermediate inspection and exceptional inspection in accordance with 1.8.7.6

shall be lodged by the owner or its authorized representative, or by the operator or its authorized representative, with a competent authority or an inspection body.

When the in-house inspection service is authorized for (c), (d), or (f), it is not necessary to lodge an application for (c), (d), or (f).

1.8.7.1.3 The application shall include:

(a) The name and address of the applicant according to 1.8.7.1.2;

(b) A written declaration that the same application has not been lodged with any other competent authority or inspection body;

(c) The relevant technical documentation in 1.8.7.8;

(d) A statement allowing the competent authority or the inspection body, as appropriate, access for conformity assessment or inspection purposes to the locations of manufacture, inspection, testing and storage and providing it with all necessary information to perform their tasks.

1.8.7.1.4 Where the manufacturer or an enterprise with a testing facility is allowed to establish an in-house inspection service according to 6.2.2.12, 6.2.3.6.1, 6.8.1.5.3 (b) or 6.8.1.5.4 (b), it shall demonstrate to the satisfaction of the inspection body that the in-house inspection service is able to perform inspections and tests in conformity with 1.8.7.

1.8.7.1.5 Type approval certificates, inspection certificates and reports for the products (pressure receptacles, tanks, service equipment and the assembly of the elements, structural equipment and service equipment of battery-vehicles or MEGCs), including the technical documentation, shall be kept:

(a) By the manufacturer for a period of at least 20 years from the expiry date of the type approval;

(b) By the issuing competent authority or the issuing inspection body, for a period of at least 20 years from the issuing date;

(c) By the owner or operator for a period of at least 15 months after the product is taken out of service.

1.8.7.2 Type examination and type approval certificate issue

1.8.7.2.1 Type examination

1.8.7.2.1.1 The manufacturer shall:

(a) In the case of pressure receptacles, place at the disposal of the inspection body representative samples of the production envisaged. The inspection body may request further samples if required by the test programme;

(b) In the case of tanks, battery-vehicles or MEGCs, give access to the prototype for type testing;

(c) In the case of service equipment, place at the disposal of the inspection body representative samples of the production envisaged. The inspection body may request further samples if required by the test programme.

NOTE: The results of assessments and tests according to other regulations or standards may be taken into account.

1.8.7.2.1.2 The inspection body shall:

(a) Examine the technical documentation specified in 1.8.7.8.1 to verify that the design is in accordance with the relevant provisions of ADR, and the prototype or the prototype lot has been manufactured in conformity with the technical documentation and is representative of the design;

- (b) Perform the examinations and the tests, or perform the examinations and verify the test conditions and supervise the tests on site, as specified in ADR, including the relevant standards, to determine that the provisions have been applied and fulfilled, and the procedures adopted by the manufacturer meet the requirements;
- (c) Check the material(s) certificate(s) issued by the manufacturer(s) of the materials against the relevant provisions of ADR;
- (d) As applicable, approve the procedures for the permanent joining of parts or check that they have been previously approved, and verify that the staff undertaking the permanent joining of parts and the non-destructive tests are qualified or approved;
- (e) Agree with the manufacturer the location(s) where the examinations and necessary tests are to be carried out.

The inspection body shall issue a report of the type examination to the manufacturer.

1.8.7.2.2 Type approval certificate issue

Type approvals authorize the construction of products within the period of validity of that approval.

1.8.7.2.2.1 Where the type satisfies all applicable provisions, the competent authority or the inspection body, shall issue a type approval certificate to the manufacturer in conformity with Chapters 6.2 and 6.8.

This certificate shall contain:

- (a) The name and address of the issuer;
- (b) The competent authority under whom the certificate is issued;
- (c) The name and address of the manufacturer;
- (d) A reference to the version of ADR and standards used for the type examination;
- (e) Any requirements resulting from the type examination;
- (f) The data contained in the documents for the type-examination according to 1.8.7.8.1, necessary for the identification of the type and variation, as defined by the relevant standards. The documents, or a list identifying the documents, containing the data shall be included or annexed to the certificate;~~The necessary data for identification of the type and variation, as defined by the relevant standard;~~
- (g) The reference to the type examination report(s);
- (h) The maximum period of validity of the type approval; and
- (i) Any specific requirements in accordance with Chapters 6.2 and 6.8.

~~A list of the relevant parts of the technical documentation shall be annexed to the certificate (see 1.8.7.8.1);~~

1.8.7.2.2.2 The type approval shall be valid for a maximum of ten years. If within that period the relevant technical requirements of ADR have changed so that the approved type is no longer in conformity with them, then the type approval is no longer valid. If within that period, the withdrawal date according to column (3) of the tables in 6.2.2.1 and 6.2.2.3 or column (5) of the tables in 6.2.4.1, 6.8.2.6.1 and 6.8.3.6 applies, the type approval is also no longer valid. It shall then be withdrawn by the competent authority or the inspection body which issued the type approval certificate.

NOTE: For the latest date for withdrawal of existing type approvals, see column (5) of the tables in 6.2.4.1 and 6.8.2.6.1 or 6.8.3.6 as appropriate.

If a type approval has expired, or has been withdrawn, the manufacture of the products according to that type approval is no longer authorized.

NOTE: The relevant provisions concerning the use, periodic inspection and intermediate inspection of products contained in a type approval which has expired or has been withdrawn shall

continue to apply to the products constructed according to that type approval before its expiry or its withdrawal if they may continue to be used.

Type approvals may be renewed on the basis of a new type examination. Results of the previous type examination tests shall be taken into account if these tests are still in accordance with the provisions of ADR including the standards applicable at the date of renewal. Renewal is not permitted after a type approval has been withdrawn.

NOTE: The type examination for renewal may be performed by an inspection body other than the one which issued the original type examination report.

Interim amendments of an existing type approval (e.g. for pressure receptacles minor amendments such as the addition of further sizes or volumes not affecting conformity, or for tanks see 6.8.2.3.3) do not extend or modify the original validity of the certificate.

1.8.7.2.2.3 In the case of a modification of a product with a valid, expired or withdrawn type approval, the relevant type examination, testing, inspection and approval are limited to the parts of the product that have been modified.

The modification shall meet the provisions of ADR applicable at the time of the modification. For all parts of the product not affected by the modification, the documentation of the initial type approval remains valid.

A modification may apply to one or more product(s) covered by the same type approval.

Where the modified product satisfies all applicable provisions, a supplementary approval certificate for the modification shall be issued to the owner or operator by the competent authority or inspection body of any Contracting Party to ADR in conformity with Chapters 6.2 and 6.8. For tanks, battery-vehicles or MEGCs, a copy shall be kept as part of the tank record.

1.8.7.3 Supervision of manufacture

1.8.7.3.1 The manufacturer shall take all the necessary measures to ensure that the manufacturing process complies with the applicable provisions of ADR and of the type approval certificate, the technical documentation according to 1.8.7.8.3 and reports.

1.8.7.3.2 The manufacturing process shall be subject to supervision by the relevant body.

The relevant body shall:

- (a) Verify the conformity with the technical documentation specified in 1.8.7.8.3 and with the applicable provisions of ADR and of the type approval certificate and reports;
- (b) Verify that the manufacturing process produces products in conformity with the requirements and the documentation which apply to it;
- (c) Verify the traceability of materials and check the material(s) certificate(s) against the specifications;
- (d) As applicable, verify that the personnel undertaking the permanent joining of parts and the non-destructive tests are qualified or approved;
- (e) Agree with the manufacturer on the location where the examinations and necessary tests are to be carried out; and
- (f) Provide a written report of the results of the supervision of manufacture.

1.8.7.4 Initial inspection and tests

1.8.7.4.1 The manufacturer shall:

- (a) Affix the marks specified in ADR; and
- (b) Supply to the relevant body the technical documentation specified in 1.8.7.8.4.

1.8.7.4.2 The relevant body shall:

- (a) Perform the examinations and the tests, or perform the examinations and verify the test conditions and supervise the tests on site to ensure that the product is manufactured in accordance with the type approval and the relevant provisions;
- (b) Check the certificates supplied by the manufacturers of service equipment against the service equipment;
- (c) Issue an initial inspection and tests report relating to the detailed tests and verifications carried out and the verified technical documentation;
- (d) Issue an initial inspection and tests certificate and affix its mark when the manufacture satisfies the provisions; and
- (e) Check if the type approval remains valid after provisions of ADR (including the referenced standards) relevant to the type approval have changed. If the type approval is no longer valid, the relevant body shall issue a refusal inspection report and inform the competent authority or the inspection body which issued the type approval certificate.

The certificate in (d) and report in (c) may cover a number of products of the same type (group certificate or report).

1.8.7.4.3 The certificate in 1.8.7.4.2 (d) shall contain as a minimum:

- (a) The name and address of the inspection body and the name and address of the in-house inspection service when applicable;
- (b) The name and address of the manufacturer;
- (c) The location of the initial inspection;
- (d) A reference to the version of ADR and the standards used for the initial inspections and tests;
- (e) The results of the inspections and tests;
- (f) The data for identification of the inspected product(s), at least the serial number or for non refillable cylinders the batch number;
- (g) The type approval number; and
- (h) The reference to the certificate of authorization of the in-house inspection service when applicable.

1.8.7.5 Entry into service verification

1.8.7.5.1 If an entry into service verification is required by the competent authority under 6.8.1.5.5, the owner or operator shall engage a single inspection body to perform the entry into service verification and shall provide it with the type approval certificate and the technical documentation specified in 1.8.7.8.4.

1.8.7.5.2 The inspection body shall review the documentation and:

- (a) Perform external checks (e.g. marking, condition);
- (b) Verify conformity with the type approval certificate;
- (c) Verify the validity of the approvals of the inspection bodies who performed the previous inspections and tests;
- (d) Verify that the transitional measures of 1.6.3 or 1.6.4 have been fulfilled.

1.8.7.5.3 The inspection body shall issue an entry into service verification report that contains the results of the assessment. The owner or operator shall present this report at the request of the competent authority requiring the entry into service verification, and to the inspection body(ies) in charge of subsequent inspections and tests.

In the event of a failed entry into service verification, the non-conformities shall be rectified and a new entry into service verification passed before the tank is used.

The inspection body in charge of the entry into service verification shall, without delay, inform its competent authority of any refusal.

1.8.7.6 Periodic inspection, intermediate inspection and exceptional inspection

1.8.7.6.1 The relevant body shall:

- (a) Perform the identification and verify the conformity with the documentation;
- (b) Perform the inspections and the tests, or perform the inspections and verify the test conditions and supervise the tests on site in order to check that the requirements are met;
- (c) Issue reports and certificates, as appropriate, of the results of the inspections and tests, which may cover a number of products; and
- (d) Ensure that the required marks are applied.

1.8.7.6.2 Reports of periodic inspections and tests of pressure receptacles shall be retained by the owner or operator at least until the next periodic inspection.

***NOTE:** For tanks, see provisions for tank records in 4.3.2.1.7.*

1.8.7.7 Surveillance of the in-house inspection service

1.8.7.7.1 Where an in-house inspection service is used according to 6.2.2.12, 6.2.3.6.1, 6.8.1.5.3 (b) or 6.8.1.5.4 (b), the manufacturer or the testing facility shall:

- (a) Implement a quality system for the in-house inspection service, including technical procedures, for inspections and tests documented in 1.8.7.8.6 and subject to surveillance;
- (b) Fulfil the obligations arising out of the quality system as approved and ensure that it remains satisfactory and efficient in particular:
 - (i) Authorize trained and competent personnel for the in-house inspection service; and
 - (ii) Affix the identity mark or stamp, as specified in Chapters 6.2 and 6.8, of the inspection body, and the mark of the in-house inspection service where appropriate on the product to ensure traceability.

1.8.7.7.2 The inspection body shall carry out an initial audit at each site. If satisfactory the inspection body shall inform the competent authority of the authorization of the in-house inspection service and issue a certificate of authorization for a period not exceeding three years. The following provisions shall be met:

- (a) This audit shall be undertaken at each site to confirm that the inspections and tests performed are in compliance with the requirements of ADR;
- (b) The inspection body may authorize the in-house inspection service to affix the identity mark or stamp, as specified in Chapter 6.2 and 6.8, of the inspection body to each approved product;
- (c) The authorization may be renewed after a satisfactory audit at each site in the last year prior to the expiry. The new period of validity shall begin with the date of expiry of the authorization;
- (d) The inspectors of the inspection body undertaking the audits shall be competent to carry out the assessment of conformity of the product covered by the quality system and to assess the quality system itself; and
- (e) The in-house inspection service shall be engaged in activities at a frequency which ensures the necessary level of competence.

The in-house inspection service may, in specific cases only, subcontract specific parts of its activities if approved by the inspection body which has authorized it. The subcontractor shall additionally be accredited according to EN ISO/IEC 17025:2017 (except clause 8.1.3) or EN ISO/IEC 17020:2012 (except clause 8.1.3) as an independent and impartial testing laboratory or inspection body in order to perform testing tasks in accordance with its accreditation.

1.8.7.7.3 The certificate of authorization shall contain as a minimum:

- (a) The name and address of the inspection body;
- (b) The name and address of the manufacturer or testing facility and addresses of all in-house inspection service sites;
- (c) A reference to the version of ADR used for authorization of the in-house inspection service and standards or recognised technical codes according to 6.2.5 used for initial inspection and tests or periodic inspections;
- (d) The reference to the initial audit report;
- (e) As necessary, further information to define the scope of the in-house inspection service (e.g. type approvals of the products for initial inspection and tests);
- (f) The mark of the in-house inspection service, if applicable; and
- (g) The expiry date.

1.8.7.7.4 The inspection body shall carry out periodic audits at each site within the _____ duration _____ of the authorization to make sure that the in-house inspection service maintains and applies the quality system, including the technical procedures. The following provisions shall be met:

- (a) The audits shall be carried out no later than every six months;
- (b) The inspection body may require additional visits, training, technical changes, modifications of the quality system, restrict or prohibit the inspections and tests to be done by the in-house inspection service;
- (c) The inspection body shall assess any changes in the quality system and decide whether the modified quality system still satisfies the requirements of the initial audit or whether a full reassessment is required;
- (d) The inspectors of the inspection body undertaking the audits shall be competent to carry out the assessment of conformity of the product covered by the quality system and to assess the quality system itself; and
- (e) The inspection body shall provide the manufacturer or the testing facility, as applicable, and the in-house inspection service, with the report of the audit and, if tests have taken place, with a test report.

1.8.7.7.5 In cases of non-conformity with the relevant requirements the inspection _____ body shall ensure that corrective measures are taken. If corrective measures are not taken in due time, the inspection body shall suspend or withdraw the permission for the in-house inspection service to carry out its activities. The notice of suspension or withdrawal shall be transmitted to the competent authority. A report shall be provided to the manufacturer or the testing facility, as applicable, and to the in-house inspection service giving detailed reasons for the decisions taken by the inspection body.

1.8.7.8 Documents

_____ The technical documentation shall enable an assessment to be made of conformity with the relevant requirements.

1.8.7.8.1 Documents for the type examination

_____ The manufacturer shall provide as appropriate:

- (a) The list of standards used for the design and manufacture;
- (b) A description of the type including all variations;
- (c) The instructions according to the relevant column of table A of Chapter 3.2 or a list of dangerous goods to be carried for dedicated products;
- (d) A general assembly drawing or drawings;

- (e) The detailed drawings, including the dimensions used for the calculations, of the product, the service equipment, the structural equipment, the marking and the labelling necessary to verify the conformity;
- (f) The calculation notes, results and conclusions;
- (g) The list of the service equipment with the relevant technical data and information on the safety devices including the calculation of the relief capacity if relevant;
- (h) The list of material requested in the standard for manufacture used for every part, sub-part, lining, service and structural equipment and the corresponding material specifications or the corresponding declaration of conformity to ADR;
- (i) The approved qualification of permanent joining processes;
- (j) The description of the heat treatment process(es); and
- (k) The procedures, descriptions and records of all relevant tests listed in the standards or ADR for the type approval and for the manufacture.

1.8.7.8.2 Documents for the type approval certificate issue

The manufacturer shall provide as appropriate:

- (a) The list of standards used for the design and manufacture;
- (b) A description of the type, including all variations;
- (c) The instructions according to the relevant column of table A of Chapter 3.2 or a list of dangerous goods to be carried for dedicated products;
- (d) A general assembly drawing or drawings;
- (e) The list of materials in contact with the dangerous goods;
- (f) The list of service equipment;
- (g) The type-examination report; and
- (h) Further documents mentioned under 1.8.7.8.1 on request of the competent authority or inspection body.

1.8.7.8.3 Documents for the supervision of manufacture

The manufacturer shall provide as appropriate:

- (a) The documents listed in 1.8.7.8.1 and 1.8.7.8.2;
- (b) A copy of the type approval certificate;
- (c) The manufacturing procedures including test procedures;
- (d) The manufacturing records;
- (e) The approved qualifications of permanent joining operators;
- (f) The approved qualifications of the non-destructive test operators;
- (g) The reports of the destructive and non-destructive tests;
- (h) The heat treatment records; and
- (i) The calibration records.

1.8.7.8.4 Documents for initial inspection and tests, and for entry into service verification

The manufacturer for initial inspection and tests, and the owner or operator for the entry into service verification shall provide as appropriate:

- (a) The documents listed in 1.8.7.8.1, 1.8.7.8.2, and 1.8.7.8.3;
- (b) The material certificates of the product and any sub-parts including the service equipment;
- (c) The certificates of conformity of the service equipment; and
- (d) A declaration of conformity including the description of the product and all the variations adopted from the type approval.

1.8.7.8.5 Documents for periodic inspection, intermediate inspection and exceptional inspection

The owner or operator, or its authorized representative shall provide as appropriate:

- (a) For pressure receptacles, the documents specifying special requirements when the manufacturing and periodic inspections and tests standards so require;
- (b) For tanks:
 - (i) the tank record; and
 - (ii) any relevant document mentioned in 1.8.7.8.1 to 1.8.7.8.4 if requested by the inspection body.

1.8.7.8.6 Documents for the surveillance of in-house inspection service

The in-house inspection service shall provide the quality system documentation as appropriate:

- (a) The organizational structure and responsibilities;
- (b) The relevant inspection and test, quality control, quality assurance and process operation instructions, and systematic actions that will be used;
- (c) The quality records, such as inspection reports, test data, calibration data and certificates;
- (d) The management reviews to ensure the effective operation of the quality system arising from the on-site audits in accordance with 1.8.7.7;
- (e) The process describing how customer and regulation requirements are met;
- (f) The process for control of documents and their revision;
- (g) The procedures for dealing with non-conforming products; and
- (h) The training programmes and qualification procedures for relevant personnel.

1.8.6 Administrative controls for application of the conformity assessments, periodic inspections, intermediate inspections and exceptional checks described in 1.8.7

1.8.6.1 Approval of inspection bodies

The competent authority may approve inspection bodies for conformity assessments, periodic inspections, intermediate inspections, exceptional checks and surveillance of the in-house inspection service as specified in 1.8.7.

1.8.6.2 Operational obligations for the competent authority, its delegate or inspection body

1.8.6.2.1 The competent authority, its delegate or inspection body shall carry out conformity assessments, periodic inspections, intermediate inspections and exceptional checks in a proportionate manner, avoiding unnecessary burdens. The competent authority, its delegate or inspection body shall perform its activities taking into consideration the size, the sector and the structure of the undertakings involved, the relative complexity of the technology and the serial character of production.

~~1.8.6.2.2~~ Nevertheless the competent authority, its delegate or inspection body shall respect the degree of rigour and the level of protection required for the compliance of the transportable pressure equipment by the provisions of parts 4 and 6 as applicable.

~~1.8.6.2.3~~ Where a competent authority, its delegate or inspection body finds out that requirements laid down in parts 4 or 6 have not been met by the manufacturer, it shall require the manufacturer to take appropriate corrective measures and it shall not issue any type approval certificate or certificate of conformity.

1.8.6.3 *Information obligation*

~~—————~~ Contracting Parties to ADR shall publish their national procedures for the assessment, appointment and monitoring of inspection bodies and of any changes to that information.

1.8.6.4 *Delegation of inspection tasks*

~~—————~~ *NOTE:* In-house inspection services according to 1.8.7.6 are not covered by 1.8.6.4.

~~1.8.6.4.1~~ Where an inspection body uses the services of any other entity (e.g. subcontractor, subsidiary), to carry out specific tasks connected with the conformity assessment, periodic inspection, intermediate inspection or exceptional checks, this entity shall be included in the accreditation of the inspection body, or it shall be accredited separately. In the case of separate accreditation, this entity shall be duly accredited according to standard EN ISO/IEC 17025:2017 (except clause 8.1.3) and shall be recognised by the inspection body as an independent and impartial testing laboratory in order to perform testing tasks in accordance with its accreditation, or it shall be accredited according to standard EN ISO/IEC 17020:2012 (except clause 8.1.3). The inspection body shall ensure that this entity meets the requirements set out for the tasks given to it with the same level of competence and safety as laid down for inspection bodies (see 1.8.6.8) and the inspection body shall monitor it. The inspection body shall inform the competent authority about the above mentioned arrangements.

~~1.8.6.4.2~~ The inspection body shall take full responsibility for the tasks performed by such entities wherever the tasks are performed by them.

~~1.8.6.4.3~~ The inspection body shall not delegate the whole task of conformity assessment, periodic inspection, intermediate inspection or exceptional checks. In any case, the assessment and the issue of certificates shall be carried out by the inspection body itself.

~~1.8.6.4.4~~ Activities shall not be delegated without the agreement of the applicant.

~~1.8.6.4.5~~ The inspection body shall keep at the disposal of the competent authority the relevant documents concerning the assessment of the qualifications and the work carried out by the above mentioned entities.

1.8.6.5 *Information obligations for inspection bodies*

~~—————~~ Any inspection body shall inform the competent authority, which had approved it, of the following:

- ~~—————~~ (a) Except when the provisions of 1.8.7.2.4 apply, any refusal, restriction, suspension or withdrawal of type approval certificates;
- ~~—————~~ (b) Any circumstance(s) affecting the scope of and conditions for the approval as granted by the competent authority;
- ~~—————~~ (c) Any request for information on conformity assessment activities performed which they have received from competent authorities monitoring compliance according to 1.8.1 or 1.8.6.6;
- ~~—————~~ (d) On request, conformity assessment activities performed within the scope of their approval and any other activity performed, including delegation of tasks.

~~1.8.6.6~~ The competent authority shall ensure the monitoring of the inspection bodies and shall revoke or restrict the approval given, if it notes that an approved body is no longer in compliance with the approval and the requirements of 1.8.6.8 or does not follow the procedures specified in the provisions of ADR.

~~1.8.6.7~~ If the approval of the inspection body is revoked or restricted or if the inspection body ceased activity, the competent authority shall take the appropriate steps to ensure that the files are either processed by another inspection body or kept available.

~~1.8.6.8 The inspection body shall:~~

- ~~(a) Have a staff with an organizational structure, capable, trained, competent and skilled, to satisfactorily perform its technical functions;~~
- ~~(b) Have access to suitable and adequate facilities and equipment;~~
- ~~(c) Operate in an impartial manner and be free from any influence which could prevent it from doing so;~~
- ~~(d) Ensure commercial confidentiality of the commercial and proprietary activities of the manufacturer and other bodies;~~
- ~~(e) Maintain clear demarcation between actual inspection body functions and unrelated functions;~~
- ~~(f) Have a documented quality system;~~
- ~~(g) Ensure that the tests and inspections specified in the relevant standard and in ADR are performed; and~~
- ~~(h) Maintain an effective and appropriate report and record system in accordance with 1.8.7 and 1.8.8.~~

~~The inspection body shall additionally be accredited according to the standard EN ISO/IEC 17020:2012 (except clause 8.1.3), as specified in 6.2.2.11, 6.2.3.6 and TA4 and TT9 of 6.8.4.~~

~~An inspection body starting a new activity may be approved temporarily. Before temporary designation, the competent authority shall ensure that the inspection body meets the requirements of the standard EN ISO/IEC 17020:2012 (except clause 8.1.3). The inspection body shall be accredited in its first year of activity to be able to continue this new activity.~~

~~**1.8.7 Procedures for conformity assessment and periodic inspection**~~

~~*NOTE: In this section, "relevant body" means a body assigned in 6.2.2.11 when certifying UN pressure receptacles, in 6.2.3.6 when approving non-UN pressure receptacles and in special provisions TA4 and TT9 of 6.8.4.*~~

~~**1.8.7.1 General provisions**~~

~~1.8.7.1.1 The procedures in section 1.8.7 shall be applied according to 6.2.3.6 when approving non-UN pressure receptacles and according to TA4 and TT9 of 6.8.4 when approving tanks, battery vehicles and MEGCs.~~

~~The procedures in section 1.8.7 may be applied according to the table in 6.2.2.11 when certifying UN pressure receptacles.~~

~~1.8.7.1.2 Each application for~~

- ~~(a) The type approval in accordance with 1.8.7.2 or;~~
- ~~(b) The supervision of manufacture in accordance with 1.8.7.3 and the initial inspection and test in accordance with 1.8.7.4; or~~
- ~~(c) The periodic inspection, intermediate inspection and exceptional checks in accordance with 1.8.7.5~~

~~shall be lodged by the applicant with a single competent authority, its delegate or an approved inspection body of his choice.~~

~~1.8.7.1.3 The application shall include:~~

- ~~(a) The name and address of the applicant;~~
- ~~(b) For conformity assessment where the applicant is not the manufacturer, the name and address of the manufacturer;~~

- ~~————— (c) ——— A written declaration that the same application has not been lodged with any other competent authority, its delegate or inspection body;~~
- ~~————— (d) ——— The relevant technical documentation specified in 1.8.7.7;~~
- ~~————— (e) ——— A statement allowing the competent authority, its delegate or inspection body access for inspection purposes to the locations of manufacture, inspection, testing and storage and providing it with all necessary information.~~
- ~~1.8.7.1.4 ——— Where the applicant can demonstrate to the satisfaction of the competent authority or its delegated inspection body conformity with 1.8.7.6 the applicant may establish an in-house inspection service which may perform part or all of the inspections and tests when specified in 6.2.2.11 or 6.2.3.6.~~
- ~~1.8.7.1.5 ——— Design type approval certificates and certificates of conformity including the technical documentation shall be retained by the manufacturer or by the applicant for the type approval, if he is not the manufacturer, and by the inspection body, who issued the certificate, for a period of at least 20 years starting from the last date of production of products of the same type.~~
- ~~1.8.7.1.6 ——— When a manufacturer or owner intends to cease operation, he shall send the documentation to the competent authority. The competent authority shall then retain the documentation for the rest of the period specified in 1.8.7.1.5.~~
- 1.8.7.2 ——— *Type approval***
- ~~————— Type approvals authorise the manufacture of pressure receptacles, tanks, battery vehicles or MEGCs within the period of validity of that approval.~~
- ~~1.8.7.2.1 ——— The applicant shall:~~
 - ~~————— (a) ——— In the case of pressure receptacles, place at the disposal of the relevant body representative samples of the production envisaged. The relevant body may request further samples if required by the test programme;~~
 - ~~————— (b) ——— In the case of tanks, battery vehicles or MEGCs, give access to the prototype for type testing.~~
- ~~1.8.7.2.2 ——— The relevant body shall:~~
 - ~~————— (a) ——— Examine the technical documentation specified in 1.8.7.7.1 to verify that the design is in accordance with the relevant provisions of ADR, and the prototype or the prototype lot has been manufactured in conformity with the technical documentation and is representative of the design;~~
 - ~~————— (b) ——— Perform the examinations and witness the tests specified in ADR, to determine that the provisions have been applied and fulfilled, and the procedures adopted by the manufacturer meet the requirements;~~
 - ~~————— (c) ——— Check the certificate(s) issued by the materials manufacturer(s) against the relevant provisions of ADR;~~
 - ~~————— (d) ——— As applicable, approve the procedures for the permanent joining of parts or check that they have been previously approved, and verify that the staff undertaking the permanent joining of parts and the non-destructive tests are qualified or approved;~~
 - ~~————— (e) ——— Agree with the applicant the location and testing facilities where the examinations and necessary tests are to be carried out.~~
 - ~~————— The relevant body shall issue a type examination report to the applicant.~~
- ~~1.8.7.2.3 ——— Where the type satisfies all applicable provisions, the competent authority, its delegate or the inspection body, shall issue a type approval certificate to the applicant.~~
- ~~————— This certificate shall contain:~~
 - ~~————— (a) ——— The name and address of the issuer;~~
 - ~~————— (b) ——— The name and address of the manufacturer and of the applicant when the applicant is not the manufacturer;~~

~~(c) A reference to the version of ADR and standards used for the type examination;~~

~~(d) Any requirements resulting from the examination;~~

~~(e) The necessary data for identification of the type and variation, as defined by the relevant standard;~~

~~(f) The reference to the type examination report(s); and~~

~~(g) The maximum period of validity of the type approval.~~

~~A list of the relevant parts of the technical documentation shall be annexed to the certificate (see 1.8.7.7.1).~~

~~1.8.7.2.4 The type approval shall be valid for a maximum of ten years. If within that period the relevant technical requirements of ADR (including referenced standards) have changed so that the approved type is no longer in conformity with them, the relevant body which issued the type approval shall withdraw it and inform the holder of the type approval.~~

~~*NOTE: For the ultimate dates for withdrawal of existing type approvals, see column (5) of the tables in 6.2.4 and 6.8.2.6 or 6.8.3.6 as appropriate.*~~

~~If a type approval has expired or has been withdrawn, the manufacture of the pressure receptacles, tanks, battery vehicles or MEGCs according to that type approval is no longer authorised.~~

~~In such a case, the relevant provisions concerning the use, periodic inspection and intermediate inspection of pressure receptacles, tanks, battery vehicles or MEGCs contained in the type approval which has expired or has been withdrawn shall continue to apply to these pressure receptacles, tanks, battery vehicles or MEGCs constructed before the expiry or the withdrawal if they may continue to be used.~~

~~They may continue to be used as long as they remain in conformity with the requirements of ADR. If they are no longer in conformity with the requirements of ADR they may continue to be used only if such use is permitted by relevant transitional measures in Chapter 1.6.~~

~~Type approvals may be renewed by a complete review and assessment for conformity with the provisions of ADR applicable at the date of renewal. Renewal is not permitted after a type approval has been withdrawn. Interim amendments of an existing type approval (e.g. for pressure receptacles minor amendments such as the addition of further sizes or volumes not affecting conformity, or for tanks see 6.8.2.3.2) do not extend or modify the original validity of the certificate.~~

~~*NOTE: The review and assessment of conformity can be done by a body other than the one which issued the original type approval.*~~

~~The issuing body shall keep all documents for the type approval (see 1.8.7.7.1) for the whole period of validity including its renewals if granted.~~

~~1.8.7.2.5 In the case of a modification of a pressure receptacle, tank, battery vehicle or MEGC with a valid, expired or withdrawn type approval, the testing, inspection and approval are limited to the parts of the pressure receptacle, tank, battery vehicle or MEGC that have been modified. The modification shall meet the provisions of ADR applicable at the time of the modification. For all parts of the pressure receptacle, tank, battery vehicle or MEGC not affected by the modification, the documentation of the initial type approval remains valid.~~

~~A modification may apply to one or more pressure receptacles, tanks, battery vehicles or MEGCs covered by a type approval.~~

~~A certificate approving the modification shall be issued to the applicant by the competent authority of any Contracting Party to ADR or by a body designated by this authority. For tanks, battery vehicles or MEGCs, a copy shall be kept as part of the tank record.~~

~~Each application for an approval certificate for a modification shall be lodged by the applicant with a single competent authority or body designated by this authority.~~

1.8.7.3 ~~Supervision of manufacture~~

~~1.8.7.3.1 The manufacturing process shall be subject to a survey by the relevant body to ensure the product is produced in conformity with the provisions of the type approval.~~

~~1.8.7.3.2 The applicant shall take all the necessary measures to ensure that the manufacturing process complies with the applicable provisions of ADR and of the type approval certificate and its annexes.~~

~~1.8.7.3.3 The relevant body shall:~~

- ~~(a) Verify the conformity with the technical documentation specified in 1.8.7.7.2;~~
- ~~(b) Verify that the manufacturing process produces products in conformity with the requirements and the documentation which apply to it;~~
- ~~(c) Verify the traceability of materials and check the material certificate(s) against the specifications;~~
- ~~(d) As applicable, verify that the personnel undertaking the permanent joining of parts and the non-destructive tests are qualified or approved;~~
- ~~(e) Agree with the applicant on the location where the examinations and necessary tests are to be carried out; and~~
- ~~(f) Record the results of its survey.~~

1.8.7.4 ~~Initial inspection and tests~~

~~1.8.7.4.1 The applicant shall:~~

- ~~(a) Affix the marks specified in ADR; and~~
- ~~(b) Supply to the relevant body the technical documentation specified in 1.8.7.7.~~

~~1.8.7.4.2 The relevant body shall:~~

- ~~(a) Perform the necessary examinations and tests in order to verify that the product is manufactured in accordance with the type approval and the relevant provisions;~~
- ~~(b) Check the certificates supplied by the manufacturers of service equipment against the service equipment;~~
- ~~(c) Issue an initial inspection and test report to the applicant relating to the detailed tests and verifications carried out and the verified technical documentation;~~
- ~~(d) Draw up a written certificate of conformity of the manufacture and affix its registered mark when the manufacture satisfies the provisions; and~~
- ~~(e) Check if the type approval remains valid after provisions of ADR (including referenced standards) relevant to the type approval have changed.~~

~~The certificate in (d) and report in (c) may cover a number of items of the same type (group certificate or report).~~

~~1.8.7.4.3 The certificate shall contain as a minimum:~~

- ~~(a) The name and address of the relevant body;~~
- ~~(b) The name and address of the manufacturer and the name and address of the applicant, if not the manufacturer;~~
- ~~(c) A reference to the version of the ADR and standards used for the initial inspections and tests;~~
- ~~(d) The results of the inspections and tests;~~
- ~~(e) The data for identification of the inspected product(s), at least the serial number or for non refillable cylinders the batch number; and~~

~~(f) The type approval number.~~

~~1.8.7.5 Periodic inspection, intermediate inspection and exceptional checks~~

~~1.8.7.5.1 The relevant body shall:~~

~~(a) Perform the identification and verify the conformity with the documentation;~~

~~(b) Carry out the inspections and witness the tests in order to check that the requirements are met;~~

~~(c) Issue reports of the results of the inspections and tests, which may cover a number of items; and~~

~~(d) Ensure that the required marks are applied.~~

~~1.8.7.5.2 Reports of periodic inspections and tests of pressure receptacles shall be retained by the applicant at least until the next periodic inspection.~~

~~NOTE: For tanks, see provisions for tank records in 4.3.2.1.7.~~

~~1.8.7.6 Surveillance of the applicant's in-house inspection service~~

~~1.8.7.6.1 The applicant shall:~~

~~(a) Implement an in-house inspection service with a quality system for inspections and tests documented in 1.8.7.7.5 and subject to surveillance;~~

~~(b) Fulfil the obligations arising out of the quality system as approved and to ensure that it remains satisfactory and efficient;~~

~~(c) Appoint trained and competent personnel for the in-house inspection service; and~~

~~(d) Affix the registered mark of the inspection body where appropriate.~~

~~1.8.7.6.2 The inspection body shall carry out an initial audit. If satisfactory the inspection body shall issue an authorisation for a period not exceeding three years. The following provisions shall be met:~~

~~(a) This audit shall confirm that the inspections and tests performed on the product are in compliance with the requirements of ADR;~~

~~(b) The inspection body may authorise the in-house inspection service of the applicant to affix the registered mark of the inspection body to each approved product;~~

~~(c) The authorisation may be renewed after a satisfactory audit in the last year prior to the expiry. The new period of validity shall begin with the date of expiry of the authorisation; and~~

~~(d) The auditors of the inspection body shall be competent to carry out the assessment of conformity of the product covered by the quality system.~~

~~1.8.7.6.3 The inspection body shall carry out periodic audits within the duration of the authorisation to make sure that the applicant maintains and applies the quality system. The following provisions shall be met:~~

~~(a) A minimum of two audits shall be carried out in a 12 month period;~~

~~(b) The inspection body may require additional visits, training, technical changes, modifications of the quality system, restrict or prohibit the inspections and tests to be done by the applicant;~~

~~(c) The inspection body shall assess any changes in the quality system and decide whether the modified quality system will still satisfy the requirements of the initial audit or whether a full reassessment is required;~~

~~(d) The auditors of the inspection body shall be competent to carry out the assessment of conformity of the product covered by the quality system; and~~

~~(e) The inspection body shall provide the applicant with a visit or audit report and, if a test has taken place, with a test report.~~

~~1.8.7.6.4~~ In cases of non conformity with the relevant requirements the inspection body shall ensure that corrective measures are taken. If corrective measures are not taken in due time, the inspection body shall suspend or withdraw the permission for the in-house inspection service to carry out its activities. The notice of suspension or withdrawal shall be transmitted to the competent authority. A report shall be provided to the applicant giving detailed reasons for the decisions taken by the inspection body.

~~1.8.7.7~~ *Documents*

~~The technical documentation shall enable an assessment to be made of conformity with the relevant requirements.~~

~~1.8.7.7.1~~ *Documents for type approval*

~~The applicant shall provide as appropriate:~~

- ~~(a) The list of standards used for the design and manufacture;~~
- ~~(b) A description of the type including all variations;~~
- ~~(c) The instructions according to the relevant column of table A of Chapter 3.2 or a list of dangerous goods to be transported for dedicated products;~~
- ~~(d) A general assembly drawing or drawings;~~
- ~~(e) The detailed drawings, including the dimensions used for the calculations, of the product, the service equipment, the structural equipment, the marking and/or the labelling necessary to verify the conformity;~~
- ~~(f) The calculation notes, results and conclusions;~~
- ~~(g) The list of the service equipment with the relevant technical data and information on the safety devices including the calculation of the relief capacity if relevant;~~
- ~~(h) The list of material requested in the standard for manufacture used for every part, sub-part, lining, service and structural equipment and the corresponding material specifications or the corresponding declaration of conformity to ADR;~~
- ~~(i) The approved qualification of permanent joining process;~~
- ~~(j) The description of the heat treatment process(es); and~~
- ~~(k) The procedures, descriptions and records of all relevant tests listed in the standards or ADR for the type approval and for the manufacture.~~

~~1.8.7.7.2~~ *Documents for the supervision of manufacture*

~~The applicant shall make available as appropriate:~~

- ~~(a) The documents listed in 1.8.7.7.1;~~
- ~~(b) A copy of the type approval certificate;~~
- ~~(c) The manufacturing procedures including test procedures;~~
- ~~(d) The manufacturing records;~~
- ~~(e) The approved qualifications of permanent joining operators;~~
- ~~(f) The approved qualifications of the non destructive test operators;~~
- ~~(g) The reports of the destructive and non destructive tests;~~
- ~~(h) The heat treatment records; and~~
- ~~(i) The calibration records.~~

~~1.8.7.7.3 Documents for initial inspection and tests~~

~~The applicant shall make available as appropriate:~~

- ~~(a) The documents listed in 1.8.7.7.1 and 1.8.7.7.2;~~
- ~~(b) The material certificates of the product and any sub-parts;~~
- ~~(c) The declarations of conformity and material certificates of the service equipment; and~~
- ~~(d) A declaration of conformity including the description of the product and all the variations adopted from the type approval.~~

~~1.8.7.7.4 Documents for periodic inspections, intermediate inspections and exceptional checks~~

~~The applicant shall make available as appropriate:~~

- ~~(a) For pressure receptacles, the documents specifying special requirements when the manufacturing and periodic inspections and tests standards so require;~~
- ~~(b) For tanks:

 - ~~(i) the tank record; and~~
 - ~~(ii) one or more of the documents mentioned in 1.8.7.7.1 to 1.8.7.7.3.~~~~

~~1.8.7.7.5 Documents for the assessment of in-house inspection service~~

~~The applicant for in-house inspection service shall make available the quality system documentation as appropriate:~~

- ~~(a) The organizational structure and responsibilities;~~
- ~~(b) The relevant inspection and test, quality control, quality assurance and process operation instructions, and systematic actions that will be used;~~
- ~~(c) The quality records, such as inspection reports, test data, calibration data and certificates;~~
- ~~(d) The management reviews to ensure the effective operation of the quality system arising from the audits in accordance with 1.8.7.6;~~
- ~~(e) The process describing how customer and regulation requirements are met;~~
- ~~(f) The process for control of documents and their revision;~~
- ~~(g) The procedures for dealing with non-conforming products; and~~
- ~~(h) The training programmes and qualification procedures for relevant personnel.~~

~~1.8.7.8 Products manufactured, approved, inspected and tested according to standards~~

~~The requirements of 1.8.7.7 are considered to have been complied with if the following standards, as relevant, are applied:~~

Applicable subsection and paragraph	References	Title of the document
1.8.7.7.1 to 1.8.7.7.4	EN 12972:2018	Tanks for transport of dangerous goods – Testing, inspection and marking of metallic tanks

1.8.8 Procedures for conformity assessment of gas cartridges

When assessing the conformity of gas cartridges, one of the following procedures shall be applied:

- (a) The procedure in section 1.8.7 for non-UN pressure receptacles, with the exception of 1.8.7.56; or
- (b) The procedure in sub-sections 1.8.8.1 to 1.8.8.7.

1.8.8.1 *General provisions*

1.8.8.1.1 The supervision of manufacture shall be carried out by an Xa body and the tests as required in 6.2.6 shall be carried out either by that Xa body or by an IS ~~body approved~~ **authorized** by that Xa body; for definition of Xa and IS, ~~bodies~~ see definitions in 6.2.3.6.1. Conformity assessment shall be carried out by the competent authority, its delegate or its approved inspection body of a Contracting Party to ADR.

1.8.8.1.2 By the application of 1.8.8, the applicant shall demonstrate, ensure and declare on his sole responsibility the conformity of gas cartridges with the provisions of 6.2.6 and all further applicable provisions of ADR.

1.8.8.1.3 The applicant shall

- (a) Carry out a design type examination of each type of gas cartridges (including materials to be used and variations of that type, e.g. volumes, pressures, drawings and closing and release devices) according to 1.8.8.2;
- (b) Operate an approved quality system for design, manufacture, inspection and testing according to 1.8.8.3;
- (c) Operate an approved testing regime according to 1.8.8.4 for the tests required in 6.2.6;
- (d) Apply for the approval of his quality system for supervision of manufacture and for testing to one Xa body of his choice of the Contracting Party; if the applicant is not established in a Contracting Party he shall apply to one Xa body of a Contracting Party prior to first transport into a Contracting Party;
- (e) If the gas cartridge is finally assembled from parts manufactured by the applicant by one or more other enterprise(s), provide written instructions how to assemble and fill the gas cartridges to meet the provisions of his type examination certificate.

1.8.8.1.4 Where the applicant and enterprises assembling or filling gas cartridges according to the instructions of the applicant, can demonstrate to the satisfaction of the Xa body conformity with the provisions of 1.8.7.67 excluding 1.8.7.67.1 (d) and 1.8.7.67.2 (b), they may establish an in-house inspection service which may perform part or all of the inspections and tests specified in 6.2.6.

1.8.8.2 *Design type examination*

1.8.8.2.1 The applicant shall establish a technical documentation for each type of gas cartridges including the technical standard(s) applied. If he chooses to apply a standard not referenced in 6.2.6, he shall add the standard applied to the documentation.

1.8.8.2.2 The applicant shall retain the technical documentation together with samples of that type at the disposal of the Xa body during production and afterwards for a period of minimum five years starting from the last date of production of gas cartridges according to that type examination certificate.

1.8.8.2.3 The applicant shall after careful examination issue a design type certificate which shall be valid for a maximum period of ten years; he shall add this certificate to the documentation. This certificate authorises him to produce gas cartridges of that type for that period.

1.8.8.2.4 If within that period the relevant technical requirements of ADR (including referenced standards) have changed so that the design type is no longer in conformity with them, the applicant shall withdraw his type examination certificate and inform the Xa body.

1.8.8.2.5 The applicant may after careful and complete review reissue the certificate for another period of maximum ten years.

1.8.8.3 ***Supervision of manufacture***

1.8.8.3.1 The procedure of design type examination as well as the manufacturing process shall be subject to a survey by the Xa body to ensure the type certified by the applicant and the product as produced are in conformity with the provisions of the design type certificate and the applicable provisions of ADR. If 1.8.8.1.3 (e) applies, the assembling and filling enterprises shall be included in that procedure.

1.8.8.3.2 The applicant shall take all the necessary measures to ensure that the manufacturing process complies with the applicable provisions of ADR and of his design type certificate and its annexes. If 1.8.8.1.3 (e) applies, the assembling and filling enterprises shall be included in that procedure.

1.8.8.3.3 The Xa body shall:

- (a) Verify the conformity of the design type examination of the applicant and conformity of the type of gas cartridges with the technical documentation specified in 1.8.8.2;
- (b) Verify that the manufacturing process produces products in conformity with the requirements and the documentation which apply to it; if the gas cartridge is finally assembled from parts manufactured by the applicant by one or more enterprise(s), the Xa body shall also verify that the gas cartridges are in full conformity with all applicable provisions after final assembly and filling and that the instructions of the applicant are correctly applied;
- (c) Verify that the personnel undertaking the permanent joining of parts and the tests are qualified or approved;
- (d) Record the results of its surveys.

1.8.8.3.4 If the findings of the Xa body show non-conformity of the design type certificate of the applicant or the manufacturing process, he shall require appropriate corrective measures or withdrawal of the certificate from the applicant.

1.8.8.4 ***Leakproofness test***

1.8.8.4.1 The applicant and enterprises finally assembling and filling gas cartridges according to the instructions of the applicant shall:

- (a) Carry out the tests required in 6.2.6;
- (b) Record the test results;
- (c) Issue a certificate of conformity only for gas cartridges, which are in full compliance with the provisions of his design type examination and the applicable provisions of ADR and have successfully passed the tests as required in 6.2.6;
- (d) Retain the documentation as specified in 1.8.8.7 during production and afterwards for a period of minimum five years from the last date of production of gas cartridges belonging to one type approval for inspection by the Xa body at random intervals;
- (e) Affix a durable and legible mark identifying the type of gas cartridge, the applicant and the date of production or batch number; where due to limited available space the mark cannot be fully applied to the body of the gas cartridge, he shall affix a durable tag with this information to the gas cartridge or place it together with a gas cartridge in an inner packaging.

1.8.8.4.2 The Xa body shall:

- (a) Perform the necessary examinations and tests at random intervals, but at least shortly after starting of manufacture of a type of gas cartridges and thereafter at least once every three years, in order to verify that the procedure for design type examination of the applicant as well as that the manufacture and testing of the product are carried out in accordance with the design type certificate and the relevant provisions;
- (b) Check the certificates supplied by the applicant;
- (c) Carry out the tests as required in 6.2.6 or approve the program of testing and the in-house inspection service to carry out the tests.

1.8.8.4.3 The certificate shall contain as a minimum:

- (a) The name and address of the applicant and, when the final assembly is not carried out by the applicant but by an enterprise or enterprises in accordance with the written instructions of the applicant, the name(s) and address(es) of these enterprises;
- (b) A reference to the version of ADR and the standard(s) used for manufacture and tests;
- (c) The result of inspections and tests;
- (d) The data for marking as required in 1.8.8.4.1 (e).

1.8.8.5 *(Reserved)*

1.8.8.6 *Surveillance of the in-house inspection service*

When the applicant or enterprise assembling or filling gas cartridges has established an in-house inspection service, the provisions of 1.8.7.~~6-7~~ excluding 1.8.7.~~67~~.1 (d) and 1.8.7.~~67~~.2 (b) shall be applied. The enterprise assembling or filling gas cartridges shall comply with the provisions relevant to the applicant.

1.8.8.7 *Documents*

The provisions of 1.8.7.~~78~~.1, 1.8.7.~~78~~.2, 1.8.7.~~78~~.3, 1.8.7.8.4 and 1.8.7.~~78~~.~~5-6~~ shall be applied.

CHAPTER 1.9

TRANSPORT RESTRICTIONS BY THE COMPETENT AUTHORITIES

- 1.9.1 In accordance with Article 4, paragraph 1 of ADR, the entry of dangerous goods into the territory of Contracting Parties may be subject to regulations or prohibitions imposed for reasons other than safety during carriage. Such regulations or prohibitions shall be published in an appropriate form.
- 1.9.2 Subject to the provisions of 1.9.3, a Contracting Party may apply to vehicles engaged in the international carriage of dangerous goods by road on its territory certain additional provisions not included in ADR, provided that those provisions do not conflict with Article 2, paragraph 2 of the Agreement, and are contained in its domestic legislation applying equally to vehicles engaged in the domestic carriage of dangerous goods by road on the territory of that Contracting Party.
- 1.9.3 Additional provisions falling within the scope of 1.9.2 are as follows:
- (a) Additional safety requirements or restrictions concerning vehicles using certain structures such as bridges, vehicles using combined transport modes such as ferries or trains, or vehicles entering or leaving ports or other transport terminals;
 - (b) Requirements for vehicles to follow prescribed routes to avoid commercial or residential areas, environmentally sensitive areas, industrial zones containing hazardous installations or roads presenting severe physical hazards;
 - (c) Emergency requirements regarding routing or parking of vehicles carrying dangerous goods resulting from extreme weather conditions, earthquake, accident, industrial action, civil disorder or military hostilities;
 - (d) Restrictions on movement of dangerous goods traffic on certain days of the week or year.
- 1.9.4 The competent authority of the Contracting Party applying on its territory any additional provisions within the scope of 1.9.3 (a) and (d) above shall notify the secretariat of the United Nations Economic Commission for Europe of the additional provisions, which secretariat shall bring them to the attention of the Contracting Parties^{1,3}.

1.9.5 Tunnel restrictions

NOTE: Provisions concerning restrictions for the passage of vehicles through road tunnels are also included in Chapter 8.6.

1.9.5.1 General provisions

When applying restrictions to the passage of vehicles carrying dangerous goods through tunnels, the competent authority shall assign the road tunnel to one of the tunnel categories defined in 1.9.5.2.2. Account should be taken of the tunnel characteristics, risk assessment including availability and suitability of alternative routes and modes and traffic management considerations. The same tunnel may be assigned to more than one tunnel category, e.g. depending on the hours of the day, or the day of the week etc.

1.9.5.2 Categorization

- 1.9.5.2.1 The categorization shall be based on the assumption that in tunnels there are three major dangers which may cause numerous victims or serious damage to the tunnel structure:

¹ A General Guideline for the Calculation of Risks in the Transport of Dangerous Goods by Road may be consulted on the website of the secretariat of the United Nations Economic Commission for Europe (<http://www.unece.org/guidelines-telematics-application-standards-construction-and-approval-vehicles-calculation-risks/trans/danger/danger.htm>).

³ Multimodal guidelines (Inland TDG Risk Management Framework) may be consulted on the website of the Directorate General for Mobility and Transport of the European Commission (https://ec.europa.eu/transport/themes/dangerous_good/risk_management_framework_en).

- (a) Explosions;
- (b) Release of toxic gas or volatile toxic liquid;
- (c) Fires.

1.9.5.2.2 The five tunnel categories are the following:

Tunnel category A:

No restrictions for the carriage of dangerous goods;

Tunnel category B:

Restriction for the carriage of dangerous goods which may lead to a very large explosion;

The following dangerous goods are considered to fulfil this criterion²:

Class 1:	Compatibility groups A and L;
Class 2:	UN No. 3529;
Class 3:	Classification code D (UN Nos. 1204, 2059, 3064, 3343, 3357 and 3379);
Class 4.1:	Classification codes D and DT; and Self-reactive substances, type B (UN Nos. 3221, 3222, 3231 and 3232);
Class 5.2:	Organic peroxides, type B (UN Nos. 3101, 3102, 3111 and 3112).
When the total net explosive mass per transport unit is greater than 1000 kg:	
Class 1:	Divisions 1.1, 1.2 and 1.5 (except compatibility groups A and L).
When carried in tanks:	
Class 2:	Classification codes F, TF and TFC;
Class 4.2:	Packing group I;
Class 4.3:	Packing group I;
Class 5.1:	Packing group I;
Class 6.1:	UN No. 1510

Tunnel category C:

Restriction for the carriage of dangerous goods which may lead to a very large explosion, a large explosion or a large toxic release;

The following dangerous goods are considered to fulfil this criterion²:

- the dangerous goods restricted in tunnel category B, and
- the following dangerous goods:

Class 1:	Divisions 1.1, 1.2 and 1.5 (except compatibility groups A and L); and Division 1.3 (compatibility groups H and J);
Class 7:	UN Nos. 2977 and 2978.
When the net explosive mass per transport unit is greater than 5000 kg:	
Class 1:	Division 1.3 (compatibility groups C and G).
When carried in tanks:	
Class 2:	Classification codes 2A, 2O, 3A and 3O, and classification codes containing the letter T only or letter groups TC, TO and TOC;
Class 3:	Packing group I for classification codes FC, FT1, FT2 and FTC;
Class 6.1:	Packing group I, except UN No. 1510;
Class 8:	Packing group I for classification codes CT1, CFT and COT.

² The assessment is based on the intrinsic dangerous properties of the goods, the type of containment and the quantity carried.

Tunnel category D:

Restriction for the carriage of dangerous goods which may lead to a very large explosion, to a large explosion, to a large toxic release or to a large fire;

The following dangerous goods are considered to fulfil this criterion²:

- the dangerous goods restricted in tunnel category C, and
- the following dangerous goods:

Class 1:	Division 1.3 (compatibility groups C and G);
Class 2:	Classification codes F, FC, T, TF, TC, TO, TFC and TOC;
Class 3:	Class 3: UN No. 3528;
Class 4.1:	Self-reactive substances, types C, D, E and F; and UN Nos. 2956, 3241, 3242, 3251, 3531, 3532, 3533 and 3534;
Class 5.2:	Organic peroxides, types C, D, E and F;
Class 6.1:	Packing group I for classification codes TF1, TFC and TFW and UN No.3507; and Toxic by inhalation entries for which special provision 354 is assigned in column (6) of Table A of Chapter 3.2 and toxic by inhalation entries of UN Nos. 3381 to 3390;
Class 8:	Packing group I for classification codes CT1, CFT and COT;
Class 9:	Classification codes M9 and M10.
When carried in bulk or in tanks:	
Class 3	
Class 4.2:	Packing group II;
Class 4.3:	Packing group II;
Class 6.1:	Packing group II; and Packing group III for classification code TF2;
Class 8:	Packing group I for classification codes CF1, CFT and CW1; and Packing group II for classification codes CF1 and CFT
Class 9:	Classification codes M2 and M3.

Tunnel category E:

Restriction for the carriage of all dangerous goods other than those for which ‘(-)’ is marked in Column (15) of Table A of Chapter 3.2 and for all dangerous goods in accordance with the provisions of Chapter 3.4 if the quantities carried exceed 8 tonnes total gross mass per transport unit..

NOTE: For the dangerous goods assigned to UN Nos. 2919 and 3331, restrictions to the passage through tunnels may, however, be part of the special arrangement approved by the competent authority(ies) on the basis of 1.7.4.2.

1.9.5.3 Provisions for road signs and notification of restrictions

- 1.9.5.3.1 Contracting Parties shall indicate tunnel prohibitions and alternative routes by means of signs and signals.
- 1.9.5.3.2 For this purpose, they may use signs C, 3h and D, 10a, 10b and 10c and signals according to the Vienna Convention on Road Signs and Signals (Vienna, 1968) and the European Agreement supplementing the Convention on Road Signs and Signals (Geneva, 1971) as interpreted by the Resolution on Road Signs and Signals (R.E.2) of the UNECE Inland Transport Committee Principal Working Party on Road Transport, as amended.
- 1.9.5.3.3 In order to facilitate international understanding of signs, the system of signs and signals prescribed in the Vienna Convention is based on the use of shapes, and colours characteristic of each class of signs and wherever possible, on the use of graphic symbols rather than inscriptions. Where Contracting Parties consider it necessary to modify the signs and symbols prescribed, the modifications made shall

² The assessment is based on the intrinsic dangerous properties of the goods, the type of containment and the quantity carried.

not alter their essential characteristics. Where Contracting Parties do not apply the Vienna Convention, the prescribed signs and symbols may be modified, provided that the modifications made shall not alter their essential intent.

- 1.9.5.3.4 Traffic signs and signals intended to prohibit access of vehicles carrying dangerous goods to road tunnels shall be affixed at a place where the choice of alternative routes is possible.
- 1.9.5.3.5 When access to tunnels is restricted or alternative routes are prescribed, the signs shall be displayed with additional panels as follows:
- No sign: no restriction
- Sign with additional panel bearing the letter B: applies to vehicles carrying dangerous goods not allowed in tunnels of category B;
- Sign with additional panel bearing the letter C: applies to vehicles carrying dangerous goods not allowed in tunnels of category C;
- Sign with additional panel bearing the letter D: applies to vehicles carrying dangerous goods not allowed in tunnels of category D;
- Sign with additional panel bearing the letter E: applies to vehicles carrying dangerous goods not allowed in tunnels of category E.
- 1.9.5.3.6 Tunnel restrictions shall apply to transport units for which an orange-coloured plate marking in accordance with 5.3.2 is required, except for the carriage of dangerous goods for which ‘(-)’ is marked in Column (15) of Table A of Chapter 3.2. For the dangerous goods assigned to UN Nos. 2919 and 3331, restrictions to the passage through tunnels may, however, be part of the special arrangement approved by the competent authority(ies) on the basis of 1.7.4.2. For tunnels of category E, they shall apply also to transport units for which a marking in accordance with 3.4.13 is required or carrying containers for which a marking in accordance with 3.4.13 is required.
- Tunnel restrictions shall not apply when dangerous goods are carried in accordance with 1.1.3, except when transport units carrying such goods are marked in accordance with 3.4.13 subject to 3.4.14.
- 1.9.5.3.7 Restrictions shall be published officially and made publicly available. Contracting Parties shall notify the secretariat of UNECE of such restrictions and the secretariat shall make this information publicly available on its website.
- 1.9.5.3.8 When Contracting Parties apply specific operating measures designed to reduce the risks and related to some or all vehicles using tunnels, such as declaration before entering or passage in convoys escorted by accompanying vehicles, such operating measures shall be published officially and made publicly available.

CHAPTER 1.10

SECURITY PROVISIONS

NOTE: *For the purposes of this Chapter, security means measures or precautions to be taken to minimise theft or misuse of dangerous goods that may endanger persons, property or the environment.*

1.10.1 General provisions

- 1.10.1.1 All persons engaged in the carriage of dangerous goods shall consider the security requirements set out in this Chapter commensurate with their responsibilities.
- 1.10.1.2 Dangerous goods shall only be offered for carriage to carriers that have been appropriately identified.
- 1.10.1.3 Areas within temporary storage terminals, temporary storage sites, vehicle depots, berthing areas and marshalling yards used for the temporary storage during carriage of dangerous goods shall be properly secured, well lit and, where possible and appropriate, not accessible to the general public.
- 1.10.1.4 Each member of a vehicle crew shall carry with them means of identification, which includes their photograph, during carriage of dangerous goods.
- 1.10.1.5 Safety inspections in accordance with 1.8.1 and 7.5.1.1 shall cover appropriate security measures.
- 1.10.1.6 The competent authority shall maintain up-to-date registers of all valid training certificates for drivers stipulated in 8.2.1 issued by it or by any recognized organization.

1.10.2 Security training

- 1.10.2.1 The training and the refresher training specified in Chapter 1.3 shall also include elements of security awareness. The security refresher training need not be linked to regulatory changes only.
- 1.10.2.2 Security awareness training shall address the nature of security risks, recognising security risks, methods to address and reduce such risks and actions to be taken in the event of a security breach. It shall include awareness of security plans (if appropriate) commensurate with the responsibilities and duties of individuals and their part in implementing security plans.
- 1.10.2.3 Such training shall be provided or verified upon employment in a position involving dangerous goods transport and shall be periodically supplemented with refresher training.
- 1.10.2.4 Records of all security training received shall be kept by the employer and made available to the employee or competent authority, upon request. Records shall be kept by the employer for a period of time established by the competent authority.

1.10.3 Provisions for high consequence dangerous goods

NOTE: *In addition to the security provisions of ADR, competent authorities may implement further security provisions for reasons other than safety during carriage (see also Article 4, paragraph 1 of the Agreement). In order not to impede international and multimodal carriage by different explosives security marks, it is recommended that such marks be formatted consistent with an internationally harmonized standard (e.g. European Union Commission Directive 2008/43/EC).*

1.10.3.1 Definition of high consequence dangerous goods

- 1.10.3.1.1 High consequence dangerous goods are those which have the potential for misuse in a terrorist event and which may, as a result, produce serious consequences such as mass casualties, mass destruction or, particularly for Class 7, mass socio-economic disruption.
- 1.10.3.1.2 High consequence dangerous goods in classes other than Class 7 are those listed in Table 1.10.3.1.2 below and carried in quantities greater than those indicated therein.

Table 1.10.3.1.2: List of high consequence dangerous goods

Class	Division	Substance or article	Quantity		
			Tank (l) ^c	Bulk (kg) ^d	Packages (kg)
1	1.1	Explosives	a	a	0
	1.2	Explosives	a	a	0
	1.3	Compatibility group C explosives	a	a	0
	1.4	Explosives of UN Nos. 0104, 0237, 0255, 0267, 0289, 0361, 0365, 0366, 0440, 0441, 0455, 0456, 0500, 0512 and 0513	a	a	0
	1.5	Explosives	0	a	0
	1.6	Explosives	a	a	0
2		Flammable, non-toxic gases (classification codes including only letters F or FC)	3000	a	b
		Toxic gases (classification codes including letters T, TF, TC, TO, TFC or TOC) excluding aerosols	0	a	0
3		Flammable liquids of packing groups I and II	3000	a	b
		Desensitized explosives	0	a	0
4.1		Desensitized explosives	a	a	0
4.2		Packing group I substances	3000	a	b
4.3		Packing group I substances	3000	a	b
5.1		Oxidizing liquids of packing group I	3000	a	b
		Perchlorates, ammonium nitrate, ammonium nitrate fertilisers and ammonium nitrate emulsions or suspensions or gels	3000	3000	b
6.1		Toxic substances of packing group I	0	a	0
6.2		Infectious substances of Category A (UN Nos. 2814 and 2900, except for animal material) and medical waste of Category A (UN No. 3549)	a	0	0
8		Corrosive substances of packing group I	3000	a	b

^a Not relevant.

^b The provisions of 1.10.3 do not apply, whatever the quantity is.

^c A value indicated in this column is applicable only if carriage in tanks is authorized, in accordance with Chapter 3.2, Table A, column (10) or (12). For substances that are not authorized for carriage in tanks, the instruction in this column is not relevant.

^d A value indicated in this column is applicable only if carriage in bulk is authorized, in accordance with Chapter 3.2, Table A, column (10) or (17). For substances that are not authorized for carriage in bulk, the instruction in this column is not relevant.

- 1.10.3.1.3 For dangerous goods of Class 7, high consequence radioactive material is that with an activity equal to or greater than a transport security threshold of 3 000 A₂ per single package (see also 2.2.7.2.2.1) except for the following radionuclides where the transport security threshold is given in Table 1.10.3.1.3 below.

Table 1.10.3.1.3: Transport security thresholds for specific radionuclides

Element	Radionuclide	Transport security threshold (TBq)
Americium	Am-241	0.6
Gold	Au-198	2
Cadmium	Cd-109	200
Californium	Cf-252	0.2
Curium	Cm-244	0.5
Cobalt	Co-57	7
Cobalt	Co-60	0.3
Caesium	Cs-137	1
Iron	Fe-55	8000
Germanium	Ge-68	7
Gadolinium	Gd-153	10
Iridium	Ir-192	0.8
Nickel	Ni-63	600
Palladium	Pd-103	900
Promethium	Pm-147	400
Polonium	Po-210	0.6
Plutonium	Pu-238	0.6
Plutonium	Pu-239	0.6
Radium	Ra-226	0.4
Ruthenium	Ru-106	3
Selenium	Se-75	2
Strontium	Sr-90	10
Thallium	Tl-204	200
Thulium	Tm-170	200
Ytterbium	Yb-169	3

- 1.10.3.1.4 For mixtures of radionuclides, determination of whether or not the transport security threshold has been met or exceeded can be calculated by summing the ratios of activity present for each radionuclide divided by the transport security threshold for that radionuclide. If the sum of the fractions is less than 1, then the radioactivity threshold for the mixture has not been met nor exceeded.

This calculation can be made with the formula:

$$\sum_i \frac{A_i}{T_i} < 1$$

Where:

A_i = activity of radionuclide i that is present in a package (TBq)

T_i = transport security threshold for radionuclide i (TBq).

- 1.10.3.1.5 When radioactive material possesses subsidiary hazards of other classes, the criteria of table 1.10.3.1.2 shall also be taken into account (see also 1.7.5).

1.10.3.2 *Security plans*

- 1.10.3.2.1 Carriers, consignors and other participants specified in 1.4.2 and 1.4.3 engaged in the carriage of high consequence dangerous goods (see Table 1.10.3.1.2) or high consequence radioactive material (see 1.10.3.1.3) shall adopt, implement and comply with a security plan that addresses at least the elements specified in 1.10.3.2.2.
- 1.10.3.2.2 The security plan shall comprise at least the following elements:

- (a) Specific allocation of responsibilities for security to competent and qualified persons with appropriate authority to carry out their responsibilities;
- (b) Records of dangerous goods or types of dangerous goods concerned;
- (c) Review of current operations and assessment of security risks, including any stops necessary to the transport operation, the keeping of dangerous goods in the vehicle, tank or container before, during and after the journey and the intermediate temporary storage of dangerous goods during the course of intermodal transfer or transshipment between units as appropriate;
- (d) Clear statement of measures that are to be taken to reduce security risks, commensurate with the responsibilities and duties of the participant, including:
 - training;
 - security policies (e.g. response to higher threat conditions, new employee/employment verification, etc.);
 - operating practices (e.g. choice/use of routes where known, access to dangerous goods in intermediate temporary storage (as defined in (c)), proximity to vulnerable infrastructure etc.);
 - equipment and resources that are to be used to reduce security risks;
- (e) Effective and up to date procedures for reporting and dealing with security threats, breaches of security or security incidents;
- (f) Procedures for the evaluation and testing of security plans and procedures for periodic review and update of the plans;
- (g) Measures to ensure the physical security of transport information contained in the security plan; and
- (h) Measures to ensure that the distribution of information relating to the transport operation contained in the security plan is limited to those who need to have it. Such measures shall not preclude the provision of information required elsewhere in ADR.

NOTE: Carriers, consignors and consignees should co-operate with each other and with competent authorities to exchange threat information, apply appropriate security measures and respond to security incidents.

1.10.3.3 Devices, equipment or arrangements to prevent the theft of the vehicle carrying high consequence dangerous goods (see Table 1.10.3.1.2) or high consequence radioactive material (see 1.10.3.1.3) and its cargo, shall be applied and measures taken to ensure that these are operational and effective at all times. The application of these protective measures shall not jeopardize emergency response.

NOTE: When appropriate and already fitted, the use of transport telemetry or other tracking methods or devices should be used to monitor the movement of high consequence dangerous goods (see Table 1.10.3.1.2) or high consequence radioactive material (see 1.10.3.1.3).

1.10.4 ~~In accordance with the provisions of 1.1.3.6, the requirements of 1.10.1, 1.10.2, 1.10.3 and 8.1.2.1 (d) do not apply when the quantities carried in packages on a transport unit do not exceed those referred to in 1.1.3.6.3, except for UN Nos. 0029, 0030, 0059, 0065, 0073, 0104, 0237, 0255, 0267, 0288, 0289, 0290, 0360, 0361, 0364, 0365, 0366, 0439, 0440, 0441, 0455, 0456, 0500, 0511, 0512 and 0513 and except for UN Nos. 2910 and 2911 if the activity level exceeds the A₂ value (see first indent of 1.1.3.6.2). In addition, †The requirements of 1.10.1, 1.10.2, 1.10.3 and 8.1.2.1 (d) do not apply when the quantities carried in tanks or in bulk on a transport unit do not exceed those referred to in 1.1.3.6.3. In addition the provisions of this Chapter do not apply to the carriage of UN No. 2912 RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-I) and UN No. 2913 RADIOACTIVE MATERIAL, SURFACE CONTAMINATED OBJECTS (SCO-I).~~

1.10.5

For radioactive material, the provisions of this Chapter are deemed to be complied with when the provisions of the Convention on Physical Protection of Nuclear Material ([INFCIRC/274/Rev.1, IAEA, Vienna \(1980\)](#))¹ and the IAEA circular on "Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities"² ([INFCIRC/225/Rev.5, IAEA, Vienna \(2011\)](#)) are applied.

¹ ~~[INFCIRC/274/Rev.1, IAEA, Vienna \(1980\)](#)~~

² ~~[INFCIRC/225/Rev.5, IAEA, Vienna \(2011\)](#)~~

PART 2

Classification

CHAPTER 2.1

GENERAL PROVISIONS

2.1.1 Introduction

2.1.1.1 The classes of dangerous goods according to ADR are the following:

Class 1	Explosive substances and articles
Class 2	Gases
Class 3	Flammable liquids
Class 4.1	Flammable solids, self-reactive substances, polymerizing substances and solid desensitized explosives
Class 4.2	Substances liable to spontaneous combustion
Class 4.3	Substances which, in contact with water, emit flammable gases
Class 5.1	Oxidizing substances
Class 5.2	Organic peroxides
Class 6.1	Toxic substances
Class 6.2	Infectious substances
Class 7	Radioactive material
Class 8	Corrosive substances
Class 9	Miscellaneous dangerous substances and articles

2.1.1.2 Each entry in the different classes has been assigned a UN number. The following types of entries are used:

A. Single entries for well-defined substances or articles including entries for substances covering several isomers, e.g.:

UN No. 1090 ACETONE
UN No. 1104 AMYL ACETATES
UN No. 1194 ETHYL NITRITE SOLUTION

B. Generic entries for a well-defined group of substances or articles, which are not n.o.s. entries, e.g.:

UN No. 1133 ADHESIVES
UN No. 1266 PERFUMERY PRODUCTS
UN No. 2757 CARBAMATE PESTICIDE, SOLID, TOXIC
UN No. 3101 ORGANIC PEROXIDE TYPE B, LIQUID

C. Specific n.o.s. entries covering a group of substances or articles of a particular chemical or technical nature, not otherwise specified, e.g.:

UN No. 1477 NITRATES, INORGANIC, N.O.S.
UN No. 1987 ALCOHOLS, N.O.S.

D. General n.o.s. entries covering a group of substances or articles having one or more dangerous properties, not otherwise specified, e.g.:

UN No. 1325 FLAMMABLE SOLID, ORGANIC, N.O.S.
UN No. 1993 FLAMMABLE LIQUID, N.O.S.

The entries defined under B., C. and D. are defined as collective entries.

2.1.1.3 For packing purposes, substances other than those of Classes 1, 2, 5.2, 6.2 and 7, and other than self-reactive substances of Class 4.1 are assigned to packing groups in accordance with the degree of danger they present:

Packing group I: Substances presenting high danger;
Packing group II: Substances presenting medium danger;
Packing group III: Substances presenting low danger.

The packing group(s) to which a substance is assigned is (are) indicated in Table A of Chapter 3.2.

Articles are not assigned to packing groups. For packing purposes any requirement for a specific packaging performance level is set out in the applicable packing instruction.

2.1.2 Principles of classification

- 2.1.2.1 The dangerous goods covered by the heading of a class are defined on the basis of their properties according to sub-section 2.2.x.1 of the relevant class. Assignment of dangerous goods to a class and a packing group is made according to the criteria mentioned in the same sub-section 2.2.x.1. Assignment of one or several subsidiary hazard(s) to a dangerous substance or article is made according to the criteria of the class or classes corresponding to those hazards, as mentioned in the appropriate sub-section(s) 2.2.x.1.
- 2.1.2.2 All dangerous goods entries are listed in Table A of Chapter 3.2 in the numerical order of their UN Number. This table contains relevant information on the goods listed, such as name, class, packing group(s), label(s) to be affixed, packing and carriage provisions¹. The substances listed by name in column (2) of Table A of Chapter 3.2 shall be carried according to their classification in Table A or under the conditions specified in 2.1.2.8.
- 2.1.2.3 A substance may contain technical impurities (for example those deriving from the production process) or additives for stability or other purposes that do not affect their classification. However, a substance mentioned by name, i.e. listed as a single entry in Table A of Chapter 3.2, containing technical impurities or additives for stability or other purposes affecting its classification shall be considered a solution or mixture (see 2.1.3.3).
- 2.1.2.4 Dangerous goods which are listed or defined in sub-section 2.2.x.2 of each class are not to be accepted for carriage.
- 2.1.2.5 Goods not mentioned by name, i.e. goods not listed as single entries in Table A of Chapter 3.2 and not listed or defined in one of the above-mentioned sub-sections 2.2.x.2 shall be assigned to the relevant class in accordance with the procedure of section 2.1.3. In addition, the subsidiary hazard (if any) and the packing group (if any) shall be determined. Once the class, subsidiary hazard (if any) and packing group (if any) have been established the relevant UN number shall be determined. The decision trees in sub-sections 2.2.x.3 (list of collective entries) at the end of each class indicate the relevant parameters for selecting the relevant collective entry (UN number). In all cases the most specific collective entry covering the properties of the substance or article shall be selected, according to the hierarchy indicated in 2.1.1.2 by the letters B, C and D respectively. If the substance or article cannot be classified under entries of type B or C according to 2.1.1.2, then, and only then shall it be classified under an entry of type D.
- 2.1.2.6 On the basis of the test procedures of Chapter 2.3 and the criteria set out in sub-sections 2.2.x.1 of classes when it is so specified, it may be determined that a substance, solution or mixture of a certain class, mentioned by name in Table A of Chapter 3.2, does not meet the criteria of that class. In such a case, the substance, solution or mixture is deemed not to belong to that class.
- 2.1.2.7 For the purposes of classification, substances with a melting point or initial melting point of 20 °C or lower at a pressure of 101.3 kPa shall be considered to be liquids. A viscous substance for which a specific melting point cannot be determined shall be subjected to the ASTM D 4359-90 test or to the test for determining fluidity (penetrometer test) prescribed in 2.3.4.
- 2.1.2.8 A consignor who has identified, on the basis of test data, that a substance listed by name in column 2 of Table A of Chapter 3.2 meets classification criteria for a class that is not identified in column 3a or 5 of Table A of Chapter 3.2, may, with the approval of the competent authority, consign the substance:
- Under the most appropriate collective entry listed in sub-sections 2.2.x.3 reflecting all hazards; or
 - Under the same UN number and name but with additional hazard communication information as appropriate to reflect the additional subsidiary hazard(s) (documentation, label, placard)

¹ **Note by the Secretariat:** An alphabetic list of these entries has been prepared by the secretariat and is reproduced in Table B of Chapter 3.2. This table is not an official part of the ADR.

provided that the class remains unchanged and that any other carriage conditions (e.g. limited quantity, packaging and tank provisions) that would normally apply to substances possessing such a combination of hazards are the same as those applicable to the substance listed.

NOTE 1: *The competent authority granting the approval may be the competent authority of any ADR Contracting Party who may also recognize an approval granted by the competent authority of a country which is not an ADR Contracting Party provided that this approval has been granted in accordance with the procedures applicable according to RID, ADR, ADN, the IMDG Code or the ICAO Technical Instructions.*

NOTE 2: *When a competent authority grants such approvals, it should inform the United Nations Sub-Committee of Experts on the Transport of Dangerous Goods accordingly and submit a relevant proposal of amendment to the Dangerous Goods List of the UN Model Regulations. Should the proposed amendment be rejected, the competent authority should withdraw its approval.*

NOTE 3: *For carriage in accordance with 2.1.2.8, see also 5.4.1.1.20.*

2.1.3 Classification of substances, including solutions and mixtures (such as preparations and wastes), not mentioned by name

2.1.3.1 Substances including solutions and mixtures not mentioned by name shall be classified according to their degree of danger on the basis of the criteria mentioned in sub-section 2.2.x.1 of the various classes. The danger(s) presented by a substance shall be determined on the basis of its physical and chemical characteristics and physiological properties. Such characteristics and properties shall also be taken into account when such experience leads to a more stringent assignment.

2.1.3.2 A substance not mentioned by name in Table A of Chapter 3.2 presenting a single hazard shall be classified in the relevant class under a collective entry listed in sub-section 2.2.x.3 of that class.

2.1.3.3 A solution or mixture meeting the classification criteria of ADR composed of a single predominant substance mentioned by name in Table A of Chapter 3.2 and one or more substances not subject to ADR or traces of one or more substances mentioned by name in Table A of Chapter 3.2, shall be assigned the UN number and proper shipping name of the predominant substance mentioned by name in Table A of Chapter 3.2 unless:

- (a) The solution or mixture is mentioned by name in Table A of Chapter 3.2;
- (b) The name and description of the substance mentioned by name in Table A of Chapter 3.2 specifically indicate that they apply only to the pure substance;
- (c) The class, classification code, packing group, or physical state of the solution or mixture is different from that of the substance mentioned by name in Table A of Chapter 3.2; or
- (d) The hazard characteristics and properties of the solution or mixture necessitate emergency response measures that are different from those required for the substance mentioned by name in Table A of Chapter 3.2.

In those other cases, except the one described in (a), the solution or mixture shall be classified as a substance not mentioned by name in the relevant class under a collective entry listed in sub-section 2.2.x.3 of that class taking account of the subsidiary hazards presented by that solution or mixture, if any, unless the solution or mixture does not meet the criteria of any class, in which case it is not subject to ADR.

2.1.3.4 Solutions and mixtures containing substances belonging to one of the entries mentioned in 2.1.3.4.1 or 2.1.3.4.2 shall be classified in accordance with the provisions of these paragraphs.

2.1.3.4.1 Solutions and mixtures containing one of the following substances mentioned by name shall always be classified under the same entry as the substance they contain, provided they do not have the hazard characteristics as indicated in 2.1.3.5.3:

- Class 3

UN No. 1921 PROPYLENEIMINE, STABILIZED; UN No. 3064 NITROGLYCERIN SOLUTION IN ALCOHOL with more than 1 % but not more than 5 % nitroglycerin;

- Class 6.1

UN No. 1051 HYDROGEN CYANIDE, STABILIZED, containing less than 3 % water; UN No. 1185 ETHYLENEIMINE, STABILIZED; UN No. 1259 NICKEL CARBONYL; UN No. 1613 HYDROCYANIC ACID, AQUEOUS SOLUTION (HYDROGEN CYANIDE, AQUEOUS SOLUTION), with not more than 20 % hydrogen cyanide; UN No. 1614 HYDROGEN CYANIDE, STABILIZED, containing not more than 3 % water and absorbed in a porous inert material; UN No. 1994 IRON PENTACARBONYL; UN No. 2480 METHYL ISOCYANATE; UN No. 2481 ETHYL ISOCYANATE; UN No. 3294 HYDROGEN CYANIDE, SOLUTION IN ALCOHOL, with not more than 45 % hydrogen cyanide;

- Class 8

UN No. 1052 HYDROGEN FLUORIDE, ANHYDROUS; UN No. 1744 BROMINE or UN No. 1744 BROMINE SOLUTION; UN No. 1790 HYDROFLUORIC ACID with more than 85 % hydrogen fluoride; UN No. 2576 PHOSPHORUS OXYBROMIDE, MOLTEN;

2.1.3.4.2 Solutions and mixtures containing a substance belonging to one of the following entries of Class 9:

UN No. 2315 POLYCHLORINATED BIPHENYLS, LIQUID;
UN No. 3151 POLYHALOGENATED BIPHENYLS, LIQUID;
UN No. 3151 HALOGENATED MONOMETHYLDIPHENYLMETHANES, LIQUID;
UN No. 3151 POLYHALOGENATED TERPHENYLS, LIQUID;
UN No. 3152 POLYHALOGENATED BIPHENYLS, SOLID;
UN No. 3152 HALOGENATED MONOMETHYLDIPHENYLMETHANES, SOLID;
UN No. 3152 POLYHALOGENATED TERPHENYLS, SOLID; or
UN No. 3432 POLYCHLORINATED BIPHENYLS, SOLID

shall always be classified under the same entry of Class 9 provided that:

- they do not contain any additional dangerous component other than components of packing group III of classes 3, 4.1, 4.2, 4.3, 5.1, 6.1 or 8; and
- they do not have the hazard characteristics as indicated in 2.1.3.5.3.

2.1.3.4.3 Used articles, e.g. transformers and condensers, containing a solution or mixture mentioned in 2.1.3.4.2 shall always be classified under the same entry of Class 9, provided:

- (a) they do not contain any additional dangerous components, other than polyhalogenated dibenzodioxins and dibenzofurans of Class 6.1 or components of packing group III of Class 3, 4.1, 4.2, 4.3, 5.1, 6.1 or 8; and
- (b) they do not have the hazard characteristics as indicated in 2.1.3.5.3 (a) to (g) and (i).

2.1.3.5 Substances not mentioned by name in Table A of Chapter 3.2, having more than one hazard characteristic and solutions or mixtures meeting the classification criteria of ADR containing several dangerous substances shall be classified under a collective entry (see 2.1.2.5) and packing group of the appropriate class in accordance with their hazard characteristics. Such classification according to the hazard characteristics shall be carried out as follows:

2.1.3.5.1 The physical and chemical characteristics and physiological properties shall be determined by measurement or calculation and the substance, solution or mixture shall be classified according to the criteria mentioned in sub-section 2.2.x.1 of the various classes.

2.1.3.5.2 If this determination is not possible without disproportionate cost or effort (as for some kinds of wastes), the substance, solution or mixture shall be classified in the class of the component presenting the major hazard.

- 2.1.3.5.3 If the hazard characteristics of the substance, solution or mixture fall within more than one class or group of substances listed below then the substance, solution or mixture shall be classified in the class or group of substances corresponding to the major hazard on the basis of the following order of precedence:
- (a) Material of Class 7 (apart from radioactive material in excepted packages for which, except for UN 3507 URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE, special provision 290 of Chapter 3.3 applies, where the other hazardous properties take precedence);
 - (b) Substances of Class 1;
 - (c) Substances of Class 2;
 - (d) Liquid desensitized explosives of Class 3;
 - (e) Self-reactive substances and solid desensitized explosives of Class 4.1;
 - (f) Pyrophoric substances of Class 4.2;
 - (g) Substances of Class 5.2;
 - (h) Substances of Class 6.1 meeting the inhalation toxicity criteria of packing group I (Substances meeting the classification criteria of Class 8 and having an inhalation toxicity of dust and mist (LC₅₀) in the range of Packing group I and a toxicity through oral ingestion or dermal contact only in the range of Packing group III or less, shall be allocated to Class 8);
 - (i) Infectious substances of Class 6.2.
- 2.1.3.5.4 If the hazard characteristics of the substance fall within more than one class or group of substances not listed in 2.1.3.5.3 above, the substance shall be classified in accordance with the same procedure but the relevant class shall be selected according to the precedence of hazards table in 2.1.3.10.
- 2.1.3.5.5 If the substance to be carried is a waste, with a composition that is not precisely known, its assignment to a UN number and packing group in accordance with 2.1.3.5.2 may be based on the consignor's knowledge of the waste, including all available technical and safety data as requested by safety and environmental legislation in force².
- In case of doubt, the highest danger level shall be taken.
- If however, on the basis of the knowledge of the composition of the waste and the physical and chemical properties of the identified components, it is possible to demonstrate that the properties of the waste do not correspond to the properties of the packing group I level, the waste may be classified by default in the most appropriate n.o.s. entry of packing group II. However, if it is known that the waste possesses only environmentally hazardous properties, it may be assigned to packing group III under UN Nos. 3077 or 3082.
- This procedure may not be used for wastes containing substances mentioned in 2.1.3.5.3, substances of Class 4.3, substances of the case mentioned in 2.1.3.7 or substances which are not accepted for carriage in accordance with 2.2.x.2.
- 2.1.3.6 The most specific applicable collective entry (see 2.1.2.5) shall always be used, i.e. a general n.o.s. entry shall only be used if a generic entry or a specific n.o.s. entry cannot be used.
- 2.1.3.7 Solutions and mixtures of oxidizing substances or substances with an oxidizing subsidiary hazard may have explosive properties. In such a case they are not to be accepted for carriage unless they meet the requirements for Class 1. For solid ammonium nitrate based fertilizers, see also 2.2.51.2.2, thirteenth and fourteenth indent and Manual of Tests and Criteria, Part III, Section 39.

² Such legislation is for instance the Commission Decision 2000/532/EC of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous wastes pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous wastes (Official Journal of the European Communities No. L 226 of 6 September 2000, page 3), as amended; and Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Official Journal of the European Union No. L312 of 22 November 2008, pages 3-30), as amended.

- 2.1.3.8 Substances of classes 1 to 6.2, 8 and 9, other than those assigned to UN Nos. 3077 and 3082, meeting the criteria of 2.2.9.1.10 are additionally to their hazards of classes 1 to 6.2, 8 and 9 considered to be environmentally hazardous substances. Other substances meeting the criteria of no other class or of no other substance of Class 9, but those of 2.2.9.1.10 are to be assigned to UN Nos. 3077 and 3082 as appropriate.
- 2.1.3.9 Wastes that do not meet the criteria for classification in classes 1 to 9 but are covered by the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* may be carried under UN Nos. 3077 or 3082.

2.1.3.10 Table of precedence of hazards

Class and packing group	4.1, II	4.1, III	4.2, II	4.2, III	4.3, I	4.3, II	4.3, III	5.1, I	5.1, II	5.1, III	6.1, I DERMAL	6.1, I ORAL	6.1, II	6.1, III	8, I	8, II	8, III	9
3, I	SOL LIQ 4.1 3, I	SOL LIQ 4.1 3, I	SOL LIQ 4.2 3, I	SOL LIQ 4.2 3, I	4.3, I	4.3, I	4.3, I	SOL LIQ 5.1, I 3, I	SOL LIQ 5.1, I 3, I	SOL LIQ 5.1, I 3, I	3, I	3, I	3, I	3, I	3, I	3, I	3, I	3, I
3, II	SOL LIQ 4.1 3, II	SOL LIQ 4.1 3, II	SOL LIQ 4.2 3, II	SOL LIQ 4.2 3, II	4.3, I	4.3, II	4.3, II	SOL LIQ 5.1, I 3, I	SOL LIQ 5.1, II 3, II	SOL LIQ 5.1, II 3, II	3, I	3, I	3, II	3, II	8, I	3, II	3, II	3, II
3, III	SOL LIQ 4.1 3, II	SOL LIQ 4.1 3, III	SOL LIQ 4.2 3, II	SOL LIQ 4.2 3, III	4.3, I	4.3, II	4.3, III	SOL LIQ 5.1, I 3, I	SOL LIQ 5.1, II 3, II	SOL LIQ 5.1, III 3, III	6.1, I	6.1, I	6.1, II	3, III *	8, I	8, II	3, III	3, III
4.1, II			4.2, II	4.2, II	4.3, I	4.3, II	4.3, II	5.1, I	4.1, II	4.1, II	6.1, I	6.1, I	SOL LIQ 4.1, II 6.1, II	SOL LIQ 4.1, II 6.1, II	8, I	SOL LIQ 4.1, II 8, II	SOL LIQ 4.1, II 8, II	4.1, II
4.1, III			4.2, II	4.2, III	4.3, I	4.3, II	4.3, III	5.1, I	4.1, II	4.1, III	6.1, I	6.1, I	6.1, II	SOL LIQ 4.1, III 6.1, III	8, I	8, II	SOL LIQ 4.1, III 8, III	4.1, III
4.2, II					4.3, I	4.3, II	4.3, II	5.1, I	4.2, II	4.2, II	6.1, I	6.1, I	4.2, II	4.2, II	8, I	4.2, II	4.2, II	4.2, II
4.2, III					4.3, I	4.3, II	4.3, III	5.1, I	5.1, II	4.2, III	6.1, I	6.1, I	6.1, II	4.2, III	8, I	8, II	4.2, III	4.2, III
4.3, I								5.1, I	4.3, I	4.3, I	6.1, I	4.3, I	4.3, I	4.3, I	4.3, I	4.3, I	4.3, I	4.3, I
4.3, II								5.1, I	4.3, II	4.3, II	6.1, I	4.3, I	4.3, II	4.3, II	8, I	4.3, II	4.3, II	4.3, II
4.3, III								5.1, I	5.1, II	4.3, III	6.1, I	6.1, I	6.1, II	4.3, III	8, I	8, II	4.3, III	4.3, III
5.1, I											5.1, I	5.1, I	5.1, I	5.1, I	5.1, I	5.1, I	5.1, I	5.1, I
5.1, II											6.1, I	5.1, I	5.1, II	5.1, II	8, I	5.1, II	5.1, II	5.1, II
5.1, III											6.1, I	6.1, I	6.1, II	5.1, III	8, I	8, II	5.1, III	5.1, III
6.1, I DERMAL															SOL LIQ 6.1, I 8, I	6.1, I	6.1, I	6.1, I
6.1, I ORAL															SOL LIQ 6.1, I 8, I	6.1, I	6.1, I	6.1, I
6.1, II INHAL															SOL LIQ 6.1, I 8, I	6.1, II	6.1, II	6.1, II
6.1, II DERMAL															SOL LIQ 6.1, I 8, I	SOL LIQ 6.1, II 8, II	6.1, II	6.1, II
6.1, II ORAL															8, I	SOL LIQ 6.1, II 8, II	6.1, II	6.1, II
6.1, III															8, I	8, II	8, III	6.1, III
8, I																		8, I
8, II																		8, II
8, III																		8, III

SOL = Solid substances and mixtures
 LIQ = Liquid substances, mixtures and solutions
 DERMAL = Dermal toxicity
 ORAL = Oral toxicity
 INHAL = Inhalation toxicity
 * Class 6.1 for pesticides

NOTE 1: Examples to explain the use of the table

Classification of a single substance

Description of the substance to be classified:

An amine not mentioned by name meeting the criteria for Class 3, packing group II as well as those for Class 8, packing group I.

Procedure:

The intersection of line 3 II with column 8 I gives 8 I.

This amine has therefore to be classified in Class 8 under:

UN No. 2734 AMINES LIQUID, CORROSIVE, FLAMMABLE, N.O.S. or UN No. 2734 POLYAMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.

packing group I

Classification of a mixture

Description of the mixture to be classified:

Mixture consisting of a flammable liquid classified in Class 3, packing group III, a toxic substance in Class 6.1, packing group II and a corrosive substance in Class 8, packing group I.

Procedure:

The intersection of line 3 III with column 6.1 II gives 6.1 II.

The intersection of line 6.1 II with column 8 I gives 8 I LIQ.

This mixture not further defined has therefore to be classified in Class 8 under:

UN No. 2922 CORROSIVE LIQUID, TOXIC, N.O.S. packing group I.

NOTE 2: Examples for the classification of mixtures and solutions under a class and a packing group:

A phenol solution of Class 6.1, (II), in benzene of Class 3, (II) is to be classified in Class 3, (II); this solution is to be classified under UN No. 1992 FLAMMABLE LIQUID, TOXIC, N.O.S., Class 3, (II), by virtue of the toxicity of the phenol.

A solid mixture of sodium arsenate of Class 6.1, (II) and sodium hydroxide of Class 8, (II) is to be classified under UN No. 3290 TOXIC SOLID, CORROSIVE, INORGANIC, N.O.S., in Class 6.1 (II).

A solution of crude or refined naphthalene of Class 4.1, (III) in petrol of Class 3, (II), is to be classified under UN No. 3295 HYDROCARBONS, LIQUID, N.O.S. in Class 3, (II).

A mixture of hydrocarbons of Class 3, (III), and of polychlorinated biphenyls (PCB) of Class 9, (II), is to be classified under UN No. 2315 POLYCHLORINATED BIPHENYLS LIQUID or UN No. 3432 POLYCHLORINATED BIPHENYLS SOLID in Class 9, (II).

A mixture of propyleneimine of Class 3, and polychlorinated biphenyls (PCB) of Class 9, (II), is to be classified under UN No. 1921 PROPYLENEIMINE, INHIBITED in Class 3.

2.1.4 Classification of samples

2.1.4.1 When the class of a substance is uncertain and it is being carried for further testing, a tentative class, proper shipping name and UN number shall be assigned on the basis of the consignor's knowledge of the substance and application of:

- (a) the classification criteria of Chapter 2.2; and
- (b) the requirements of this Chapter.

The most severe packing group possible for the proper shipping name chosen shall be used.

Where this provision is used the proper shipping name shall be supplemented with the word "SAMPLE" (e.g., "FLAMMABLE LIQUID, N.O.S., SAMPLE"). In certain instances, where a specific proper shipping name is provided for a sample of a substance considered to meet certain classification criteria (e.g., GAS SAMPLE, NON-PRESSURIZED, FLAMMABLE, UN No. 3167) that proper shipping name shall be used. When an N.O.S. entry is used to carry the sample, the proper shipping name need not be supplemented with the technical name as required by special provision 274 of Chapter 3.3.

2.1.4.2 Samples of the substance shall be carried in accordance with the requirements applicable to the tentative assigned proper shipping name provided:

- (a) The substance is not considered to be a substance not accepted for carriage by sub-sections 2.2.x.2 of Chapter 2.2 or by Chapter 3.2;
- (b) The substance is not considered to meet the criteria for Class 1 or considered to be an infectious substance or a radioactive material;
- (c) The substance is in compliance with 2.2.41.1.15 or 2.2.52.1.9 if it is a self-reactive substance or an organic peroxide, respectively;
- (d) The sample is carried in a combination packaging with a net mass per package not exceeding 2.5 kg; and
- (e) The sample is not packed together with other goods.

2.1.4.3 *Samples of energetic materials for testing purposes*

2.1.4.3.1 Samples of organic substances carrying functional groups listed in tables A6.1 and/or A6.3 in Appendix 6 (Screening Procedures) of the Manual of Tests and Criteria may be carried under UN No. 3224 (self-reactive solid type C) or UN No. 3223 (self-reactive liquid type C), as applicable, of Class 4.1 provided that:

- (a) The samples do not contain any:
 - ~~(i)~~ Known explosives;
 - ~~(ii)~~ Substances showing explosive effects in testing;
 - ~~(iii)~~ Compounds designed with the view of producing a practical explosive or pyrotechnic effect; or
 - ~~(iv)~~ Components consisting of synthetic precursors of intentional explosives;
- (b) For mixtures, complexes or salts of inorganic oxidizing substances of Class 5.1 with organic material(s), the concentration of the inorganic oxidizing substance is:
 - ~~(i)~~ Less than 15 %, by mass, if assigned to packing group I (high hazard) or II (medium hazard); or
 - ~~(ii)~~ Less than 30 %, by mass, if assigned to packing group III (low hazard);
- (c) Available data do not allow a more precise classification;
- (d) The sample is not packed together with other goods; and
- (e) The sample is packed in accordance with packing instruction P520 and special packing provisions PP94 or PP95 of 4.1.4.1, as applicable.

2.1.5 Classification of articles as articles containing dangerous goods, n.o.s.

NOTE: *For articles which do not have a proper shipping name and which contain only dangerous goods within the permitted limited quantity amounts specified in Column (7a) of Table A of Chapter 3.2, UN No. 3363 and special provisions 301 and 672 of Chapter 3.3 may be applied.*

2.1.5.1 Articles containing dangerous goods may be classified as otherwise provided by ADR under the proper shipping name for the dangerous goods they contain or in accordance with this section.

For the purposes of this section “article” means machinery, apparatus or other devices containing one or more dangerous goods (or residues thereof) that are an integral element of the article, necessary for its functioning and that cannot be removed for the purpose of carriage.

An inner packaging shall not be an article.

2.1.5.2 Such articles may in addition contain batteries. Lithium batteries that are integral to the article shall be of a type proven to meet the testing requirements of the Manual of Tests and Criteria, part III, sub-section 38.3, except when otherwise specified by ADR (e.g. for pre-production prototype articles containing lithium batteries or for a small production run, consisting of not more than 100 such articles).

2.1.5.3 This section does not apply to articles for which a more specific proper shipping name already exists in Table A of Chapter 3.2.

2.1.5.4 This section does not apply to dangerous goods of Class 1, Class 6.2, Class 7 or radioactive material contained in articles. However, this section applies to articles containing explosives which are excluded from Class 1 in accordance with 2.2.1.1.8.2.

2.1.5.5 Articles containing dangerous goods shall be assigned to the appropriate Class determined by the hazards present using, where applicable, the table of precedence of hazard in 2.1.3.10 for each of the dangerous goods contained in the article. If dangerous goods classified as Class 9 are contained within the article, all other dangerous goods present in the article shall be considered to present a higher hazard.

2.1.5.6 Subsidiary hazards shall be representative of the primary hazards posed by the other dangerous goods contained within the article. When only one item of dangerous goods is present in the article, the subsidiary hazard(s), if any, shall be the subsidiary hazard(s) identified by the subsidiary hazard label(s) in column (5) of Table A of Chapter 3.2. If the article contains more than one item of dangerous goods and these could react dangerously with one another during carriage, each of the dangerous goods shall be enclosed separately (see 4.1.1.6).

2.1.6 Classification of packagings, discarded, empty, uncleaned

Empty uncleaned packagings, large packagings or IBCs, or parts thereof, carried for disposal, recycling or recovery of their material, other than reconditioning, repair, routine maintenance, remanufacturing or reuse, may be assigned to UN 3509 if they meet the requirements for this entry.

CHAPTER 2.2

CLASS SPECIFIC PROVISIONS

2.2.1 Class 1 Explosive substances and articles

2.2.1.1 *Criteria*

2.2.1.1.1 The heading of Class 1 covers:

- (a) Explosive substances: solid or liquid substances (or mixtures of substances) capable by chemical reaction of producing gases at such a temperature and pressure and at such a speed as to cause damage to the surroundings.

Pyrotechnic substances: substances or mixtures of substances designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonating self-sustaining exothermic chemical reactions;

NOTE 1: Substances which are not themselves explosive but which may form an explosive mixture of gas, vapour or dust are not substances of Class 1.

NOTE 2: Also excluded from Class 1 are: water- or alcohol-wetted explosives of which the water or alcohol content exceeds the limits specified and those containing plasticizers - these explosives are assigned to Class 3 or Class 4.1 - and those explosives which, on the basis of their predominant hazard, are assigned to Class 5.2.

- (b) Explosive articles: articles containing one or more explosive or pyrotechnic substances;

NOTE: Devices containing explosive or pyrotechnic substances in such small quantity or of such a character that their inadvertent or accidental ignition or initiation during carriage would not cause any manifestation external to the device by projection, fire, smoke, heat or loud noise are not subject to the requirements of Class 1.

- (c) Substances and articles not mentioned above which are manufactured with a view to producing a practical explosive or pyrotechnic effect.

For the purposes of Class 1, the following definition applies:

Phlegmatized means that a substance (or "phlegmatizer") has been added to an explosive to enhance its safety in handling and carriage. The phlegmatizer renders the explosive insensitive, or less sensitive, to the following actions: heat, shock, impact, percussion or friction. Typical phlegmatizing agents include, but are not limited to: wax, paper, water, polymers (such as chlorofluoropolymers), alcohol and oils (such as petroleum jelly and paraffin).

2.2.1.1.2 Any substance or article having or suspected of having explosive properties shall be considered for assignment to Class 1 in accordance with the tests, procedures and criteria prescribed in Part I, Manual of Tests and Criteria.

A substance or article assigned to Class 1 can only be accepted for carriage when it has been assigned to a name or n.o.s. entry listed in Table A of Chapter 3.2 and meets the criteria of the Manual of Tests and Criteria.

2.2.1.1.3 The substances and articles of Class 1 shall be assigned to a UN Number and a name or n.o.s. entry listed in Table A of Chapter 3.2. Interpretation of the names of substances and articles in Table A of Chapter 3.2 shall be based upon the glossary in 2.2.1.4.

Samples of new or existing explosive substances or articles carried for purposes including: testing, classification, research and development quality control, or as a commercial sample, other than initiating explosive, may be assigned to UN No. 0190 SAMPLES, EXPLOSIVE.

The assignment of explosive substances and articles not mentioned by name as such in Table A of Chapter 3.2 to an n.o.s. entry of Class 1 or UN No. 0190 SAMPLES, EXPLOSIVE as well as the assignment of certain substances the carriage of which is subject to a specific authorization by the

competent authority according to the special provisions referred to in Column (6) of Table A of Chapter 3.2 shall be made by the competent authority of the country of origin. This competent authority shall also approve in writing the conditions of carriage of these substances and articles. If the country of origin is not a Contracting Party to ADR, the classification and the conditions of carriage shall be recognized by the competent authority of the first country Contracting Party to ADR reached by the consignment.

2.2.1.1.4 Substances and articles of Class 1 shall have been assigned to a division in accordance with 2.2.1.1.5 and to a compatibility group in accordance with 2.2.1.1.6. The division shall be based on the results of the tests described in 2.3.0 and 2.3.1 applying the definitions in 2.2.1.1.5. The compatibility group shall be determined in accordance with the definitions in 2.2.1.1.6. The classification code shall consist of the division number and the compatibility group letter.

2.2.1.1.5 *Definition of divisions*

- | | |
|--------------|---|
| Division 1.1 | Substances and articles which have a mass explosion hazard (a mass explosion is an explosion which affects almost the entire load virtually instantaneously). |
| Division 1.2 | Substances and articles which have a projection hazard but not a mass explosion hazard. |
| Division 1.3 | Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard: <ul style="list-style-type: none"> (a) combustion of which gives rise to considerable radiant heat; or (b) which burn one after another, producing minor blast or projection effects or both. |
| Division 1.4 | Substances and articles which present only a slight hazard of explosion in the event of ignition or initiation during carriage. The effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire shall not cause virtually instantaneous explosion of almost the entire contents of the package. |
| Division 1.5 | Very insensitive substances having a mass explosion hazard which are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of carriage. As a minimum requirement they must not explode in the external fire test. |
| Division 1.6 | Extremely insensitive articles which do not have a mass explosion hazard. The articles predominantly contain extremely insensitive substances and demonstrate a negligible probability of accidental initiation or propagation. |

***NOTE:** The hazard from articles of Division 1.6 is limited to the explosion of a single article.*

2.2.1.1.6 *Definition of compatibility groups of substances and articles*

- | | |
|---|--|
| A | Primary explosive substance. |
| B | Article containing a primary explosive substance and not having two or more effective protective features. Some articles, such as detonators for blasting, detonator assemblies for blasting and primers, cap-type, are included, even though they do not contain primary explosives. |
| C | Propellant explosive substance or other deflagrating explosive substance or article containing such explosive substance. |
| D | Secondary detonating explosive substance or black powder or article containing a secondary detonating explosive substance, in each case without means of initiation and without a propelling charge, or article containing a primary explosive substance and having two or more effective protective features. |
| E | Article containing a secondary detonating explosive substance, without means of initiation, with a propelling charge (other than one containing a flammable liquid or gel or hypergolic liquids). |

- F Article containing a secondary detonating explosive substance with its own means of initiation, with a propelling charge (other than one containing a flammable liquid or gel or hypergolic liquids) or without a propelling charge.
- G Pyrotechnic substance, or article containing a pyrotechnic substance, or article containing both an explosive substance and an illuminating, incendiary, tear- or smoke-producing substance (other than a water-activated article or one which contains white phosphorus, phosphides, a pyrophoric substance, a flammable liquid or gel or hypergolic liquids).
- H Article containing both an explosive substance and white phosphorus.
- J Article containing both an explosive substance and a flammable liquid or gel.
- K Article containing both an explosive substance and a toxic chemical agent.
- L Explosive substance or article containing an explosive substance and presenting a special hazard (e.g. due to water activation or the presence of hypergolic liquids, phosphides or a pyrophoric substance) necessitating isolation of each type.
- N Articles predominantly containing extremely insensitive substances.
- S Substance or article so packed or designed that any hazardous effects arising from accidental functioning are confined within the package unless the package has been degraded by fire, in which case all blast or projection effects are limited to the extent that they do not significantly hinder or prevent fire-fighting or other emergency response efforts in the immediate vicinity of the package.

NOTE 1: Each substance or article, packed in a specified packaging, may be assigned to one compatibility group only. Since the criterion of compatibility group S is empirical, assignment to this group is necessarily linked to the tests for assignment of a classification code.

NOTE 2: Articles of compatibility groups D and E may be fitted or packed together with their own means of initiation provided that such means have at least two effective protective features designed to prevent an explosion in the event of accidental functioning of the means of initiation. Such articles and packages shall be assigned to compatibility groups D or E.

NOTE 3: Articles of compatibility groups D and E may be packed together with their own means of initiation, which do not have two effective protective features (i.e. means of initiation assigned to compatibility group B), provided that they comply with mixed packing provision MP21 of Section 4.1.10. Such packages shall be assigned to compatibility groups D or E.

NOTE 4: Articles may be fitted or packed together with their own means of ignition provided that the means of ignition cannot function during normal conditions of carriage.

NOTE 5: Articles of compatibility groups C, D and E may be packed together. Such packages shall be assigned to compatibility group E.

2.2.1.1.7 *Assignment of fireworks to divisions*

2.2.1.1.7.1 Fireworks shall normally be assigned to divisions 1.1, 1.2, 1.3, and 1.4 on the basis of test data derived from Test Series 6 of the Manual of Tests and Criteria.

However:

- (a) waterfalls containing flash composition (see Note 2 of 2.2.1.1.7.5) shall be classified as 1.1G regardless of the results of Test Series 6;
- (b) since the range of such articles is very extensive and the availability of test facilities may be limited, assignment to divisions may also be made in accordance with the procedure in 2.2.1.1.7.2.

2.2.1.1.7.2 Assignment of fireworks to UN Nos. 0333, 0334, 0335 or 0336, and assignment of articles to UN No. 0431 for those used for theatrical effects meeting the definition for article type and the 1.4G specification in the default fireworks classification table in 2.2.1.1.7.5, may be made on the basis of analogy, without the need for Test Series 6 testing, in accordance with the default fireworks

classification table in 2.2.1.1.7.5. Such assignment shall be made with the agreement of the competent authority. Items not specified in the table shall be classified on the basis of test data derived from Test Series 6.

NOTE 1: *The addition of other types of fireworks to column 1 of the table in 2.2.1.1.7.5 shall only be made on the basis of full test data submitted to the UN Sub-Committee of Experts on the Transport of Dangerous Goods for consideration.*

NOTE 2: *Test data derived by competent authorities which validates, or contradicts the assignment of fireworks specified in column 4 of the table in 2.2.1.1.7.5 to divisions in column 5 should be submitted to the UN Sub-Committee of Experts on the Transport of Dangerous Goods for information.*

2.2.1.1.7.3 Where fireworks of more than one division are packed in the same package, they shall be classified on the basis of the most dangerous division unless test data derived from Test Series 6 indicate otherwise.

2.2.1.1.7.4 The classification shown in the table in 2.2.1.1.7.5 applies only for articles packed in fibreboard boxes (4G).

2.2.1.1.7.5 Default fireworks classification table¹

NOTE 1: *References to percentages in the table, unless otherwise stated, are to the mass of all pyrotechnic substances (e.g. rocket motors, lifting charge, bursting charge and effect charge).*

NOTE 2: *"Flash composition" in this table refers to pyrotechnic substances in powder form or as pyrotechnic units as presented in the fireworks that are used in waterfalls, or to produce an aural effect or used as a bursting charge, or propellant charge unless:*

- (a) *The time taken for the pressure rise in the HSL Flash Composition Test in Appendix 7 of the Manual of Tests and Criteria is demonstrated to be more than 6 ms for 0.5 g of pyrotechnic substance; or*
- (b) *The pyrotechnic substance gives a negative "-" result in the US Flash Composition Test in Appendix 7 of the Manual of Tests and Criteria.*

NOTE 3: *Dimensions in mm refer to:*

- ~~(a)~~ *for spherical and peanut shells the diameter of the sphere of the shell;*
- ~~(b)~~ *for cylinder shells the length of the shell;*
- ~~(c)~~ *for a shell in mortar, Roman candle, shot tube firework or mine the inside diameter of the tube comprising or containing the firework;*
- ~~(d)~~ *for a bag mine or cylinder mine, the inside diameter of the mortar intended to contain the mine.*

¹ This table contains a list of firework classifications which may be used in the absence of Test Series 6 data (see 2.2.1.1.7.2).

Type	Includes: / Synonym:	Definition	Specification	Classification
Shell, spherical or cylindrical	Spherical display shell: aerial shell, colour shell, dye shell, multi-break shell, multi-effect shell, nautical shell, parachute shell, smoke shell, star shell; report shell: maroon, salute, sound shell, thunderclap, aerial shell kit	Device with or without propellant charge, with delay fuse and bursting charge, pyrotechnic unit(s) or loose pyrotechnic substance and designed to be projected from a mortar	All report shells	1.1G
			Colour shell: ≥ 180 mm	1.1G
			Colour shell: < 180 mm with > 25 % flash composition, as loose powder and/or report effects	1.1G
			Colour shell: < 180 mm with ≤ 25 % flash composition, as loose powder and/or report effects	1.3G
			Colour shell: ≤ 50 mm, or ≤ 60 g pyrotechnic substance, with ≤ 2 % flash composition as loose powder and/or report effects	1.4G
	Peanut shell	Device with two or more spherical aerial shells in a common wrapper propelled by the same propellant charge with separate external delay fuses	The most hazardous spherical aerial shell determines the classification	
Preloaded mortar, shell in mortar		Assembly comprising a spherical or cylindrical shell inside a mortar from which the shell is designed to be projected	All report shells	1.1G
			Colour shell: ≥ 180 mm	1.1G
			Colour shell: > 25 % flash composition as loose powder and/or report effects	1.1G
			Colour shell: > 50 mm and < 180 mm	1.2G
			Colour shell: ≤ 50 mm, or ≤ 60 g pyrotechnic substance, with ≤ 25 % flash composition as loose powder and/or report effects	1.3G

Type	Includes: / Synonym:	Definition	Specification	Classification
Shell, spherical or cylindrical <i>(cont'd)</i>	Shell of shells (spherical) <i>(Reference to percentages for shell of shells are to the gross mass of the fireworks article)</i>	Device without propellant charge, with delay fuse and bursting charge, containing report shells and inert materials and designed to be projected from a mortar	> 120 mm	1.1G
		Device without propellant charge, with delay fuse and bursting charge, containing report shells ≤ 25g flash composition per report unit, with ≤ 33 % flash composition and ≥ 60 % inert materials and designed to be projected from a mortar	≤ 120 mm	1.3G
		Device without propellant charge, with delay fuse and bursting charge, containing colour shells and/or pyrotechnic units and designed to be projected from a mortar	> 300 mm	1.1G
		Device without propellant charge, with delay fuse and bursting charge, containing colour shells ≤ 70mm and/or pyrotechnic units, with ≤ 25 % flash composition and ≤ 60 % pyrotechnic substance and designed to be projected from a mortar	> 200 mm and ≤ 300 mm	1.3G
		Device with propellant charge, with delay fuse and bursting charge, containing colour shells ≤ 70 mm and/or pyrotechnic units, with ≤ 25 % flash composition and ≤ 60 % pyrotechnic substance and designed to be projected from a mortar	≤ 200 mm	1.3G
Battery/ combination	Barrage, bombardos, cakes, finale box, flowerbed, hybrid, multiple tubes, shell cakes, banger batteries, flash banger batteries	Assembly including several elements either containing the same type or several types each corresponding to one of the types of fireworks listed in this table, with one or two points of ignition	The most hazardous firework type determines the classification	

Type	Includes: / Synonym:	Definition	Specification	Classification
Roman candle	Exhibition candle, candle, bombettes	Tube containing a series of pyrotechnic units consisting of alternate pyrotechnic substance, propellant charge, and transmitting fuse	≥ 50 mm inner diameter, containing flash composition, or < 50 mm with > 25 % flash composition	1.1G
			≥ 50 mm inner diameter, containing no flash composition	1.2G
			< 50 mm inner diameter and ≤ 25 % flash composition	1.3G
			≤ 30 mm inner diameter, each pyrotechnic unit ≤ 25 g and ≤ 5 % flash composition	1.4G
Shot tube	Single shot Roman candle, small preloaded mortar	Tube containing a pyrotechnic unit consisting of pyrotechnic substance, propellant charge with or without transmitting fuse	≤ 30 mm inner diameter and pyrotechnic unit > 25 g, or > 5 % and ≤ 25 % flash composition	1.3G
			≤ 30 mm inner diameter, pyrotechnic unit ≤ 25 g and ≤ 5 % flash composition	1.4G
Rocket	Avalanche rocket, signal rocket, whistling rocket, bottle rocket, sky rocket, missile type rocket, table rocket	Tube containing pyrotechnic substance and/or pyrotechnic units, equipped with stick(s) or other means for stabilization of flight, and designed to be propelled into the air	Flash composition effects only	1.1G
			Flash composition > 25 % of the pyrotechnic substance	1.1G
			> 20 g pyrotechnic substance and flash composition ≤ 25 %	1.3G
			≤ 20 g pyrotechnic substance, black powder bursting charge and ≤ 0.13 g flash composition per report and ≤ 1 g in total	1.4G

Type	Includes: / Synonym:	Definition	Specification	Classification
Mine	Pot-a-feu, ground mine, bag mine, cylinder mine	<p>Tube containing propellant charge and pyrotechnic units and designed to be placed on the ground or to be fixed in the ground. The principal effect is ejection of all the pyrotechnic units in a single burst producing a widely dispersed visual and/or aural effect in the air or:</p> <p>Cloth or paper bag or cloth or paper cylinder containing propellant charge and pyrotechnic units, designed to be placed in a mortar and to function as a mine</p>	> 25 % flash composition, as loose powder and/ or report effects	1.1G
			≥ 180 mm and ≤ 25 % flash composition, as loose powder and/ or report effects	1.1G
			< 180 mm and ≤ 25 % flash composition, as loose powder and/ or report effects	1.3G
			≤ 150 g pyrotechnic substance, containing ≤ 5 % flash composition as loose powder and/ or report effects. Each pyrotechnic unit ≤ 25 g, each report effect < 2g; each whistle, if any, ≤ 3 g	1.4G
Fountain	Volcanos, gerbs, lances, Bengal fire, flitter sparkle, cylindrical fountains, cone fountains, illuminating torch	<p>Non-metallic case containing pressed or consolidated pyrotechnic substance producing sparks and flame</p> <p><i>NOTE: Fountains intended to produce a vertical cascade or curtain of sparks are considered to be waterfalls (see row below).</i></p>	≥ 1 kg pyrotechnic substance	1.3G
			< 1 kg pyrotechnic substance	1.4G
Waterfall	Cascades, showers	Pyrotechnic fountain intended to produce a vertical cascade or curtain of sparks	Containing flash composition regardless of the results of Test Series 6 (see 2.2.1.1.7.1 (a))	1.1G
			Not containing flash composition	1.3G
Sparkler	Handheld sparklers, non-handheld sparklers, wire sparklers	Rigid wire partially coated (along one end) with slow burning pyrotechnic substance with or without an ignition tip	Perchlorate based sparklers: > 5 g per item or > 10 items per pack	1.3G
			Perchlorate based sparklers: ≤ 5 g per item and ≤ 10 items per pack; Nitrate based sparklers: ≤ 30 g per item	1.4G

Type	Includes: / Synonym:	Definition	Specification	Classification
Bengal stick	Dipped stick	Non-metallic stick partially coated (along one end) with slow-burning pyrotechnic substance and designed to be held in the hand	Perchlorate based items: > 5 g per item or > 10 items per pack	1.3 G
			Perchlorate based items: ≤ 5 g per item and ≤ 10 items per pack; nitrate based items: ≤ 30 g per item	1.4G
Low hazard fireworks and novelties	Table bombs, throwdowns, crackling granules, smokes, fog, snakes, glow worm, serpents, snaps, party poppers	Device designed to produce very limited visible and/ or audible effect which contains small amounts of pyrotechnic and/or explosive composition.	Throwdowns and snaps may contain up to 1.6 mg of silver fulminate; snaps and party poppers may contain up to 16 mg of potassium chlorate/red phosphorous mixture; other articles may contain up to 5 g of pyrotechnic substance, but no flash composition	1.4G
Spinner	Aerial spinner, helicopter, chaser, ground spinner	Non-metallic tube or tubes containing gas- or spark-producing pyrotechnic substance, with or without noise producing composition, with or without aerofoils attached	Pyrotechnic substance per item > 20 g, containing ≤ 3 % flash composition as report effects, or whistle composition ≤ 5 g	1.3G
			Pyrotechnic substance per item ≤ 20 g, containing ≤ 3 % flash composition as report effects, or whistle composition ≤ 5 g	1.4G
Wheels	Catherine wheels, Saxon	Assembly including drivers containing pyrotechnic substance and provided with a means of attaching it to a support so that it can rotate	≥ 1 kg total pyrotechnic substance, no report effect, each whistle (if any) ≤ 25 g and ≤ 50 g whistle composition per wheel	1.3G
			< 1 kg total pyrotechnic substance, no report effect, each whistle (if any) ≤ 5 g and ≤ 10 g whistle composition per wheel	1.4G

Type	Includes: / Synonym:	Definition	Specification	Classification
Aerial wheel	Flying Saxon, UFO's, rising crown	Tubes containing propellant charges and sparks-flame- and/or noise producing pyrotechnic substances, the tubes being fixed to a supporting ring	> 200 g total pyrotechnic substance or > 60 g pyrotechnic substance per driver, ≤ 3 % flash composition as report effects, each whistle (if any) ≤ 25 g and ≤ 50 g whistle composition per wheel	1.3G
			≤ 200 g total pyrotechnic substance and ≤ 60 g pyrotechnic substance per driver, ≤ 3 % flash composition as report effects, each whistle (if any) ≤ 5 g and ≤ 10 g whistle composition per wheel	1.4G
Selection pack	Display selection box, display selection pack, garden selection box, indoor selection box; assortment	A pack of more than one type each corresponding to one of the types of fireworks listed in this table	The most hazardous firework type determines the classification	
Firecracker	Celebration cracker, celebration roll, string cracker	Assembly of tubes (paper or cardboard) linked by a pyrotechnic fuse, each tube intended to produce an aural effect	Each tube ≤ 140 mg of flash composition or ≤ 1 g black powder	1.4G
Banger	Salute, flash banger, lady cracker	Non-metallic tube containing report composition intended to produce an aural effect	> 2 g flash composition per item	1.1G
			≤ 2 g flash composition per item and ≤ 10 g per inner packaging	1.3G
			≤ 1 g flash composition per item and ≤ 10 g per inner packaging or ≤ 10 g black powder per item	1.4G

2.2.1.1.8 *Exclusion from Class 1*

2.2.1.1.8.1 An article or a substance may be excluded from Class 1 by virtue of test results and the Class 1 definition with the approval of the competent authority of any ADR Contracting Party who may also recognize an approval granted by the competent authority of a country which is not an ADR Contracting Party provided that this approval has been granted in accordance with the procedures applicable according to RID, ADR, ADN, the IMDG Code or the ICAO Technical Instructions.

2.2.1.1.8.2 With the approval of the competent authority in accordance with 2.2.1.1.8.1, an article may be excluded from Class 1 when three unpackaged articles, each individually activated by its own means of initiation or ignition or external means to function in the designed mode, meet the following test criteria:

- (a) No external surface shall have a temperature of more than 65 °C. A momentary spike in temperature up to 200 °C is acceptable;
- (b) No rupture or fragmentation of the external casing or movement of the article or detached parts thereof of more than one metre in any direction;

NOTE: Where the integrity of the article may be affected in the event of an external fire these criteria shall be examined by a fire test. One such method is described in ISO 14451-2 using a heating rate of 80 K/min.

- (c) No audible report exceeding 135 dB(C) peak at a distance of one metre;
- (d) No flash or flame capable of igniting a material such as a sheet of 80 ± 10 g/m² paper in contact with the article; and
- (e) No production of smoke, fumes or dust in such quantities that the visibility in a one cubic metre chamber equipped with appropriately sized blow out panels is reduced more than 50 % as measured by a calibrated light (lux) meter or radiometer located one metre from a constant light source located at the midpoint on opposite walls. The general guidance on Optical Density Testing in ISO 5659-1 and the general guidance on the Photometric System described in Section 7.5 in ISO 5659-2 may be used or similar optical density measurement methods designed to accomplish the same purpose may also be employed. A suitable hood cover surrounding the back and sides of the light meter shall be used to minimize effects of scattered or leaking light not emitted directly from the source.

NOTE 1: If during the tests addressing criteria (a), (b), (c) and (d) no or very little smoke is observed the test described in (e) may be waived.

NOTE 2: The competent authority referred to in 2.2.1.1.8.1 may require testing in packaged form if it is determined that, as packaged for carriage, the article may pose a greater hazard.

2.2.1.1.9 *Classification documentation*

2.2.1.1.9.1 A competent authority assigning an article or substance to Class 1 shall confirm that classification with the applicant in writing.

2.2.1.1.9.2 A competent authority classification document may be in any form and may consist of more than one page, provided pages are numbered consecutively. The document shall have a unique reference.

2.2.1.1.9.3 The information provided shall be easy to identify, legible and durable.

2.2.1.1.9.4 Examples of the information that may be provided in the classification documents are as follows:

- (a) The name of the competent authority and the provisions in national legislation under which it is granted its authority;
- (b) The modal or national regulations for which the classification document is applicable;
- (c) Confirmation that the classification has been approved, made or agreed in accordance with the UN Model Regulations or the relevant modal regulations;

- (d) The name and address of the person in law to which the classification has been assigned and any company registration which uniquely identifies a company or other body corporate under national legislation;
- (e) The name under which the explosives will be placed onto the market or otherwise supplied for carriage;
- (f) The proper shipping name, UN number, class, division and corresponding compatibility group of the explosives;
- (g) Where appropriate, the maximum net explosive mass of the package or article;
- (h) The name, signature, stamp, seal or other identification of the person authorised by the competent authority to issue the classification document is clearly visible;
- (i) Where safety in carriage or the division is assessed as being dependent upon the packaging, the packaging mark or a description of the permitted:
 - Inner packagings
 - Intermediate packagings
 - Outer packagings
- (j) The classification document states the part number, stock number or other identifying reference under which the explosives will be placed onto the market or otherwise supplied for carriage;
- (k) The name and address of the person in law who manufactured the explosives and any company registration which uniquely identifies a company or other body corporate under national legislation;
- (l) Any additional information regarding the applicable packing instruction and special packing provisions where appropriate;
- (m) The basis for assigning the classification, i.e. whether on the basis of test results, default for fireworks, analogy with classified explosive, by definition from Table A of Chapter 3.2 etc.;
- (n) Any special conditions or limitations that the competent authority has identified as relevant to the safety for carriage of the explosives, the communication of the hazard and international carriage;
- (o) The expiry date of the classification document is given where the competent authority considers one to be appropriate.

2.2.1.2 Substances and articles not accepted for carriage

2.2.1.2.1 Explosive substances which are unduly sensitive according to the criteria of the Manual of Tests and Criteria, Part I, or are liable to spontaneous reaction, as well as explosive substances and articles which cannot be assigned to a name or n.o.s. entry listed in Table A of Chapter 3.2, shall not be accepted for carriage.

2.2.1.2.2 Articles of compatibility group K shall not be accepted for carriage (1.2K, UN No. 0020 and 1.3K, UN No. 0021).

2.2.1.3 *List of collective entries*

Classification code (see 2.2.1.1.4)	UN No.	Name of the substance or article
1.1A	0473	SUBSTANCES, EXPLOSIVE, N.O.S.
1.1B	0461	COMPONENTS, EXPLOSIVE TRAIN, N.O.S.
1.1C	0474 0497 0498 0462	SUBSTANCES, EXPLOSIVE, N.O.S. PROPELLANT, LIQUID PROPELLANT, SOLID ARTICLES, EXPLOSIVE, N.O.S.
1.1D	0475 0463	SUBSTANCES, EXPLOSIVE, N.O.S. ARTICLES, EXPLOSIVE, N.O.S.
1.1E	0464	ARTICLES, EXPLOSIVE, N.O.S.
1.1F	0465	ARTICLES, EXPLOSIVE, N.O.S.
1.1G	0476	SUBSTANCES, EXPLOSIVE, N.O.S.
1.1L	0357 0354	SUBSTANCES, EXPLOSIVE, N.O.S. ARTICLES, EXPLOSIVE, N.O.S.
1.2B	0382	COMPONENTS, EXPLOSIVE TRAIN, N.O.S.
1.2C	0466	ARTICLES, EXPLOSIVE, N.O.S.
1.2D	0467	ARTICLES, EXPLOSIVE, N.O.S.
1.2E	0468	ARTICLES, EXPLOSIVE, N.O.S.
1.2F	0469	ARTICLES, EXPLOSIVE, N.O.S.
1.2L	0358 0248 0355	SUBSTANCES, EXPLOSIVE, N.O.S. CONTRIVANCES, WATER-ACTIVATED with burster, expelling charge or propelling charge ARTICLES, EXPLOSIVE, N.O.S.
1.3C	0132 0477 0495 0499 0470	DEFLAGRATING METAL SALTS OF AROMATIC NITRO-DERIVATIVES, N.O.S. SUBSTANCES, EXPLOSIVE, N.O.S. PROPELLANT, LIQUID PROPELLANT, SOLID ARTICLES, EXPLOSIVE, N.O.S.
1.3G	0478	SUBSTANCES, EXPLOSIVE, N.O.S.
1.3L	0359 0249 0356	SUBSTANCES, EXPLOSIVE, N.O.S. CONTRIVANCES, WATER-ACTIVATED with burster, expelling charge or propelling charge ARTICLES, EXPLOSIVE, N.O.S.
1.4B	0350 0383	ARTICLES, EXPLOSIVE, N.O.S. COMPONENTS, EXPLOSIVE TRAIN, N.O.S.
1.4C	0479 0501 0351	SUBSTANCES, EXPLOSIVE, N.O.S. PROPELLANT, SOLID ARTICLES, EXPLOSIVE, N.O.S.
1.4D	0480 0352	SUBSTANCES, EXPLOSIVE, N.O.S. ARTICLES, EXPLOSIVE, N.O.S.
1.4E	0471	ARTICLES, EXPLOSIVE, N.O.S.
1.4F	0472	ARTICLES, EXPLOSIVE, N.O.S.
1.4G	0485 0353	SUBSTANCES, EXPLOSIVE, N.O.S. ARTICLES, EXPLOSIVE, N.O.S.
1.4S	0481 0349 0384	SUBSTANCES, EXPLOSIVE, N.O.S. ARTICLES, EXPLOSIVE, N.O.S. COMPONENTS, EXPLOSIVE TRAIN, N.O.S.
1.5D	0482	SUBSTANCES, EXPLOSIVE, VERY INSENSITIVE (SUBSTANCES, EVI) N.O.S.
1.6N	0486	ARTICLES, EXPLOSIVE, EXTREMELY INSENSITIVE (ARTICLES, EEI)
	0190	SAMPLES, EXPLOSIVE other than initiating explosive <i>NOTE: Division and Compatibility Group shall be defined as directed by the competent authority and according to the principles in 2.2.1.1.4.</i>

2.2.1.4

Glossary of names

NOTE 1: *The descriptions in the glossary are not intended to replace the test procedures, nor to determine the hazard classification of a substance or article of Class 1. Assignment to the correct division and a decision on whether Compatibility Group S is appropriate shall be based on testing of the product in accordance with the Manual of Tests and Criteria, Part I or by analogy with similar products which have already been tested and assigned in accordance with the procedures of the Manual of Tests and Criteria.*

NOTE 2: *The figures given after the names refer to the relevant UN numbers (Column 1 of Table A of Chapter 3.2). For the classification code, see 2.2.1.1.4.*

AMMUNITION, ILLUMINATING, with or without burster, expelling charge or propelling charge:
UN Nos. 0171, 0254, 0297

Ammunition designed to produce a single source of intense light for lighting up an area. The term includes illuminating cartridges, grenades and projectiles; and illuminating and target identification bombs.

NOTE: *The following articles: CARTRIDGES, SIGNAL; SIGNAL DEVICES HAND; SIGNALS, DISTRESS; FLARES, AERIAL; FLARES, SURFACE are not included in this definition. They are listed separately.*

AMMUNITION, INCENDIARY, liquid or gel, with burster, expelling charge or propelling charge:
UN No. 0247

Ammunition containing liquid or gelatinous incendiary substance. Except when the incendiary substance is an explosive *per se*, it also contains one or more of the following: a propelling charge with primer and igniter charge; a fuze with burster or expelling charge.

AMMUNITION, INCENDIARY, WHITE PHOSPHORUS with burster, expelling charge or propelling charge:
UN Nos. 0243, 0244

Ammunition containing white phosphorus as incendiary substance. It also contains one or more of the following: a propelling charge with primer and igniter charge; a fuze with burster or expelling charge.

AMMUNITION, INCENDIARY with or without burster, expelling charge or propelling charge:
UN Nos. 0009, 0010, 0300

Ammunition containing incendiary composition. Except when the composition is an explosive *per se*, it also contains one or more of the following: a propelling charge with primer and igniter charge; a fuze with burster or expelling charge.

AMMUNITION, PRACTICE: UN Nos. 0362, 0488

Ammunition without a main bursting charge, containing a burster or expelling charge. Normally it also contains a fuze and a propelling charge.

NOTE: *GRENADDES, PRACTICE are not included in this definition. They are listed separately.*

AMMUNITION, PROOF: UN No. 0363

Ammunition containing pyrotechnic substances, used to test the performance or strength of new ammunition, weapon components or assemblies.

AMMUNITION, SMOKE, WHITE PHOSPHORUS, with burster, expelling charge or propelling charge:
UN Nos. 0245, 0246

Ammunition containing white phosphorus as a smoke-producing substance. It also contains one or more of the following: a propelling charge with primer and igniter charge; a fuze with burster or expelling charge. The term includes grenades, smoke.

AMMUNITION, SMOKE with or without burster, expelling charge or propelling charge: UN Nos. 0015, 0016, 0303

Ammunition containing a smoke-producing substance such as chlorosulphonic acid mixture or titanium tetrachloride; or a smoke-producing pyrotechnic composition based on hexachloroethane or red phosphorus. Except when the substance is an explosive per se, the ammunition also contains one or more of the following: a propelling charge with primer and igniter charge; a fuze with burster or expelling charge. The term includes grenades, smoke.

NOTE: *SIGNALS, SMOKE are not included in this definition. They are listed separately.*

AMMUNITION, TEAR-PRODUCING, with burster, expelling charge or propelling charge: UN Nos. 0018, 0019, 0301

Ammunition containing a tear-producing substance. It also contains one or more of the following: a pyrotechnic substance; a propelling charge with primer and igniter charge; a fuze with burster or expelling charge.

ARTICLES, EXPLOSIVE, EXTREMELY INSENSITIVE (ARTICLES EEI): UN No. 0486

Articles that predominantly contain extremely insensitive substances which demonstrate a negligible probability of accidental initiation or propagation under normal conditions of transport, and which have passed Test Series 7.

ARTICLES, PYROPHORIC: UN No. 0380

Articles which contain a pyrophoric substance (capable of spontaneous ignition when exposed to air) and an explosive substance or component. The term excludes articles containing white phosphorus.

ARTICLES, PYROTECHNIC, for technical purposes: UN Nos. 0428, 0429, 0430, 0431, 0432

Articles which contain pyrotechnic substances and are used for technical purposes such as heat generation, gas generation, theatrical effects, etc.

NOTE: *The following articles: all ammunition; CARTRIDGES, SIGNAL; CUTTERS, CABLE, EXPLOSIVE; FIREWORKS; FLARES, AERIAL; FLARES, SURFACE; RELEASE DEVICES, EXPLOSIVE; RIVETS, EXPLOSIVE; SIGNAL DEVICES, HAND; SIGNALS, DISTRESS; SIGNALS, RAILWAY TRACK, EXPLOSIVES; SIGNALS, SMOKE are not included in this definition. They are listed separately.*

BLACK POWDER (GUNPOWDER), COMPRESSED or BLACK POWDER (GUNPOWDER), IN PELLETS: UN No. 0028

Substance consisting of a pelletized form of black powder.

BLACK POWDER (GUNPOWDER), granular or as meal: UN No. 0027

Substance consisting of an intimate mixture of charcoal or other carbon and either potassium nitrate or sodium nitrate, with or without sulphur.

BOMBS, WITH FLAMMABLE LIQUID, with bursting charge: UN Nos. 0399, 0400

Articles which are dropped from aircraft, consisting of a tank filled with inflammable liquid and bursting charge.

BOMBS, PHOTO-FLASH: UN No. 0038

Explosive articles which are dropped from aircraft to provide brief, intense illumination for photography. They contain a charge of detonating explosive without means of initiation or with means of initiation containing two or more effective protective features.

BOMBS, PHOTO-FLASH: UN No. 0037

Explosive articles which are dropped from aircraft to provide brief, intense illumination for photography. They contain a charge of detonating explosive with means of initiation not containing two or more effective protective features.

BOMBS, PHOTO-FLASH: UN Nos. 0039, 0299

Explosive articles which are dropped from aircraft to provide brief, intense illumination for photography. They contain a photo-flash composition.

BOMBS with bursting charge: UN Nos. 0034; 0035

Explosive articles which are dropped from aircraft, without means of initiation or with means of initiation containing two or more effective protective features.

BOMBS with bursting charge: UN Nos. 0033, 0291

Explosive articles which are dropped from aircraft, with means of initiation not containing two or more effective protective features.

BOOSTERS WITH DETONATOR: UN Nos. 0225, 0268

Articles consisting of a charge of detonating explosive with means of initiation. They are used to increase the initiating power of detonators or detonating cord.

BOOSTERS without detonator: UN Nos. 0042, 0283

Articles consisting of a charge of detonating explosive without means of initiation. They are used to increase the initiating power of detonators or detonating cord.

BURSTERS, explosive: UN No. 0043

Articles consisting of a small charge of explosive used to open projectiles or other ammunition in order to disperse their contents.

CARTRIDGES, FLASH: UN Nos. 0049, 0050

Articles consisting of a casing, a primer and flash powder, all assembled in one piece ready for firing.

CARTRIDGES FOR TOOLS, BLANK: UN No. 0014

Article, used in tools, consisting of a closed cartridge case with a centre or rim fire primer with or without a charge of smokeless or black powder but with no projectile.

CARTRIDGES FOR WEAPONS, BLANK: UN Nos. 0326, 0413, 0327, 0338, 0014

Ammunition consisting of a closed cartridge case with a centre or rim fire primer and a charge of smokeless or black powder but no projectile. It produces a loud noise and is used for training, saluting, propelling charge, starter pistols, etc. The term includes ammunition, blank.

CARTRIDGES FOR WEAPONS, INERT PROJECTILE: UN Nos. 0328, 0417, 0339, 0012

Ammunition consisting of a projectile without bursting charge but with a propelling charge with or without a primer. The articles may include a tracer, provided that the predominant hazard is that of the propelling charge.

CARTRIDGES FOR WEAPONS with bursting charge: UN Nos. 0006, 0321, 0412

Ammunition consisting of a projectile with a bursting charge without means of initiation or with means of initiation containing two or more effective protective features; and a propelling charge with or without a primer. The term includes fixed (assembled) ammunition, semi-fixed (partially assembled) ammunition and separate loading ammunition when the components are packed together.

CARTRIDGES FOR WEAPONS with bursting charge: UN Nos. 0005, 0007, 0348

Ammunition consisting of a projectile with a bursting charge with means of initiation not containing two or more effective protective features; and a propelling charge with or without a primer. The term includes fixed (assembled) ammunition, semi-fixed (partially assembled) ammunition and separate loading ammunition when the components are packed together.

CARTRIDGES, OIL WELL: UN Nos. 0277, 0278

Articles consisting of a thin casing of fibreboard, metal or other material containing only propellant powder which projects a hardened projectile to perforate an oil well casing.

NOTE: *CHARGES, SHAPED are not included in this definition. They are listed separately.*

CARTRIDGES, POWER DEVICE: UN Nos. 0275, 0276, 0323, 0381

Articles designed to accomplish mechanical actions. They consist of a casing with a charge of deflagrating explosive and a means of ignition. The gaseous products of the deflagration produce inflation, linear or rotary motion or activate diaphragms, valves or switches or project fastening devices or extinguishing agents.

CARTRIDGES, SIGNAL: UN Nos. 0054, 0312, 0405

Articles designed to fire coloured flares or other signals from signal pistols, etc.

CARTRIDGES, SMALL ARMS: UN Nos. 0417, 0339, 0012

Ammunition consisting of a cartridge case fitted with a centre or rim fire primer and containing both a propelling charge and solid projectile. They are designed to be fired in weapons of calibre not larger than 19.1 mm. Shot-gun cartridges of any calibre are included in this description.

NOTE: *CARTRIDGES, SMALL ARMS, BLANK, are not included in this definition. They are listed separately. Some military small arms cartridges are not included in this definition. They are listed under CARTRIDGES FOR WEAPONS, INERT PROJECTILE.*

CARTRIDGES, SMALL ARMS, BLANK: UN Nos. 0014, 0327, 0338

Ammunition consisting of a closed cartridge case with a centre or rim fire primer and a charge of smokeless or black powder. The cartridge cases contain no projectiles. The cartridges are designed to be fired from weapons with a calibre of at most 19.1 mm and serve to produce a loud noise and are used for training, saluting, propelling charge, starter pistols, etc.

CASES, CARTRIDGE, EMPTY, WITH PRIMER: UN Nos. 0379; 0055

Articles consisting of a cartridge case made from metal, plastics or other non-inflammable material, in which the only explosive component is the primer.

CASES, COMBUSTIBLE, EMPTY, WITHOUT PRIMER: UN Nos. 0447, 0446

Articles consisting of a cartridge case made partly or entirely from nitrocellulose.

CHARGES, BURSTING, PLASTICS BONDED: UN Nos. 0457, 0458, 0459, 0460

Articles consisting of a charge of detonating explosive, plastics bonded, manufactured in a specific form without a casing and without means of initiation. They are designed as components of ammunition such as warheads.

CHARGES, DEMOLITION: UN No. 0048

Articles containing a charge of a detonating explosive in a casing of fibreboard, plastics, metal or other material. The articles are without means of initiation or with means of initiation containing two or more effective protective features.

NOTE: *The following articles: BOMBS; MINES; PROJECTILES are not included in this definition. They are listed separately.*

CHARGES, DEPTH: UN No. 0056

Articles consisting of a charge of detonating explosive contained in a drum or projectile without means of initiation or with means of initiation containing two or more effective protective features. They are designed to detonate under water.

CHARGES, EXPLOSIVE, COMMERCIAL without detonator: UN Nos. 0442, 0443, 0444, 0445

Articles consisting of a charge of detonating explosive without means of initiation, used for explosive welding, jointing, forming and other metallurgical processes.

CHARGES, PROPELLING, FOR CANNON: UN Nos. 0242, 0279, 0414

Charges of propellant in any physical form for separate-loading ammunition for cannon.

CHARGES, PROPELLING: UN Nos. 0271, 0272, 0415, 0491

Articles consisting of a charge of a propellant charge in any physical form, with or without a casing, as a component of rocket motors or for reducing the drag of projectiles.

CHARGES, SHAPED, without detonator: UN Nos. 0059, 0439, 0440, 0441

Articles consisting of a casing containing a charge of detonating explosive with a cavity lined with rigid material, without means of initiation. They are designed to produce a powerful, penetrating jet effect.

CHARGES, SHAPED, FLEXIBLE, LINEAR: UN Nos. 0237, 0288

Articles consisting of a V-shaped core of a detonating explosive clad by a flexible sheath.

CHARGES, SUPPLEMENTARY, EXPLOSIVE: UN No. 0060

Articles consisting of a small removable booster placed in the cavity of a projectile between the fuze and the bursting charge.

COMPONENTS, EXPLOSIVE TRAIN, N.O.S.: UN Nos. 0382, 0383, 0384, 0461

Articles containing an explosive designed to transmit detonation or deflagration within an explosive train.

CONTRIVANCES, WATER-ACTIVATED with burster, expelling charge or propelling charge: UN Nos. 0248, 0249

Articles whose functioning depends upon physico-chemical reaction of their contents with water.

CORD, DETONATING, flexible: UN Nos. 0065, 0289

Article consisting of a core of detonating explosive enclosed in spun fabric and a plastics or other covering. The covering is not necessary if the spun fabric is sift-proof.

CORD (FUSE) DETONATING, metal clad: UN Nos. 0102, 0290

Article consisting of a core of detonating explosive clad by a soft metal tube with or without protective covering.

CORD (FUSE) DETONATING, MILD EFFECT, metal clad: UN No. 0104

Article consisting of a core of detonating explosive clad by a soft metal tube with or without a protective covering. The quantity of explosive substance is so small that only a mild effect is manifested outside the cord.

CORD, IGNITER: UN No. 0066

Article consisting of textile yarns covered with black powder or another fast burning pyrotechnic composition and of a flexible protective covering; or it consists of a core of black powder surrounded by a flexible woven fabric. It burns progressively along its length with an external flame and is used to transmit ignition from a device to a charge or primer.

CUTTERS, CABLE, EXPLOSIVE: UN No. 0070

Articles consisting of a knife-edged device which is driven by a small charge of deflagrating explosive into an anvil.

DETONATOR ASSEMBLIES, NON-ELECTRIC for blasting: UN Nos. 0360, 0361, 0500

Non-electric detonators assembled with and activated by such means as safety fuse, shock tube, flash tube or detonating cord. They may be of instantaneous design or incorporate delay elements. Detonating relays incorporating detonating cord are included.

DETONATORS, ELECTRIC for blasting: UN Nos. 0030, 0255, 0456

Articles specially designed for the initiation of blasting explosives. These detonators may be constructed to detonate instantaneously or may contain a delay element. Electric detonators are activated by an electric current.

DETONATORS, ELECTRONIC programmable for blasting: UN Nos. 0511, 0512, 0513

Detonators with enhanced safety and security features, utilizing electronic components to transmit a firing signal with validated commands and secure communications. Detonators of this type cannot be initiated by other means.

DETONATORS FOR AMMUNITION: UN Nos. 0073, 0364, 0365, 0366

Articles consisting of a small metal or plastics tube containing explosives such as lead azide, PETN or combinations of explosives. They are designed to start a detonation train.

DETONATORS, NON-ELECTRIC for blasting: UN Nos. 0029, 0267, 0455

Articles specially designed for the initiation of blasting explosives. These detonators may be constructed to detonate instantaneously or may contain a delay element. Non-electric detonators are activated by such means as shock tube, flash tube, safety fuse, other igniferous device or flexible detonating cord. Detonating relays without detonating cord are included.

EXPLOSIVE, BLASTING, TYPE A: UN No. 0081

Substances consisting of liquid organic nitrates such as nitroglycerine or a mixture of such ingredients with one or more of the following: nitrocellulose; ammonium nitrate or other inorganic nitrates; aromatic nitro-derivatives, or combustible materials, such as wood-meal and aluminium powder. They may contain inert components such as kieselguhr, and additives such as colouring agents and stabilizers. Such explosives shall be in powdery, gelatinous or elastic form. The term includes dynamite; gelatine, blasting and gelatine dynamites.

EXPLOSIVE, BLASTING, TYPE B: UN Nos. 0082, 0331

Substances consisting of

- (a) a mixture of ammonium nitrate or other inorganic nitrates with an explosive such as trinitrotoluene, with or without other substances such as wood-meal and aluminium powder; or
- (b) a mixture of ammonium nitrate or other inorganic nitrates with other combustible substances which are not explosive ingredients. In both cases they may contain inert components such as kieselguhr, and additives such as colouring agents and stabilizers. Such explosives must not contain nitroglycerine, similar liquid organic nitrates or chlorates.

EXPLOSIVE, BLASTING, TYPE C: UN No. 0083

Substances consisting of a mixture of either potassium or sodium chlorate or potassium, sodium or ammonium perchlorate with organic nitro-derivatives or combustible materials such as wood-meal or aluminium powder or a hydrocarbon. They may contain inert components such as kieselguhr and additives such as colouring agents and stabilizers. Such explosives must not contain nitroglycerine or similar liquid organic nitrates.

EXPLOSIVE, BLASTING, TYPE D: UN No. 0084

Substances consisting of a mixture of organic nitrated compounds and combustible materials such as hydrocarbons and aluminium powder. They may contain inert components such as kieselguhr and additives such as colouring agents and stabilizers. Such explosives must not contain nitroglycerine,

similar liquid organic nitrates, chlorates and ammonium nitrate. The term generally includes plastic explosives.

EXPLOSIVES, BLASTING, TYPE E: UN Nos. 0241, 0332

Substances consisting of water as an essential ingredient and high proportions of ammonium nitrate or other oxidizers, some or all of which are in solution. The other constituents may include nitro-derivatives such as trinitrotoluene, hydrocarbons or aluminium powder. They may contain inert components such as kieselguhr and additives such as colouring agents and stabilizers. The term includes explosives, emulsion, explosives, slurry and explosives, watergel.

FIREWORKS: UN Nos. 0333, 0334, 0335, 0336, 0337

Pyrotechnic articles designed for entertainment.

FLARES, AERIAL: UN Nos. 0093, 0403, 0404, 0420, 0421

Articles containing pyrotechnic substances which are designed to be dropped from an aircraft to illuminate, identify, signal or warn.

FLARES, SURFACE: UN Nos. 0092, 0418, 0419

Articles containing pyrotechnic substances which are designed for use on the surface to illuminate, identify, signal or warn.

FLASH POWDER: UN Nos. 0094, 0305

Pyrotechnic substance which, when ignited, produces an intense light.

FRACTURING DEVICES, EXPLOSIVE without detonator, for oil wells: UN No. 0099

Articles consisting of a charge of detonating explosive contained in a casing without means of initiation. They are used to fracture the rock around a drill shaft to assist the flow of crude oil from the rock.

FUSE, IGNITER, tubular, metal clad: UN No. 0103

Article consisting of a metal tube with a core of deflagrating explosive.

FUSE, NON-DETONATING: UN No. 0101

Article consisting of cotton yarns impregnated with fine black powder (quickmatch). It burns with an external flame and is used in ignition trains for fireworks, etc.

FUSE, SAFETY: UN No. 0105

Article consisting of a core of fine grained black powder surrounded by a flexible woven fabric with one or more protective outer coverings. When ignited, it burns at a predetermined rate without any external explosive effect.

FUZES, DETONATING: UN Nos. 0106, 0107, 0257, 0367

Articles with explosive components designed to produce a detonation in ammunition. They incorporate mechanical, electrical, chemical or hydrostatic components to initiate the detonation. They generally incorporate protective features.

FUZES, DETONATING with protective features: UN Nos. 0408, 0409, 0410

Articles with explosive components designed to produce a detonation in ammunition. They incorporate mechanical, electrical, chemical or hydrostatic components to initiate the detonation. The detonating fuze must incorporate two or more effective protective features.

FUZES, IGNITING: UN Nos. 0316, 0317, 0368

Articles with primary explosive components designed to produce a deflagration in ammunition. They incorporate mechanical, electrical, chemical or hydrostatic components to start the deflagration. They generally incorporate protective features.

GRENADES, hand or rifle, with bursting charge: UN Nos. 0284, 0285

Articles which are designed to be thrown by hand or to be projected by a rifle. They are without means of initiation or with means of initiation containing two or more effective protective features.

GRENADES, hand or rifle, with bursting charge: UN Nos. 0292, 0293

Articles which are designed to be thrown by hand or to be projected by a rifle. They are with means of initiation not containing two or more effective protective features.

GRENADES, PRACTICE, hand or rifle: UN Nos. 0110, 0372, 0318, 0452

Articles without a main bursting charge which are designed to be thrown by hand or to be projected by a rifle. They contain the priming device and may contain a spotting charge.

HEXOTONAL: UN No. 0393

Substance consisting of an intimate mixture of cyclotrimethylene-trinitramine (RDX), trinitrotoluene (TNT) and aluminium.

HEXOLITE (HEXOTOL), dry or wetted with less than 15 % water, by mass: UN No. 0118

Substance consisting of an intimate mixture of cyclotrimethylene-trinitramine (RDX) and trinitrotoluene (TNT). The term includes "Composition B".

IGNITERS: UN Nos. 0121, 0314, 0315, 0325, 0454

Articles containing one or more explosive substances designed to produce a deflagration in an explosive train. They may be actuated chemically, electrically or mechanically.

***NOTE:** The following articles: CORD, IGNITER; FUSE, IGNITER; FUSE, NON-DETONATING; FUZES, IGNITING; LIGHTERS, FUSE; PRIMERS, CAP TYPE; PRIMERS, TUBULAR are not included in this definition. They are listed separately.*

JET PERFORATING GUNS, CHARGED, oil well, without detonator: UN Nos. 0124, 0494

Articles consisting of a steel tube or metallic strip, into which are inserted shaped charges connected by detonating cord, without means of initiation.

LIGHTERS, FUSE: UN No. 0131

Articles of various design actuated by friction, percussion or electricity and used to ignite a safety fuse.

MINES with bursting charge: UN Nos. 0137, 0138

Articles consisting normally of metal or composition receptacles filled with a detonating explosive, without means of initiation or with means of initiation containing two or more effective protective features. They are designed to be operated by the passage of ships, vehicles or personnel. The term includes "Bangalore torpedoes".

MINES with bursting charge: UN Nos. 0136, 0294

Articles consisting normally of metal or composition receptacles filled with a detonating explosive, with means of initiation not containing two or more effective protective features. They are designed to be operated by the passage of ships, vehicles or personnel. The term includes "Bangalore torpedoes".

OCTOLITE (OCTOL), dry or wetted with less than 15 % water, by mass: UN No. 0266

Substance consisting of an intimate mixture of cyclotetramethylene-tetranitramine (HMX) and trinitrotoluene (TNT).

OCTONAL: UN No. 0496

Substance consisting of an intimate mixture of cyclotetramethylenetetranitramine (HMX), trinitrotoluene (TNT) and aluminium.

PENTOLITE, dry or wetted with less than 15 % water, by mass: UN No. 0151

Substance consisting of an intimate mixture of pentaerythrite tetranitrate (PETN) and trinitrotoluene (TNT).

POWDER CAKE (POWDER PASTE), WETTED with not less than 17 % alcohol, by mass; POWDER CAKE (POWDER PASTE), WETTED with not less than 25 % water, by mass: UN Nos. 0433, 0159

Substance consisting of nitrocellulose impregnated with not more than 60 % of nitroglycerine or other liquid organic nitrates or a mixture of these.

POWDER, SMOKELESS: UN Nos. 0160, 0161, 0509

Substance based on nitrocellulose used as propellant. The term includes propellants with a single base (nitrocellulose (NC) alone), those with a double base (such as NC and nitroglycerine/(NG)) and those with a triple base (such as NC/NG/nitroguanidine).

NOTE: *Cast, pressed or bag-charges of smokeless powder are listed under CHARGES, PROPELLING or CHARGES, PROPELLING, FOR CANON.*

PRIMERS, CAP TYPE: UN Nos. 0044, 0377, 0378

Articles consisting of a metal or plastics cap containing a small amount of primary explosive mixture that is readily ignited by impact. They serve as igniting elements in small arms cartridges and in percussion primers for propelling charges.

PRIMERS, TUBULAR: UN Nos. 0319, 0320, 0376

Articles consisting of a primer for ignition and an auxiliary charge of deflagrating explosive such as black powder used to ignite the propelling charge in a cartridge case for cannon, etc.

PROJECTILES, inert with tracer: UN Nos. 0345, 0424, 0425

Articles such as a shell or bullet, which are projected from a cannon or other gun, rifle or other small arm.

PROJECTILES with burster or expelling charge: UN Nos. 0346, 0347

Articles such as a shell or bullet, which are projected from a cannon or other gun. They are without means of initiation or with means of initiation containing two or more effective protective features. They are used to scatter dyes for spotting or other inert materials.

PROJECTILES with burster or expelling charge: UN Nos. 0426, 0427

Articles such as a shell or bullet, which are projected from a cannon or other gun. They are with means of initiation not containing two or more effective protective features. They are used to scatter dyes for spotting or other inert materials.

PROJECTILES with burster or expelling charge: UN Nos. 0434, 0435

Articles such as a shell or bullet, which are projected from a cannon or other gun, rifle or other small arm. They are used to scatter dyes for spotting or other inert materials.

PROJECTILES with bursting charge: UN Nos. 0168, 0169, 0344

Articles such as a shell or bullet, which are projected from a cannon or other gun. They are without means of initiation or with means of initiation containing two or more effective protective features.

PROJECTILES with bursting charge: UN Nos. 0167, 0324

Articles such as a shell or bullet, which are projected from a cannon or other gun. They are with means of initiation not containing two or more effective protective features.

PROPELLANT, LIQUID: UN Nos. 0495, 0497

Substance consisting of a deflagrating liquid explosive, used for propulsion.

PROPELLANT, SOLID: UN Nos. 0498, 0499, 0501

Substance consisting of a deflagrating solid explosive, used for propulsion.

RELEASE DEVICES, EXPLOSIVE: UN No. 0173

Articles consisting of a small charge of explosive with means of initiation and rods or links. They sever the rods or links to release equipment quickly.

RIVETS, EXPLOSIVE: UN No. 0174

Articles consisting of a small charge of explosive inside a metallic rivet.

ROCKET MOTORS: UN Nos. 0186, 0280, 0281, 0510

Articles consisting of a charge of explosive, generally a solid propellant, contained in a cylinder fitted with one or more nozzles. They are designed to propel a rocket or a guided missile.

ROCKET MOTORS, LIQUID FUELLED: UN Nos. 0395, 0396

Articles consisting of a liquid fuel within a cylinder fitted with one or more nozzles. They are designed to propel a rocket or a guided missile.

ROCKET MOTORS WITH HYPERGOLIC LIQUIDS with or without expelling charge: UN Nos. 0322, 0250

Articles consisting of a hypergolic fuel contained in a cylinder fitted with one or more nozzles. They are designed to propel a rocket or a guided missile.

ROCKETS, LINE THROWING: UN Nos. 0238, 0240, 0453

Articles consisting of a rocket motor which is designed to extend a line.

ROCKETS, LIQUID FUELLED with bursting charge: UN Nos. 0397, 0398

Articles consisting of a liquid fuel within a cylinder fitted with one or more nozzles and fitted with a warhead. The term includes guided missiles.

ROCKETS with bursting charge: UN Nos. 0181, 0182

Articles consisting of a rocket motor and a warhead without means of initiation or with means of initiation containing two or more effective protective features. The term includes guided missiles.

ROCKETS with bursting charge: UN Nos. 0180, 0295

Articles consisting of a rocket motor and a warhead with means of initiation not containing two or more effective protective features. The term includes guided missiles.

ROCKETS with expelling charge: UN Nos. 0436, 0437, 0438

Articles consisting of a rocket motor and a charge to expel the payload from a rocket head. The term includes guided missiles.

ROCKETS with inert head: UN Nos. 0183, 0502

Articles consisting of a rocket motor and an inert head. The term includes guided missiles.

SAFETY DEVICES, PYROTECHNIC: UN No. 0503

Articles which contain pyrotechnic substances or dangerous goods of other classes and are used in vehicles, vessels or aircraft to enhance safety to persons. Examples are: air bag inflators, air bag modules, seat-belt pretensioners and pyromechanical devices. These pyromechanical devices are assembled components for tasks such as but not limited to separation, locking, or occupant restraint.

SAMPLES, EXPLOSIVE, other than initiating explosive UN No. 0190

New or existing explosive substances or articles, not yet assigned to a name in Table A of Chapter 3.2 and carried in conformity with the instructions of the competent authority and generally in small quantities, *inter alia*, for the purposes of testing, classification, research and development, or quality control, or as commercial samples.

NOTE: Explosive substances or articles already assigned to another name in Table A of Chapter 3.2 are not included in this definition.

SIGNAL DEVICES, HAND: UN Nos. 0191, 0373

Portable articles containing pyrotechnic substances which produce visual signals or warnings. The term includes small surface flares such as highway or railway flares and small distress flares.

SIGNALS, DISTRESS, ship: UN Nos. 0194, 0195, 0505, 0506

Articles containing pyrotechnic substances designed to produce signals by means of sound, flame or smoke or any combination thereof.

SIGNALS, RAILWAY TRACK, EXPLOSIVE: UN Nos. 0192, 0193, 0492, 0493

Articles containing a pyrotechnic substance which explodes with a loud report when the article is crushed. They are designed to be placed on a rail.

SIGNALS, SMOKE: UN Nos. 0196, 0197, 0313, 0487, 0507

Articles containing pyrotechnic substances which emit smoke. In addition they may contain devices for emitting audible signals.

SOUNDING DEVICES, EXPLOSIVE: UN Nos. 0374, 0375

Articles consisting of a charge of detonating explosive, without means of initiation or with means of initiation containing two or more effective protective features. They are dropped from ships and function when they reach a predetermined depth or the sea bed.

SOUNDING DEVICES, EXPLOSIVE: UN Nos. 0204, 0296

Articles consisting of a charge of detonating explosive with means of initiation not containing two or more effective protective features. They are dropped from ships and function when they reach a predetermined depth or the sea bed.

SUBSTANCES, EXPLOSIVE, VERY INSENSITIVE (Substances, EVI), N.O.S.: UN No. 0482

Substances presenting a mass explosion hazard but which are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport, and which have passed Test Series 5.

TORPEDOES, LIQUID FUELLED with inert head: UN No. 0450

Articles consisting of a liquid explosive system to propel the torpedo through the water, with an inert head.

TORPEDOES, LIQUID FUELLED with or without bursting charge: UN No. 0449

Articles consisting of either a liquid explosive system to propel the torpedo through the water, with or without a warhead; or a liquid non-explosive system to propel the torpedo through the water, with a warhead.

TORPEDOES with bursting charge: UN No. 0451

Articles consisting of a non-explosive system to propel the torpedo through the water, and a warhead without means of initiation or with means of initiation containing two or more effective protective features.

TORPEDOES with bursting charge: UN No. 0329

Articles consisting of an explosive system to propel the torpedo through the water, and a warhead without means of initiation or with means of initiation containing two or more effective protective features.

TORPEDOES with bursting charge: UN No. 0330

Articles consisting of an explosive or non-explosive system to propel the torpedo through the water, and a warhead with means of initiation not containing two or more effective protective features.

TRACERS FOR AMMUNITION: UN Nos. 0212, 0306

Sealed articles containing pyrotechnic substances, designed to reveal the trajectory of a projectile.

TRITONAL: UN No. 0390

Substance consisting of trinitrotoluene (TNT) mixed with aluminium.

WARHEADS, ROCKET with burster or expelling charge: UN No. 0370

Articles consisting of an inert payload and a small charge of detonating or deflagrating explosive, without means of initiation or with means of initiation containing two or more effective protective features. They are designed to be fitted to a rocket motor to scatter inert material. The term includes warheads for guided missiles.

WARHEADS, ROCKET with burster or expelling charge: UN No. 0371

Articles consisting of an inert payload and a small charge of detonating or deflagrating explosive, with means of initiation not containing two or more effective protective features. They are designed to be fitted to a rocket motor to scatter inert material. The term includes warheads for guided missiles.

WARHEADS, ROCKET with bursting charge: UN Nos. 0286, 0287

Articles consisting of a detonating explosive, without means of initiation or with means of initiation containing two or more effective protective features. They are designed to be fitted to a rocket. The term includes warheads for guided missiles.

WARHEADS, ROCKET with bursting charge: UN No. 0369

Articles consisting of a detonating explosive, with means of initiation not containing two or more effective protective features. They are designed to be fitted to a rocket. The term includes warheads for guided missiles.

WARHEADS, TORPEDO with bursting charge: UN No. 0221

Articles consisting of a detonating explosive, without means of initiation or with means of initiation containing two or more effective protective features. They are designed to be fitted to a torpedo.

2.2.2 Class 2 Gases

2.2.2.1 Criteria

2.2.2.1.1 The heading of Class 2 covers pure gases, mixtures of gases, mixtures of one or more gases with one or more other substances and articles containing such substances.

A gas is a substance which:

- (a) at 50 °C has a vapour pressure greater than 300 kPa (3 bar); or
- (b) is completely gaseous at 20 °C at the standard pressure of 101.3 kPa.

NOTE 1: UN No. 1052 HYDROGEN FLUORIDE, ANHYDROUS is nevertheless classified in Class 8.

NOTE 2: A pure gas may contain other components deriving from its production process or added to preserve the stability of the product, provided that the level of these components does not change its classification or its conditions of carriage, such as filling ratio, filling pressure, test pressure.

NOTE 3: N.O.S. entries in 2.2.2.3 may cover pure gases as well as mixtures.

2.2.2.1.2 The substances and articles of Class 2 are subdivided as follows:

1. *Compressed gas:* a gas which when packaged under pressure for carriage is entirely gaseous at -50 °C; this category includes all gases with a critical temperature less than or equal to -50 °C;
2. *Liquefied gas:* a gas which when packaged under pressure for carriage is partially liquid at temperatures above -50 °C. A distinction is made between:

High pressure liquefied gas: a gas with a critical temperature above -50 °C and equal to or below +65 °C; and

Low pressure liquefied gas: a gas with a critical temperature above +65 °C;

3. *Refrigerated liquefied gas:* a gas which when packaged for carriage is made partially liquid because of its low temperature;
4. *Dissolved gas:* a gas which when packaged under pressure for carriage is dissolved in a liquid phase solvent;
5. Aerosol dispensers and receptacles, small, containing gas (gas cartridges);
6. Other articles containing gas under pressure;
7. Non-pressurized gases subject to special requirements (gas samples);
8. Chemicals under pressure: liquids, pastes or powders, pressurized with a propellant that meets the definition of a compressed or liquefied gas and mixtures thereof.
9. *Adsorbed gas:* a gas which when packaged for carriage is adsorbed onto a solid porous material resulting in an internal receptacle pressure of less than 101.3 kPa at 20 °C and less than 300 kPa at 50 °C.

2.2.2.1.3 Substances and articles (except aerosols and chemicals under pressure) of Class 2 are assigned to one of the following groups according to their hazardous properties, as follows:

- A asphyxiant;
- O oxidizing;
- F flammable;
- T toxic;
- TF toxic, flammable;

- TC toxic, corrosive;
TO toxic, oxidizing;
TFC toxic, flammable, corrosive;
TOC toxic, oxidizing, corrosive.

For gases and gas mixtures presenting hazardous properties associated with more than one group according to the criteria, the groups designated by letter T take precedence over all other groups. The groups designated by letter F take precedence over the groups designated by letters A or O.

NOTE 1: *In the UN Model Regulations, the IMDG Code and the ICAO Technical Instructions, gases are assigned to one of the following three divisions, based on the primary hazard:*

Division 2.1: flammable gases (corresponding to the groups designated by the capital letter F);

Division 2.2: non-flammable, non-toxic gases (corresponding to the groups designated by the capital letters A or O);

Division 2.3: toxic gases (corresponding to the groups designated by the capital letter T i.e. T, TF, TC, TO, TFC and TOC).

NOTE 2: *Receptacles, small containing gas (UN No. 2037) shall be assigned to the groups A to TOC according to the hazard of the contents. For aerosols (UN No. 1950), see 2.2.2.1.6. For chemicals under pressure (UN Nos. 3500 to 3505), see 2.2.2.1.7.*

NOTE 3: *Corrosive gases are considered to be toxic, and are therefore assigned to the group TC, TFC or TOC.*

- 2.2.2.1.4 If a mixture of Class 2 mentioned by name in Table A of Chapter 3.2 meets different criteria as mentioned in 2.2.2.1.2 and 2.2.2.1.5, this mixture shall be classified according to the criteria and assigned to an appropriate N.O.S. entry.
- 2.2.2.1.5 Substances and articles (except aerosols and chemicals under pressure) of Class 2 which are not mentioned by name in Table A of Chapter 3.2 shall be classified under a collective entry listed in 2.2.2.3 in accordance with 2.2.2.1.2 and 2.2.2.1.3. The following criteria shall apply:

Asphyxiant gases

Gases which are non-oxidizing, non-flammable and non-toxic and which dilute or replace oxygen normally in the atmosphere.

Flammable gases

Gases which at 20 °C and a standard pressure of 101.3 kPa:

- (a) are ignitable when in a mixture of 13 % or less by volume with air; or
- (b) have a flammable range with air of at least 12 percentage points regardless of the lower flammable limit.

Flammability shall be determined by tests or by calculation, in accordance with methods adopted by ISO (see ISO 10156:2017).

Where insufficient data are available to use these methods, tests by a comparable method recognized by the competent authority of the country of origin may be used.

If the country of origin is not a Contracting Party to ADR these methods shall be recognized by the competent authority of the first country Contracting Party to ADR reached by the consignment.

Oxidizing gases

Gases, which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. These are pure gases or gas mixtures with an oxidizing power greater than 23.5 % as determined by a method specified in ISO 10156:2017.

Toxic gases

NOTE: *Gases meeting the criteria for toxicity in part or completely owing to their corrosivity are to be classified as toxic. See also the criteria under the heading "Corrosive gases" for a possible subsidiary corrosivity hazard.*

Gases which:

- (a) are known to be so toxic or corrosive to humans as to pose a hazard to health; or
- (b) are presumed to be toxic or corrosive to humans because they have a LC₅₀ value for acute toxicity equal to or less than 5 000 ml/m³ (ppm) when tested in accordance with 2.2.61.1.

In the case of gas mixtures (including vapours of substances from other classes) the following formula may be used:

$$LC_{50} \text{ Toxic(mixture)} = \frac{1}{\sum_{i=1}^n \frac{f_i}{T_i}}$$

where f_i = mole fraction of the i^{th} component substance of the mixture;

T_i = toxicity index of the i^{th} component substance of the mixture.

The T_i equals the LC₅₀ value as found in packing instruction P200 of 4.1.4.1.

When no LC₅₀ value is listed in packing instruction P200 of 4.1.4.1, a LC₅₀ value available in scientific literature shall be used.

When the LC₅₀ value is unknown, the toxicity index is determined by using the lowest LC₅₀ value of substances of similar physiological and chemical effects, or through testing if this is the only practical possibility.

Corrosive gases

Gases or gas mixtures meeting the criteria for toxicity completely owing to their corrosivity are to be classified as toxic with a subsidiary corrosivity hazard.

A gas mixture that is considered to be toxic due to the combined effects of corrosivity and toxicity has a subsidiary hazard of corrosivity when the mixture is known by human experience to be destructive to the skin, eyes or mucous membranes or when the LC₅₀ value of the corrosive components of the mixture is equal to or less than 5 000 ml/m³ (ppm) when the LC₅₀ is calculated by the formula:

$$LC_{50} \text{ Corrosive (mixture)} = \frac{1}{\sum_{i=1}^n \frac{f_{ci}}{T_{ci}}}$$

where f_{ci} = mole fraction of the i^{th} corrosive component substance of the mixture;

T_{ci} = toxicity index of the i^{th} corrosive component substance of the mixture.

The T_{ci} equals the LC₅₀ value as found in packing instruction P200 of 4.1.4.1.

When no LC₅₀ value is listed in packing instruction P200 of 4.1.4.1, a LC₅₀ value available in scientific literature shall be used.

When the LC₅₀ value is unknown the toxicity index is determined by using the lowest LC₅₀ value of substances of similar physiological and chemical effects, or through testing if this is the only practical possibility.

2.2.2.1.6 *Aerosols*

Aerosols (UN No. 1950) are assigned to one of the following groups according to their hazardous properties, as follows:

A	asphyxiant;
O	oxidizing;
F	flammable;
T	toxic;
C	corrosive;
CO	corrosive, oxidizing;
FC	flammable, corrosive;
TF	toxic, flammable;
TC	toxic, corrosive;
TO	toxic, oxidizing;
TFC	toxic, flammable, corrosive;
TOC	toxic, oxidizing, corrosive.

The classification depends on the nature of the contents of the aerosol dispenser.

NOTE: *Gases, which meet the definition of toxic gases according to 2.2.2.1.5 and gases identified as "Considered as pyrophoric" by table note c of Table 2 of packing instruction P200 in 4.1.4.1, shall not be used as a propellant in an aerosol dispenser. Aerosols with contents meeting the criteria for packing group I for toxicity or corrosivity shall not be accepted for carriage (see also 2.2.2.2.2).*

The following criteria shall apply:

- (a) Assignment to group A shall apply when the contents do not meet the criteria for any other group according to sub-paragraphs (b) to (f) below;
- (b) Assignment to group O shall apply when the aerosol contains an oxidizing gas according to 2.2.2.1.5;
- (c) Assignment to group F shall apply if the contents include 85 % by mass or more flammable components and the chemical heat of combustion is 30 kJ/g or more.

It shall not apply if the contents contain 1 % by mass or less flammable components and the heat of combustion is less than 20 kJ/g.

Otherwise the aerosol shall be tested for flammability in accordance with the tests described in the *Manual of Tests and Criteria*, Part III, section 31. Extremely flammable and flammable aerosols shall be assigned to group F;

NOTE: *Flammable components are flammable liquids, flammable solids or flammable gases and gas mixtures as defined in Notes 1 to 3 of sub-section 31.1.3 of Part III of the Manual of Tests and Criteria. This designation does not cover pyrophoric, self-heating or water-reactive substances. The chemical heat of combustion shall be determined by one of the following methods ASTM D 240, ISO/FDIS 13943:1999 (E/F) 86.1 to 86.3 or NFPA 30B.*

- (d) Assignment to group T shall apply when the contents, other than the propellant of aerosol dispensers to be ejected, are classified as Class 6.1, packing groups II or III;
- (e) Assignment to group C shall apply when the contents, other than the propellant of aerosol dispensers to be ejected, meet the criteria for Class 8, packing groups II or III;
- (f) When the criteria for more than one group amongst groups O, F, T, and C are met, assignment to groups CO, FC, TF, TC TO, TFC or TOC shall apply, as relevant.

2.2.2.1.7

Chemicals under pressure

Chemicals under pressure (UN Nos. 3500 to 3505) are assigned to one of the following groups according to their hazardous properties, as follows:

A	asphyxiant;
F	flammable;
T	toxic;
C	corrosive;
FC	flammable, corrosive;
TF	toxic, flammable.

The classification depends on the hazard characteristics of the components in the different states:

The propellant;

The liquid; or

The solid.

NOTE 1: *Gases, which meet the definition of toxic gases or of oxidizing gases according to 2.2.2.1.5 or gases identified as "Considered as pyrophoric" by table note c of Table 2 of packing instruction P200 in 4.1.4.1, shall not be used as a propellant in chemicals under pressure.*

NOTE 2: *Chemicals under pressure with contents meeting the criteria for packing group I for toxicity or corrosivity or with contents meeting both the criteria for packing group II or III for toxicity and for packing group II or III for corrosivity shall not be accepted for carriage under these UN numbers.*

NOTE 3: *Chemicals under pressure with components meeting the properties of Class 1; liquid desensitized explosives of Class 3; self-reactive substances and solid desensitized explosives of Class 4.1; Class 4.2; Class 4.3; Class 5.1; Class 5.2; Class 6.2; or Class 7, shall not be used for carriage under these UN numbers.*

NOTE 4: *A chemical under pressure in an aerosol dispenser shall be carried under UN No. 1950.*

The following criteria shall apply:

- (a) Assignment to group A shall apply when the contents do not meet the criteria for any other group according to sub-paragraphs (b) to (e) below;
- (b) Assignment to group F shall apply if one of the components, which can be a pure substance or a mixture, needs to be classified as flammable. Flammable components are flammable liquids and liquid mixtures, flammable solids and solid mixtures or flammable gases and gas mixtures meeting the following criteria:
 - (i) A flammable liquid is a liquid having a flashpoint of not more than 93 °C;
 - (ii) A flammable solid is a solid which meets the criteria in 2.2.41.1;
 - (iii) A flammable gas is a gas which meets the criteria in 2.2.2.1.5;
- (c) Assignment to group T shall apply when the contents, other than the propellant, are classified as dangerous goods of Class 6.1, packing groups II or III;
- (d) Assignment to group C shall apply when the contents, other than the propellant, are classified as dangerous goods of Class 8, packing groups II or III;
- (e) When the criteria for two groups amongst groups F, T, and C are met, assignment to groups FC or TF shall apply, as relevant.

2.2.2.2 Gases not accepted for carriage

2.2.2.2.1 Chemically unstable gases of Class 2 shall not be accepted for carriage unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of carriage or unless carried in accordance with special packing provision (r) of packing instruction P200 (10) of 4.1.4.1, as applicable. For the precautions necessary to prevent polymerization, see special provision 386 of Chapter 3.3. To this end particular care shall be taken to ensure that receptacles and tanks do not contain any substances liable to promote these reactions.

2.2.2.2.2 The following substances and mixtures shall not be accepted for carriage:

- UN No. 2186 HYDROGEN CHLORIDE, REFRIGERATED LIQUID;
- UN No. 2421 NITROGEN TRIOXIDE;
- UN No. 2455 METHYL NITRITE;
- Refrigerated liquefied gases which cannot be assigned to classification codes 3A, 3O or 3F;
- Dissolved gases which cannot be classified under UN Nos. 1001, [1043](#), 2073 or 3318. [For UN No. 1043, see special provision 642](#);
- Aerosols where gases which are toxic according to 2.2.2.1.5 or pyrophoric according to packing instruction P200 in 4.1.4.1 are used as propellants;
- Aerosols with contents meeting the criteria for packing group I for toxicity or corrosivity (see 2.2.61 and 2.2.8);
- Receptacles, small, containing gases which are very toxic (LC₅₀ lower than 200 ppm) or pyrophoric according to packing instruction P200 in 4.1.4.1.

2.2.2.3 *List of collective entries*

Compressed gases		
Classification code	UN No.	Name of the substance or article
1A	1956	COMPRESSED GAS, N.O.S.
1O	3156	COMPRESSED GAS, OXIDIZING, N.O.S.
1F	1964	HYDROCARBON GAS MIXTURE, COMPRESSED, N.O.S.
	1954	COMPRESSED GAS, FLAMMABLE, N.O.S.
1T	1955	COMPRESSED GAS, TOXIC, N.O.S.
1TF	1953	COMPRESSED GAS, TOXIC, FLAMMABLE, N.O.S.
1TC	3304	COMPRESSED GAS, TOXIC, CORROSIVE, N.O.S.
1TO	3303	COMPRESSED GAS, TOXIC, OXIDIZING, N.O.S.
1TFC	3305	COMPRESSED GAS, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.
1TOC	3306	COMPRESSED GAS, TOXIC, OXIDIZING, CORROSIVE, N.O.S.

Liquefied gases		
Classification code	UN No.	Name of the substance or article
2A	1058 1078	LIQUEFIED GASES, non-flammable, charged with nitrogen, carbon dioxide or air REFRIGERANT GAS, N.O.S. such as mixtures of gases, indicated by the letter R..., which as: Mixture F1, have a vapour pressure at 70 °C not exceeding 1.3 MPa (13 bar) and a density at 50 °C not lower than that of dichlorofluoromethane (1.30 kg/l); Mixture F2, have a vapour pressure at 70 °C not exceeding 1.9 MPa (19 bar) and a density at 50 °C not lower than that of dichlorodifluoromethane (1.21 kg/l); Mixture F3, have a vapour pressure at 70 °C not exceeding 3 MPa (30 bar) and a density at 50 °C not lower than that of chlorodifluoromethane (1.09 kg/l). NOTE: Trichlorofluoromethane (Refrigerant R 11), 1,1,2-trichloro-1,2,2-trifluoroethane (Refrigerant R 113), 1,1,1-trichloro-2,2,2-trifluoroethane (Refrigerant R 113a), 1-chloro-1,2,2-trifluoroethane (Refrigerant R 133) and 1-chloro-1,1,2-trifluoroethane (Refrigerant R 133b) are not substances of Class 2. They may, however, enter into the composition of mixtures F1 to F3.
	1968	INSECTICIDE GAS, N.O.S.
	3163	LIQUEFIED GAS, N.O.S.
2O	3157	LIQUEFIED GAS, OXIDIZING, N.O.S.
2F	1010 1060	BUTADIENES, STABILIZED or BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED, containing more than 40% butadienes. METHYLACETYLENE AND PROPADIENE MIXTURE, STABILIZED such as mixtures of methylacetylene and propadiene with hydrocarbons, which as: Mixture P1, contain not more than 63 % methylacetylene and propadiene by volume and not more than 24 % propane and propylene by volume, the percentage of C ₄ - saturated hydrocarbons being not less than 14 % by volume; and as Mixture P2, contain not more than 48 % methylacetylene and propadiene by volume and not more than 50 % propane and propylene by volume, the percentage of C ₄ - saturated hydrocarbons being not less than 5 % by volume, as well as mixtures of propadiene with 1 to 4 % methylacetylene.

Liquefied gases (cont'd)		
Classification code	UN No.	Name of the substance or article
2F <i>(cont'd)</i>	1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S such as mixtures, which as: Mixture A, have a vapour pressure at 70 °C not exceeding 1.1 MPa (11 bar) and a density at 50 °C not lower than 0.525 kg/l; Mixture A01, have a vapour pressure at 70 °C not exceeding 1.6 MPa (16 bar) and a relative density at 50 °C not lower than 0.516 kg/l; Mixture A02, have a vapour pressure at 70 °C not exceeding 1.6 MPa (16 bar) and a relative density at 50 °C not lower than 0.505 kg/l; Mixture A0, have a vapour pressure at 70 °C not exceeding 1.6 MPa (16 bar) and a density at 50 °C not lower than 0.495 kg/l; Mixture A1, have a vapour pressure at 70 °C not exceeding 2.1 MPa (21 bar) and a density at 50 °C not lower than 0.485 kg/l; Mixture B1 have a vapour pressure at 70 °C not exceeding 2.6 MPa (26 bar) and a relative density at 50 °C not lower than 0.474 kg/l; Mixture B2 have a vapour pressure at 70 °C not exceeding 2.6 MPa (26 bar) and a relative density at 50 °C not lower than 0.463 kg/l; Mixture B, have a vapour pressure at 70 °C not exceeding 2.6 MPa (26 bar) and a density at 50 °C not lower than 0.450 kg/l; Mixture C, have a vapour pressure at 70 °C not exceeding 3.1 MPa (31 bar) and a relative density at 50 °C not lower than 0.440 kg/l; NOTE 1: <i>In the case of the foregoing mixtures, the use of the following names customary in the trade is permitted for describing these substances: for mixtures A, A01, A02 and A0: BUTANE; for mixture C: PROPANE.</i> NOTE 2: <i>UN No. 1075 PETROLEUM GASES, LIQUEFIED may be used as an alternative entry for UN No. 1965 HYDROCARBON GAS MIXTURE LIQUEFIED, N.O.S. for carriage prior to or following maritime or air carriage.</i>
	3354	INSECTICIDE GAS, FLAMMABLE, N.O.S.
	3161	LIQUEFIED GAS, FLAMMABLE, N.O.S.
2T	1967	INSECTICIDE GAS, TOXIC, N.O.S.
	3162	LIQUEFIED GAS, TOXIC, N.O.S.
2TF	3355	INSECTICIDE GAS, TOXIC, FLAMMABLE, N.O.S.
	3160	LIQUEFIED GAS, TOXIC, FLAMMABLE, N.O.S.
2TC	3308	LIQUEFIED GAS, TOXIC, CORROSIVE, N.O.S.
2TO	3307	LIQUEFIED GAS, TOXIC, OXIDIZING, N.O.S.
2TFC	3309	LIQUEFIED GAS, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.
2TOC	3310	LIQUEFIED GAS, TOXIC, OXIDIZING, CORROSIVE, N.O.S.

Refrigerated liquefied gases		
Classification code	UN No.	Name of the substance or article
3A	3158	GAS, REFRIGERATED LIQUID, N.O.S.
3O	3311	GAS, REFRIGERATED LIQUID, OXIDIZING, N.O.S.
3F	3312	GAS, REFRIGERATED LIQUID, FLAMMABLE, N.O.S.

Dissolved gases		
Classification code	UN No.	Name of the substance or article
4		Only substances listed in Table A of Chapter 3.2 are to be accepted for carriage.

Aerosols and receptacles, small, containing gas		
Classification code	UN No.	Name of the substance or article
5	1950	AEROSOLS
	2037	RECEPTACLES, SMALL CONTAINING GAS (GAS CARTRIDGES) without a release device, non-refillable

Other articles containing gas under pressure		
Classification code	UN No.	Name of the substance or article
6A	2857	REFRIGERATING MACHINES containing non-flammable, non-toxic gases or ammonia solutions (UN 2672)
	3164	ARTICLES, PRESSURIZED, PNEUMATIC (containing non-flammable gas) or
	3164	ARTICLES, PRESSURIZED, HYDRAULIC (containing non-flammable gas)
	3538	ARTICLES CONTAINING NON-FLAMMABLE, NON TOXIC GAS, N.O.S.
6F	3150	DEVICES, SMALL, HYDROCARBON GAS POWERED or
	3150	HYDROCARBON GAS REFILLS FOR SMALL DEVICES, with release device
	3358	REFRIGERATING MACHINES containing flammable, non-toxic, liquefied gas
	3478	FUEL CELL CARTRIDGES, containing liquefied flammable gas or
	3478	FUEL CELL CARTRIDGES CONTAINED IN EQUIPMENT, containing liquefied flammable gas or
	3478	FUEL CELL CARTRIDGES PACKED WITH EQUIPMENT, containing liquefied flammable gas
	3479	FUEL CELL CARTRIDGES, containing hydrogen in metal hydride or
	3479	FUEL CELL CARTRIDGES CONTAINED IN EQUIPMENT, containing hydrogen in metal hydride or
	3479	FUEL CELL CARTRIDGES PACKED WITH EQUIPMENT, containing hydrogen in metal hydride
	3529	ENGINE, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or
	3529	ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or
	3529	MACHINERY, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or
	3529	MACHINERY, FUEL CELL, FLAMMABLE GAS POWERED
3537	ARTICLES CONTAINING FLAMMABLE GAS, N.O.S.	
6T	3539	ARTICLES CONTAINING TOXIC GAS, N.O.S.

Gas samples		
Classification code	UN No.	Name of the substance or article
7F	3167	GAS SAMPLE, NON-PRESSURIZED, FLAMMABLE, N.O.S., not refrigerated liquid
7T	3169	GAS SAMPLE, NON-PRESSURIZED, TOXIC, N.O.S., not refrigerated liquid
7TF	3168	GAS SAMPLE, NON-PRESSURIZED, TOXIC, FLAMMABLE, N.O.S., not refrigerated liquid

Chemicals under pressure		
Classification code	UN No.	Name of the substance or article
8A	3500	CHEMICAL UNDER PRESSURE, N.O.S.
8F	3501	CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S.
8T	3502	CHEMICAL UNDER PRESSURE, TOXIC, N.O.S.
8C	3503	CHEMICAL UNDER PRESSURE, CORROSIVE, N.O.S.
8TF	3504	CHEMICAL UNDER PRESSURE, FLAMMABLE, TOXIC, N.O.S.
8FC	3505	CHEMICAL UNDER PRESSURE, FLAMMABLE, CORROSIVE, N.O.S.

Adsorbed gases		
Classification code	UN No.	Name of the substance or article
9A	3511	ADSORBED GAS, N.O.S.
9O	3513	ADSORBED GAS, OXIDIZING, N.O.S.
9F	3510	ADSORBED GAS, FLAMMABLE, N.O.S.
9T	3512	ADSORBED GAS, TOXIC, N.O.S.
9TF	3514	ADSORBED GAS, TOXIC, FLAMMABLE, N.O.S.
9TC	3516	ADSORBED GAS, TOXIC, CORROSIVE, N.O.S.
9TO	3515	ADSORBED GAS, TOXIC, OXIDIZING, N.O.S.
9TFC	3517	ADSORBED GAS, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.
9TOC	3518	ADSORBED GAS, TOXIC, OXIDIZING, CORROSIVE, N.O.S.

2.2.3 Class 3 Flammable liquids

2.2.3.1 Criteria

2.2.3.1.1 The heading of Class 3 covers substances and articles containing substances of this Class which:

- are liquids according to subparagraph (a) of the definition for "liquid" in 1.2.1;
- have at 50 °C a vapour pressure of not more than 300 kPa (3 bar) and are not completely gaseous at 20 °C and at standard pressure of 101.3 kPa; and
- have a flash-point of not more than 60 °C (see 2.3.3.1 for the relevant test).

The heading of Class 3 also covers liquid substances and molten solid substances with a flash-point of more than 60 °C and which are carried or handed over for carriage whilst heated at temperatures equal to or higher than their flash-point. These substances are assigned to UN No. 3256.

The heading of Class 3 also covers liquid desensitized explosives. Liquid desensitized explosives are explosive substances which are dissolved or suspended in water or other liquid substances, to form an homogeneous liquid mixture to suppress their explosive properties. Such entries in Table A of Chapter 3.2 are UN Nos. 1204, 2059, 3064, 3343, 3357 and 3379.

NOTE 1: *Substances having a flash-point above 35 °C, which do not sustain combustion according to the criteria of sub-section 32.2.5 of Part III of the Manual of Tests and Criteria, are not substances of Class 3; if, however, these substances are handed over for carriage and carried whilst heated at temperatures equal to or higher than their flash-point, they are substances of Class 3.*

NOTE 2: *By derogation from paragraph 2.2.3.1.1 above, diesel fuel, gasoil, heating oil (light) including synthetically manufactured products having a flash-point above 60 °C and not more than 100 °C shall be deemed substances of Class 3, UN No. 1202.*

NOTE 3: *Flammable liquids which are highly toxic by inhalation, as defined in 2.2.61.1.4 to 2.2.61.1.9, and toxic substances having a flash-point of 23 °C or above are substances of Class 6.1 (see 2.2.61.1). Liquids which are highly toxic by inhalation are indicated as "toxic by inhalation" in their proper shipping name in Column (2) or by special provision 354 in Column (6) of Table A of Chapter 3.2.*

NOTE 4: *Flammable liquid substances and preparations used as pesticides, which are highly toxic, toxic or slightly toxic and have a flash-point of 23 °C or above are substances of Class 6.1 (see 2.2.61.1).*

2.2.3.1.2 The substances and articles of Class 3 are subdivided as follows:

- F Flammable liquids, without subsidiary hazard and articles containing such substances:
 - F1 Flammable liquids having a flash-point of or below 60 °C;
 - F2 Flammable liquids having a flash-point above 60 °C which are carried or handed over for carriage at or above their flash-point (elevated temperature substances);
 - F3 Articles containing flammable liquids;
- FT Flammable liquids, toxic:
 - FT1 Flammable liquids, toxic;
 - FT2 Pesticides;
- FC Flammable liquids, corrosive;
- FTC Flammable liquids, toxic, corrosive;
- D Liquid desensitized explosives.

2.2.3.1.3

Substances and articles classified in Class 3 are listed in Table A of Chapter 3.2. Substances not mentioned by name in Table A of Chapter 3.2 shall be assigned to the relevant entry of 2.2.3.3 and the relevant packing group in accordance with the provisions of this section. Flammable liquids shall be assigned to one of the following packing groups according to the degree of danger they present for carriage:

Packing group	Flash point (closed cup)	Initial boiling point
I	--	≤ 35 °C
II ^a	< 23 °C	> 35 °C
III ^a	≥ 23 °C ≤ 60 °C	> 35 °C

^a See also 2.2.3.1.4.

For a liquid with (a) subsidiary hazard(s), the packing group determined in accordance with the table above and the packing group based on the severity of the subsidiary hazard(s) shall be considered; the classification and packing group shall then be determined in accordance with the table of precedence of hazards in 2.1.3.10.

2.2.3.1.4

Viscous flammable liquids such as paints, enamels, lacquers, varnishes, adhesives and polishes having a flash-point of less than 23 °C may be assigned to packing group III in conformity with the procedures prescribed in the Manual of Tests and Criteria, Part III, sub-section 32.3, provided that:

(a) the viscosity² and flash-point are in accordance with the following table:

Kinematic viscosity (extrapolated) <i>v</i> (at near-zero shear rate) mm ² /s at 23 °C	Flow-time <i>t</i> in seconds	Jet diameter (mm)	Flash-point, closed-cup (°C)
20 < <i>v</i> ≤ 80	20 < <i>t</i> ≤ 60	4	above 17
80 < <i>v</i> ≤ 135	60 < <i>t</i> ≤ 100	4	above 10
135 < <i>v</i> ≤ 220	20 < <i>t</i> ≤ 32	6	above 5
220 < <i>v</i> ≤ 300	32 < <i>t</i> ≤ 44	6	above -1
300 < <i>v</i> ≤ 700	44 < <i>t</i> ≤ 100	6	above -5
700 < <i>v</i>	100 < <i>t</i>	6	no limit

- (b) Less than 3 % of the clear solvent layer separates in the solvent separation test;
- (c) The mixture or any separated solvent does not meet the criteria for Class 6.1 or Class 8;
- (d) The substances are packed in receptacles of not more than 450 litre capacity.

NOTE: These provisions also apply to mixtures containing no more than 20 % nitrocellulose with a nitrogen content not exceeding 12.6 % by dry mass. Mixtures containing more than 20 % but not more than 55 % nitrocellulose with a nitrogen content not exceeding 12.6 % by dry mass are substances assigned to UN No. 2059.

Mixtures having a flash-point below 23 °C and containing:

- more than 55 % nitrocellulose, whatever their nitrogen content; or
- not more than 55 % nitrocellulose with a nitrogen content above 12.6 % by dry mass,

² **Viscosity determination:** Where the substance concerned is non-Newtonian, or where a flow cup method of viscosity determination is otherwise unsuitable, a variable shear-rate viscometer shall be used to determine the dynamic viscosity coefficient of the substance, at 23 °C, at a number of shear rates. The values obtained are plotted against shear rate and then extrapolated to zero shear rate. The dynamic viscosity thus obtained, divided by the density, gives the apparent kinematic viscosity at near-zero shear rate.

are substances of Class 1 (UN Nos. 0340 or 0342) or of Class 4.1 (UN Nos. 2555, 2556 or 2557).

2.2.3.1.5 *Viscous liquids*

2.2.3.1.5.1 Except as provided for in 2.2.3.1.5.2, viscous liquids which:

- have a flash-point of 23 °C or above and less than or equal to 60 °C;
- are not toxic, corrosive or environmentally hazardous;
- contain not more than 20 % nitrocellulose provided the nitrocellulose contains not more than 12.6 % nitrogen by dry mass; and
- are packed in receptacles of not more than 450 litre capacity;

are not subject to ADR, if:

- (a) in the solvent separation test (see *Manual of Tests and Criteria*, Part III, sub-section 32.5.1), the height of the separated layer of solvent is less than 3 % of the total height; and
- (b) the flowtime in the viscosity test (see *Manual of Tests and Criteria*, Part III, sub-section 32.4.3), with a jet diameter of 6 mm is equal to or greater than:
 - (i) 60 seconds; or
 - (ii) 40 seconds if the viscous liquid contains not more than 60 % of Class 3 substances.

2.2.3.1.5.2 Viscous liquids which are also environmentally hazardous, but meet all other criteria in 2.2.3.1.5.1, are not subject to any other provisions of ADR when they are carried in single or combination packagings containing a net quantity per single or inner packaging of 5 litres or less, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

2.2.3.1.6 If substances of Class 3, as a result of admixtures, come into categories of hazard different from those to which the substances mentioned by name in Table A of Chapter 3.2 belong, these mixtures or solutions shall be assigned to the entries to which they belong on the basis of their actual degree of danger.

NOTE: *For the classification of solutions and mixtures (such as preparations and wastes) see also 2.1.3.*

2.2.3.1.7 On the basis of the test procedures in accordance with 2.3.3.1 and 2.3.4, and the criteria set out in 2.2.3.1.1, it may also be determined whether the nature of a solution or a mixture mentioned by name or containing a substance mentioned by name is such that the solution or mixture is not subject to the provisions for this Class (see also 2.1.3).

2.2.3.2 *Substances not accepted for carriage*

2.2.3.2.1 Substances of Class 3 which are liable to form peroxides easily (as happens with ethers or with certain heterocyclic oxygenated substances) shall not be accepted for carriage if their peroxide content, calculated as hydrogen peroxide (H₂O₂), exceeds 0.3 %. The peroxide content shall be determined as indicated in 2.3.3.3.

2.2.3.2.2 Chemically unstable substances of Class 3 shall not be accepted for carriage unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of carriage. For the precautions necessary to prevent polymerization, see special provision 386 of Chapter 3.3. To this end particular care shall be taken to ensure that receptacles and tanks do not contain any substances liable to promote these reactions.

2.2.3.2.3 Liquid desensitized explosives other than those listed in Table A of Chapter 3.2 shall not be accepted for carriage as substances of Class 3.

2.2.3.3

List of collective entries

Flammable liquids and articles containing such substances		1133 ADHESIVES containing flammable liquid 1136 COAL TAR DISTILLATES, FLAMMABLE 1139 COATING SOLUTION (includes surface treatments or coatings used for industrial or other purposes such as vehicle undercoating, drum or barrel lining) 1169 EXTRACTS, AROMATIC, LIQUID 1197 EXTRACTS, FLAVOURING, LIQUID, for flavour or aroma 1210 PRINTING INK, flammable or 1210 PRINTING INK RELATED MATERIAL (including printing ink thinning or reducing compound), flammable 1263 PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or 1263 PAINT RELATED MATERIAL (including paint thinning or reducing compound) 1266 PERFUMERY PRODUCTS with flammable solvents 1293 TINCTURES, MEDICINAL 1306 WOOD PRESERVATIVES, LIQUID 1866 RESIN SOLUTION, flammable 1999 TARS, LIQUID, including road oils, and cutback bitumens 3065 ALCOHOLIC BEVERAGES 1224 KETONES, LIQUID, N.O.S. 1268 PETROLEUM DISTILLATES, N.O.S. or 1268 PETROLEUM PRODUCTS, N.O.S. 1987 ALCOHOLS, N.O.S. 1989 ALDEHYDES, N.O.S. 2319 TERPENE HYDROCARBONS, N.O.S. 3271 ETHERS, N.O.S. 3272 ESTERS, N.O.S. 3295 HYDROCARBONS, LIQUID, N.O.S. 3336 MERCAPTANS, LIQUID, FLAMMABLE, N.O.S. or 3336 MERCAPTANS MIXTURE, LIQUID, FLAMMABLE, N.O.S. 1993 FLAMMABLE LIQUID, N.O.S.
	F1	
Without subsidiary hazard	F	
	F2 elevated temperature	3256 ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S., with flash-point above 60 °C, at or above its flash-point
	F3 articles	3269 POLYESTER RESIN KIT, liquid base material 3473 FUEL CELL CARTRIDGES or 3473 FUEL CELL CARTRIDGES CONTAINED IN EQUIPMENT or 3473 FUEL CELL CARTRIDGES PACKED WITH EQUIPMENT 3528 ENGINE, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED or 3528 ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or 3528 MACHINERY, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED or 3528 MACHINERY, FUEL CELL, FLAMMABLE LIQUID POWERED 3540 ARTICLES CONTAINING FLAMMABLE LIQUID, N.O.S.

(cont'd on next page)

2.2.3.3 List of collective entries (cont'd)

		<p>1228 MERCAPTANS, LIQUID, FLAMMABLE, TOXIC, N.O.S. or 1228 MERCAPTAN MIXTURE, LIQUID, FLAMMABLE, TOXIC, N.O.S. 1986 ALCOHOLS, FLAMMABLE, TOXIC, N.O.S. 1988 ALDEHYDES, FLAMMABLE, TOXIC, N.O.S. 2478 ISOCYANATES, FLAMMABLE, TOXIC, N.O.S. or 2478 ISOCYANATE SOLUTION, FLAMMABLE, TOXIC, N.O.S. 3248 MEDICINE, LIQUID, FLAMMABLE, TOXIC, N.O.S. 3273 NITRILES, FLAMMABLE, TOXIC, N.O.S. 1992 FLAMMABLE LIQUID, TOXIC, N.O.S.</p>
Toxic	FT1	
FT		<p>2758 CARBAMATE PESTICIDE, LIQUID, FLAMMABLE, TOXIC 2760 ARSENICAL PESTICIDE, LIQUID, FLAMMABLE, TOXIC 2762 ORGANOCHLORINE PESTICIDE, LIQUID, FLAMMABLE, TOXIC 2764 TRIAZINE PESTICIDE, LIQUID, FLAMMABLE, TOXIC 2772 THIOCARBAMATE PESTICIDE, LIQUID, FLAMMABLE, TOXIC 2776 COPPER BASED PESTICIDE, LIQUID, FLAMMABLE, TOXIC 2778 MERCURY BASED PESTICIDE, LIQUID, FLAMMABLE, TOXIC 2780 SUBSTITUTED NITROPHENOL PESTICIDE, LIQUID, FLAMMABLE, TOXIC 2782 BIPYRIDILUM PESTICIDE, LIQUID, FLAMMABLE, TOXIC 2784 ORGANOPHOSPHORUS PESTICIDE, LIQUID, FLAMMABLE, TOXIC 2787 ORGANOTIN PESTICIDE, LIQUID, FLAMMABLE, TOXIC 3024 COUMARIN DERIVATIVE PESTICIDE, LIQUID, FLAMMABLE, TOXIC 3346 PHENOXYACETIC ACID DERIVATIVE PESTICIDE, LIQUID, FLAMMABLE, TOXIC 3350 PYRETHROID PESTICIDE, LIQUID, FLAMMABLE TOXIC 3021 PESTICIDE, LIQUID, FLAMMABLE, TOXIC, N.O.S.</p> <p><i>NOTE: The classification of a pesticide under an entry shall be effected on the basis of the active ingredient, of the physical state of the pesticide and any subsidiary hazards it may exhibit.</i></p>
	FT2	pesticide (f.p.<23 °C)
Corrosive	FC	<p>3469 PAINT, FLAMMABLE, CORROSIVE (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or 3469 PAINT RELATED MATERIAL, FLAMMABLE, CORROSIVE (including paint thinning or reducing compound) 2733 AMINES, FLAMMABLE, CORROSIVE, N.O.S. or 2733 POLYAMINES, FLAMMABLE, CORROSIVE, N.O.S. 2985 CHLOROSILANES, FLAMMABLE, CORROSIVE, N.O.S. 3274 ALCOHOLATES SOLUTION, N.O.S., in alcohol 2924 FLAMMABLE LIQUID, CORROSIVE, N.O.S.</p>
Toxic, corrosive	FTC	3286 FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S.
Liquid desensitised explosive	D	<p>3343 NITROGLYCERIN MIXTURE, DESENSITIZED, LIQUID, FLAMMABLE, N.O.S. with not more than 30 % nitroglycerin by mass 3357 NITROGLYCERIN MIXTURE, DESENSITIZED, LIQUID, N.O.S. with not more than 30 % nitroglycerin by mass 3379 DESENSITIZED EXPLOSIVE, LIQUID, N.O.S.</p>

2.2.41 Class 4.1 Flammable solids, self-reactive substances, polymerizing substances and solid desensitized explosives

2.2.41.1 Criteria

2.2.41.1.1 The heading of Class 4.1 covers flammable substances and articles, desensitized explosives which are solids according to subparagraph (a) of the definition "solid" in 1.2.1, self-reactive liquids or solids and polymerizing substances..

The following are assigned to Class 4.1:

- readily flammable solid substances and articles (see paragraphs 2.2.41.1.3 to 2.2.41.1.8);
- self-reactive solids or liquids (see paragraphs 2.2.41.1.9 to 2.2.41.1.17);
- solid desensitized explosives (see 2.2.41.1.18);
- substances related to self-reactive substances (see 2.2.41.1.19);
- polymerizing substances (see 2.2.41.1.20 and 2.2.41.1.21).

2.2.41.1.2 The substances and articles of Class 4.1 are subdivided as follows:

F Flammable solids, without subsidiary hazard:

F1 Organic;

F2 Organic, molten;

F3 Inorganic;

F4 Articles;

FO Flammable solids, oxidizing;

FT Flammable solids, toxic:

FT1 Organic, toxic;

FT2 Inorganic, toxic;

FC Flammable solids, corrosive:

FC1 Organic, corrosive;

FC2 Inorganic, corrosive;

D Solid desensitized explosives without subsidiary hazard;

DT Solid desensitized explosives, toxic;

SR Self-reactive substances:

SR1 Not requiring temperature control;

SR2 Requiring temperature control.

PM Polymerizing substances

PM1 Not requiring temperature control;

PM2 Requiring temperature control.

Flammable solids*Definition and properties*

2.2.41.1.3 *Flammable solids* are readily combustible solids and solids which may cause fire through friction.

Readily combustible solids are powdered, granular, or pasty substances which are dangerous if they can be easily ignited by brief contact with an ignition source, such as a burning match, and if the flame spreads rapidly. The danger may come not only from the fire but also from toxic combustion products. Metal powders are especially dangerous because of the difficulty of extinguishing a fire since normal extinguishing agents such as carbon dioxide or water can increase the hazard.

Classification

2.2.41.1.4 Substances and articles classified as flammable solids of Class 4.1 are listed in Table A of Chapter 3.2. The assignment of organic substances and articles not mentioned by name in Table A of Chapter 3.2 to the relevant entry of sub-section 2.2.41.3 in accordance with the provisions of Chapter 2.1 can be based on experience or on the results of the test procedures in accordance with Part III, sub-section 33.2 of the Manual of Tests and Criteria. The assignment of inorganic substances not mentioned by name shall be based on the results of the test procedures in accordance with Part III, sub-section 33.2 of the Manual of Tests and Criteria; experience shall also be taken into account when it leads to a more stringent assignment.

2.2.41.1.5 When substances not mentioned by name are assigned to one of the entries listed in 2.2.41.3 on the basis of the test procedures in accordance with the Manual of Tests and Criteria, Part III, sub-section 33.2, the following criteria apply:

- (a) With the exception of metal powders or powders of metal alloys, powdery, granular or pasty substances shall be classified as readily flammable substances of Class 4.1 if they can be easily ignited by brief contact with an ignition source (e.g. a burning match), or if, in the event of ignition, the flame spreads rapidly, the burning time is less than 45 seconds for a measured distance of 100 mm or the rate of burning is greater than 2.2 mm/s;
- (b) Metal powders or powders of metal alloys shall be assigned to Class 4.1 if they can be ignited by a flame and the reaction spreads over the whole length of the sample in 10 minutes or less.

Solids which may cause fire through friction shall be classified in Class 4.1 by analogy with existing entries (e.g. matches) or in accordance with any appropriate special provision.

2.2.41.1.6 On the basis of the test procedure in accordance with the Manual of Tests and Criteria, Part III, Section 33.2 and the criteria set out in 2.2.41.1.4 and 2.2.41.1.5, it may also be determined whether the nature of a substance mentioned by name is such that the substance is not subject to the provisions for this Class.

2.2.41.1.7 If substances of Class 4.1, as a result of admixtures, come into different categories of hazard from those to which the substances mentioned by name in Table A of Chapter 3.2 belong, these mixtures shall be assigned to the entries to which they belong on the basis of their actual degree of danger.

NOTE: For the classification of solutions and mixtures (such as preparations and wastes), see also 2.1.3.

Assignment of packing groups

2.2.41.1.8 Flammable solids classified under the various entries in Table A of Chapter 3.2 shall be assigned to packing groups II or III on the basis of test procedures of the Manual of Tests and Criteria, Part III, sub-section 33.2, in accordance with the following criteria:

- (a) Readily flammable solids which, when tested, have a burning time of less than 45 seconds over a measured distance of 100 mm shall be assigned to:

Packing group II: if the flame passes the wetted zone;

Packing group III: if the wetted zone stops the flame for at least four minutes;

(b) Metal powders or powders of metal alloys shall be assigned to:

Packing group II: if, when tested, the reaction spreads over the whole length of the sample in five minutes or less;

Packing group III: if, when tested, the reaction spreads over the whole length of the sample in more than five minutes.

For solids which may cause fire through friction, the packing group shall be assigned by analogy with existing entries or in accordance with any special provision.

Self-reactive substances

Definitions

2.2.41.1.9

For the purposes of ADR, *self-reactive substances* are thermally unstable substances liable to undergo a strongly exothermic decomposition even without participation of oxygen (air). Substances are not considered to be self-reactive substances of Class 4.1, if:

- (a) they are explosives according to the criteria of Class 1;
- (b) they are oxidizing substances according to the classification procedure for Class 5.1 (see 2.2.51.1) except that mixtures of oxidizing substances which contain 5 % or more of combustible organic substances shall be subjected to the classification procedure defined in Note 2;
- (c) they are organic peroxides according to the criteria of Class 5.2 (see 2.2.52.1);
- (d) their heat of decomposition is less than 300 J/g; or
- (e) their self-accelerating decomposition temperature (SADT) (see Note 3 below) is greater than 75 °C for a 50 kg package.

NOTE 1: *The heat of decomposition can be determined using any internationally recognised method e.g. differential scanning calorimetry and adiabatic calorimetry.*

NOTE 2: *Mixtures of oxidizing substances meeting the criteria of Class 5.1 which contain 5 % or more of combustible organic substances, which do not meet the criteria mentioned in (a), (c), (d) or (e) above, shall be subjected to the self-reactive substance classification procedure.*

A mixture showing the properties of a self-reactive substance, type B to F, shall be classified as a self-reactive substance of Class 4.1.

A mixture showing the properties of a self-reactive substance, type G, according to the principle given in section 20.4.3 (g) of Part II of the Manual of Tests and Criteria shall be considered for classification as a substance of Class 5.1 (see 2.2.51.1).

NOTE 3: *The self-accelerating decomposition temperature (SADT) is the lowest temperature at which self-accelerating decomposition may occur with a substance in the packaging as used during carriage. Requirements for the determination of the SADT are given in the Manual of Tests and Criteria, Part II, Chapter 20 and section 28.4.*

NOTE 4: *Any substance which shows the properties of a self-reactive substance shall be classified as such, even if this substance gives a positive test result according to 2.2.42.1.5 for inclusion in Class 4.2.*

Properties

2.2.41.1.10

The decomposition of self-reactive substances can be initiated by heat, contact with catalytic impurities (e.g. acids, heavy-metal compounds, bases), friction or impact. The rate of decomposition increases with temperature and varies with the substance. Decomposition, particularly if no ignition occurs, may result in the evolution of toxic gases or vapours. For certain self-reactive substances, the temperature shall be controlled. Some self-reactive substances may decompose explosively, particularly if confined. This characteristic may be modified by the addition of diluents or by the use of appropriate packagings. Certain self-reactive substances burn vigorously. Self-reactive substances are, for example, some compounds of the types listed below:

aliphatic azo compounds (-C-N=N-C-);
 organic azides (-C-N₃);
 diazonium salts (-CN₂⁺ Z);
 N-nitroso compounds (-N-N=O); and
 aromatic sulphonylhydrazides (-SO₂-NH-NH₂).

This list is not exhaustive and substances with other reactive groups and some mixtures of substances may have similar properties.

Classification

2.2.41.1.11 Self-reactive substances are classified into seven types according to the degree of danger they present. The types of self-reactive substances range from type A, which is not accepted for carriage in the packaging in which it is tested, to type G, which is not subject to the provisions for self-reactive substances of Class 4.1. The classification of types B to F is directly related to the maximum quantity allowed in one packaging. The principles to be applied for classification as well as the applicable classification procedures, test methods and criteria and an example of a suitable test report are given in Part II of the Manual of Tests and Criteria.

2.2.41.1.12 Self-reactive substances which have already been classified and are already permitted for carriage in packagings are listed in 2.2.41.4, those already permitted for carriage in IBCs are listed in 4.1.4.2, packing instruction IBC520 and those already permitted for carriage in tanks according to Chapter 4.2 are listed in 4.2.5.2, portable tank instruction T23. Each permitted substance listed is assigned to a generic entry of Table A of Chapter 3.2 (UN Nos. 3221 to 3240), and appropriate subsidiary hazards and remarks providing relevant transport information are given.

The collective entries specify:

- self-reactive substances types B to F, see 2.2.41.1.11 above;
- physical state (liquid/solid); and
- temperature control (when required), see 2.2.41.1.17 below.

The classification of the self-reactive substances listed in 2.2.41.4 is based on the technically pure substance (except where a concentration of less than 100 % is specified).

2.2.41.1.13 Classification of self-reactive substances not listed in 2.2.41.4, 4.1.4.2, packing instruction IBC520 or 4.2.5.2, portable tank instruction T23 and assignment to a collective entry shall be made by the competent authority of the country of origin on the basis of a test report. The statement of approval shall contain the classification and the relevant conditions of carriage. If the country of origin is not a Contracting Party to ADR, the classification and the conditions of carriage shall be recognized by the competent authority of the first country Contracting Party to ADR reached by the consignment.

2.2.41.1.14 Activators, such as zinc compounds, may be added to some self-reactive substances to change their reactivity. Depending on both the type and the concentration of the activator, this may result in a decrease in thermal stability and a change in explosive properties. If either of these properties is altered, the new formulation shall be assessed in accordance with the classification procedure.

2.2.41.1.15 Samples of self-reactive substances or formulations of self-reactive substances not listed in 2.2.41.4, for which a complete set of test results is not available and which are to be carried for further testing or evaluation, shall be assigned to one of the appropriate entries for self-reactive substances type C provided the following conditions are met:

- the available data indicate that the sample would be no more dangerous than self-reactive substances type B;
- the sample is packaged in accordance with packing method OP2 and the quantity per transport unit is limited to 10 kg;
- the available data indicate that the control temperature, if any, is sufficiently low to prevent any dangerous decomposition and sufficiently high to prevent any dangerous phase separation.

Desensitization

- 2.2.41.1.16 In order to ensure safety during carriage, self-reactive substances are in many cases desensitized by use of a diluent. Where a percentage of a substance is stipulated, this refers to the percentage by mass, rounded to the nearest whole number. If a diluent is used, the self-reactive substance shall be tested with the diluent present in the concentration and form used in carriage. Diluents which may allow a self-reactive substance to concentrate to a dangerous extent in the event of leakage from a packaging shall not be used. Any diluent shall be compatible with the self-reactive substance. In this regard, compatible diluents are those solids or liquids which have no detrimental influence on the thermal stability and hazard type of the self-reactive substance. Liquid diluents in formulations requiring temperature control (see 2.2.41.1.14) shall have a boiling point of at least 60 °C and a flash-point not less than 5 °C. The boiling point of the liquid shall be at least 50 °C higher than the control temperature of the self-reactive substance.

Temperature control requirements

- 2.2.41.1.17 Self-reactive substances with an SADT not greater than 55 °C shall be subject to temperature control during carriage. See 7.1.7.

Solid desensitized explosives

- 2.2.41.1.18 Solid desensitized explosives are substances which are wetted with water or alcohols or are diluted with other substances to suppress their explosive properties. Such entries in Table A of Chapter 3.2 are: UN Nos. 1310, 1320, 1321, 1322, 1336, 1337, 1344, 1347, 1348, 1349, 1354, 1355, 1356, 1357, 1517, 1571, 2555, 2556, 2557, 2852, 2907, 3317, 3319, 3344, 3364, 3365, 3366, 3367, 3368, 3369, 3370, 3376, 3380 and 3474.

Substances related to self-reactive substances

- 2.2.41.1.19 Substances that:
- (a) have been provisionally accepted into Class 1 according to Test Series 1 and 2 but exempted from Class 1 by Test Series 6;
 - (b) are not self-reactive substances of Class 4.1; and
 - (c) are not substances of Classes 5.1 or 5.2;
- are also assigned to Class 4.1. UN Nos. 2956, 3241, 3242 and 3251 are such entries.

Polymerizing substances*Definitions and properties*

- 2.2.41.1.20 Polymerizing substances are substances which, without stabilization, are liable to undergo a strongly exothermic reaction resulting in the formation of larger molecules or resulting in the formation of polymers under conditions normally encountered in carriage. Such substances are considered to be polymerizing substances of Class 4.1 when:
- (a) their self-accelerating polymerization temperature (SAPT) is 75 °C or less under the conditions (with or without chemical stabilization as offered for carriage) and in the packaging, IBC or tank in which the substance or mixture is to be carried;
 - (b) they exhibit a heat of reaction of more than 300 J/g; and
 - (c) they do not meet any other criteria for inclusion in classes 1 to 8.

A mixture meeting the criteria of a polymerizing substance shall be classified as a polymerizing substance of Class 4.1.

Temperature control requirements

- 2.2.41.1.21 Polymerizing substances are subject to temperature control in carriage if their self-accelerating polymerization temperature (SAPT) is:
- (a) when offered for carriage in a packaging or IBC, 50 °C or less in the packaging or IBC in which the substance is to be carried; or

- (b) When offered for carriage in a tank, 45 °C or less in the tank in which the substance is to be carried.

See 7.1.7.

NOTE: *Substances meeting the criteria of polymerizing substances and also for inclusion in Classes 1 to 8 are subject to the requirements of special provision 386 of Chapter 3.3.*

2.2.41.2 Substances not accepted for carriage

2.2.41.2.1 The chemically unstable substances of Class 4.1 shall not be accepted for carriage unless the necessary steps have been taken to prevent their dangerous decomposition or polymerization during carriage. To this end, it shall in particular be ensured that receptacles and tanks do not contain any substance liable to promote these reactions.

2.2.41.2.2 Flammable solids, oxidizing, assigned to UN No. 3097 shall not be accepted for carriage unless they meet the requirements for Class 1 (see also 2.1.3.7).

2.2.41.2.3 The following substances shall not be accepted for carriage:

- Self-reactive substances of type A (see Manual of Tests and Criteria, Part II, paragraph 20.4.2 (a));
- Phosphorus sulphides which are not free from yellow and white phosphorus;
- Solid desensitized explosives other than those listed in Table A of Chapter 3.2;
- Inorganic flammable substances in the molten form other than UN No. 2448 SULPHUR, MOLTEN.

2.2.41.3 *List of collective entries*

Flammable solids	without subsidiary hazard	organic	F1	3175 SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. 1353 FIBRES IMPREGNATED WITH WEAKLY NITRATED NITROCELLULOSE, N.O.S. or 1353 FABRICS IMPREGNATED WITH WEAKLY NITRATED NITROCELLULOSE, N.O.S. 1325 FLAMMABLE SOLID, ORGANIC, N.O.S.		
		organic molten	F2	3176 FLAMMABLE SOLID, ORGANIC, MOLTEN, N.O.S.		
		inorganic	F3	3089 METAL POWDER, FLAMMABLE, N.O.S. ^{a,b} 3181 METAL SALTS OF ORGANIC COMPOUNDS, FLAMMABLE, N.O.S. 3182 METAL HYDRIDES, FLAMMABLE, N.O.S. ^c 3178 FLAMMABLE SOLID, INORGANIC, N.O.S.		
		articles	F4	3527 POLYESTER RESIN KIT, solid base material 3541 ARTICLES CONTAINING FLAMMABLE SOLID, N.O.S.		
		oxidizing	FO	3097 FLAMMABLE SOLID, OXIDIZING, N.O.S. (not allowed, see para. 2.2.41.2.2)		
		F	toxic	organic	FT1	2926 FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S.
				inorganic	FT2	3179 FLAMMABLE SOLID, TOXIC, INORGANIC, N.O.S.
			corrosive	organic	FC1	2925 FLAMMABLE SOLID, CORROSIVE, IN ORGANIC, N.O.S.
				inorganic	FC2	3180 FLAMMABLE SOLID, CORROSIVE, INORGANIC, N.O.S.
		Solid desensitized explosives	without subsidiary hazard	D	3319 NITROGLYCERIN MIXTURE, DESENSITIZED, SOLID, N.O.S. with more than 2 % but not more than 10 % nitroglycerin by mass 3344 PENTAERYTHRITOL TETRANITRATE (PENTAERYTHRITOL TETRANITRATE, PETN) MIXTURE, DESENSITIZED, SOLID, N.O.S. with more than 10 % but not more than 20 % PETN by mass 3380 DESENSITIZED EXPLOSIVE, SOLID, N.O.S.	
DT	Only substances listed in Table A of Chapter 3.2 are to be accepted for carriage as substances of Class 4.1					
SR1	3221 SELF-REACTIVE LIQUID TYPE A 3222 SELF-REACTIVE SOLID TYPE A 3223 SELF-REACTIVE LIQUID TYPE B 3224 SELF-REACTIVE SOLID TYPE B 3225 SELF-REACTIVE LIQUID TYPE C 3226 SELF-REACTIVE SOLID TYPE C 3227 SELF-REACTIVE LIQUID TYPE D 3228 SELF-REACTIVE SOLID TYPE D 3229 SELF-REACTIVE LIQUID TYPE E 3230 SELF-REACTIVE SOLID TYPE E 3231 SELF-REACTIVE LIQUID TYPE F 3232 SELF-REACTIVE SOLID TYPE F 3233 SELF-REACTIVE LIQUID TYPE G 3234 SELF-REACTIVE SOLID TYPE G } Not accepted for carriage, see 2.2.41.2.3 } Not subject to the provisions applicable to Class 4.1, see 2.2.41.1.11					
Self-reactive substances	SR	Not requiring temperature control	SR1	3221 SELF-REACTIVE LIQUID TYPE A 3222 SELF-REACTIVE SOLID TYPE A 3223 SELF-REACTIVE LIQUID TYPE B 3224 SELF-REACTIVE SOLID TYPE B 3225 SELF-REACTIVE LIQUID TYPE C 3226 SELF-REACTIVE SOLID TYPE C 3227 SELF-REACTIVE LIQUID TYPE D 3228 SELF-REACTIVE SOLID TYPE D 3229 SELF-REACTIVE LIQUID TYPE E 3230 SELF-REACTIVE SOLID TYPE E 3231 SELF-REACTIVE LIQUID TYPE F 3232 SELF-REACTIVE SOLID TYPE F 3233 SELF-REACTIVE LIQUID TYPE G 3234 SELF-REACTIVE SOLID TYPE G } Not accepted for carriage, see 2.2.41.2.3 } Not subject to the provisions applicable to Class 4.1, see 2.2.41.1.11		
		Requiring temperature control	SR2	3231 SELF-REACTIVE LIQUID TYPE B, TEMPERATURE CONTROLLED 3232 SELF-REACTIVE SOLID TYPE B, TEMPERATURE CONTROLLED 3233 SELF-REACTIVE LIQUID TYPE C, TEMPERATURE CONTROLLED 3234 SELF-REACTIVE SOLID TYPE C, TEMPERATURE CONTROLLED 3235 SELF-REACTIVE LIQUID TYPE D, TEMPERATURE CONTROLLED 3236 SELF-REACTIVE SOLID TYPE D, TEMPERATURE CONTROLLED 3237 SELF-REACTIVE LIQUID TYPE E, TEMPERATURE CONTROLLED 3238 SELF-REACTIVE SOLID TYPE E, TEMPERATURE CONTROLLED 3239 SELF-REACTIVE LIQUID TYPE F, TEMPERATURE CONTROLLED 3240 SELF-REACTIVE SOLID TYPE F, TEMPERATURE CONTROLLED		

(cont'd on next page)

^a Metals and metal alloys in powdered or other flammable form, liable to spontaneous combustion, are substances of Class 4.2.

^b Metals and metal alloys in powdered or other flammable form, which in contact with water, emit flammable gases, are substances of Class 4.3.

^c Metals hydrides which, in contact with water, emit flammable gases, are substances of Class 4.3. Aluminium borohydride or aluminium borohydride in devices are substances of Class 4.2, UN No. 2870.

2.2.41.3 *List of collective entries (cont'd)*

Polymerizing substances PM	not requiring temperature control	PM1	3531 POLYMERIZING SUBSTANCE, SOLID, STABILIZED, N.O.S. 3532 POLYMERIZING SUBSTANCE, LIQUID, STABILIZED, N.O.S.
	requiring temperature control	PM2	3533 POLYMERIZING SUBSTANCE, SOLID, TEMPERATURE CONTROLLED, N.O.S. 3534 POLYMERIZING SUBSTANCE, LIQUID, TEMPERATURE CONTROLLED, N.O.S.

2.2.41.4 *List of currently assigned self-reactive substances in packagings*

In the column "Packing Method" codes "OP1" to "OP8" refer to packing methods in 4.1.4.1, packing instruction P520 (see also 4.1.7.1). Self-reactive substances to be carried shall fulfil the classification and the control and emergency temperatures (derived from the SADT) as listed. For substances permitted in IBCs, see 4.1.4.2, packing instruction IBC520 and, for those permitted in tanks according to Chapter 4.2, see 4.2.5.2.6, portable tank instruction T23. The formulations not listed in this sub-section but listed in packing instruction IBC520 of 4.1.4.2 and in portable tank instruction T23 of 4.2.5.2.6 may also be carried packed in accordance with packing method OP8 of packing instruction P520 of 4.1.4.1, with the same control and emergency temperatures, if applicable.

NOTE: The classification given in this table is based on the technically pure substance (except where a concentration of less than 100 % is specified). For other concentrations, the substance may be classified differently following the procedures given in Part II of the Manual of Tests and Criteria and in 2.2.41.1.17.

SELF-REACTIVE SUBSTANCE	Concentration (%)	Packing method	Control temperature (°C)	Emergency temperature (°C)	UN generic entry	Remarks
ACETONE-PYROGALLOL COPOLYMER 2-DIAZO-1-NAPHTHOL-5-SULPHONATE	100	OP8			3228	
AZODICARBONAMIDE FORMULATION TYPE B, TEMPERATURE CONTROLLED	< 100	OP5			3232	(1) (2)
AZODICARBONAMIDE FORMULATION TYPE C	< 100	OP6			3224	(3)
AZODICARBONAMIDE FORMULATION TYPE C, TEMPERATURE CONTROLLED	< 100	OP6			3234	(4)
AZODICARBONAMIDE FORMULATION TYPE D	< 100	OP7			3226	(5)
AZODICARBONAMIDE FORMULATION TYPE D, TEMPERATURE CONTROLLED	< 100	OP7			3236	(6)
2,2'-AZODI(2,4-DIMETHYL-4-METHOXY- VALERONITRILE)	100	OP7	-5	+5	3236	
2,2'-AZODI(2,4-DIMETHYL-VALERONITRILE)	100	OP7	+10	+15	3236	
2,2'-AZODI(ETHYL-2-METHYL-PROPIONATE)	100	OP7	+20	+25	3235	
1,1-AZODI(HEXAHYDROBENZONITRILE)	100	OP7			3226	
2,2'-AZODI(ISOBUTYRONITRILE)	100	OP6	+40	+45	3234	
2,2'-AZODI(ISOBUTYRONITRILE) as a water based paste	≤ 50	OP6			3224	
2,2'-AZODI(2-METHYLBUTYRONITRILE)	100	OP7	+35	+40	3236	
BENZENE-1,3-DISULPHONYL HYDRAZIDE, as a paste	52	OP7			3226	
BENZENE SULPHONYL HYDRAZIDE	100	OP7			3226	
4-(BENZYL(ETHYL)AMINO)-3-ETHOXY- BENZENEDIAZONIUM ZINC CHLORIDE	100	OP7			3226	
4-(BENZYL(METHYL)AMINO)-3-ETHOXY- BENZENEDIAZONIUM ZINC CHLORIDE	100	OP7	+40	+45	3236	
3-CHLORO-4-DIETHYLAMINO BENZENE- DIAZONIUM ZINC CHLORIDE	100	OP7			3226	

SELF-REACTIVE SUBSTANCE	Concentration (%)	Packing method	Control temperature (°C)	Emergency temperature (°C)	UN generic entry	Remarks
2-DIAZO-1-NAPHTHOL-4-SULPHONYL CHLORIDE	100	OP5			3222	(2)
2-DIAZO-1-NAPHTHOL-5-SULPHONYL CHLORIDE	100	OP5			3222	(2)
2-DIAZO-1-NAPHTHOL SULPHONIC ACID ESTER MIXTURE, TYPE D	< 100	OP7			3226	(9)
2,5-DIBUTOXY-4-(4-MORPHOLINYL)-BENZENEDIAZONIUM, TETRACHLOROZINCATE (2:1)	100	OP8			3228	
2,5-DIETHOXY-4-MORPHOLINO-BENZENEDIAZONIUM ZINC CHLORIDE	67-100	OP7	+35	+40	3236	
2,5-DIETHOXY-4-MORPHOLINO-BENZENEDIAZONIUM ZINC CHLORIDE	66	OP7	+40	+45	3236	
2,5-DIETHOXY-4-MORPHOLINO-BENZENEDIAZONIUM TETRAFLUOROBORATE	100	OP7	+30	+35	3236	
2,5-DIETHOXY-4-(4-MORPHOLINYL)-BENZENEDIAZONIUM SULPHATE	100	OP7			3226	
2,5-DIETHOXY-4-(PHENYLSULPHONYL)-BENZENEDIAZONIUM ZINC CHLORIDE	67	OP7	+40	+45	3236	
DIETHYLENEGLYCOL BIS (ALLYL CARBONATE) + DI-ISOPROPYL-PEROXYDICARBONATE	≥ 88+≤ 12	OP8	-10	0	3237	
2,5-DIMETHOXY-4-(4-METHYL-PHENYLSULPHONYL)BENZENE-DIAZONIUM ZINC CHLORIDE	79	OP7	+40	+45	3236	
4-(DIMETHYLAMINO)-BENZENE-DIAZONIUM TRICHLOROZINCATE (-1)	100	OP8			3228	
4-DIMETHYLAMINO-6-(2-DIMETHYL-AMINOETHOXY) TOLUENE-2-DIAZONIUM ZINC CHLORIDE	100	OP7	+40	+45	3236	
N,N'-DINITROSO-N,N'-DIMETHYL TEREPHTHALAMIDE, as a paste	72	OP6			3224	
N,N'-DINITROSOPENTAMETHYLENE-TETRAMINE	82	OP6			3224	(7)
DIPHENYLOXIDE-4,4'-DISULPHONYL HYDRAZIDE	100	OP7			3226	
4-DIPROPYLAMINOBENZENE- DIAZONIUM ZINC CHLORIDE	100	OP7			3226	
2-(N,N-ETHOXYCARBONYL-PHENYLAMINO)-3-METHOXY-4-(N-METHYL-N-CYCLOHEXYLAMINO) BENZENEDIAZONIUM ZINC CHLORIDE	63-92	OP7	+ 40	+ 45	3236	
2-(N,N-ETHOXYCARBONYL- PHENYLAMINO)-3-METHOXY-4-(N-METHYL-N-CYCLOHEXYLAMINO) BENZENEDIAZONIUM ZINC CHLORIDE	62	OP7	+ 35	+ 40	3236	
N-FORMYL-2-(NITROMETHYLENE)-1,3-PERHYDROTHIAZINE	100	OP7	+45	+50	3236	
2-(2-HYDROXYETHOXY)-1-(PYRROLIDIN-1-YL)BENZENE-4- DIAZONIUM ZINC CHLORIDE	100	OP7	+ 45	+ 50	3236	
3-(2-HYDROXYETHOXY)-4- (PYRROLIDIN-1-YL) BENZENE DIAZONIUM ZINC CHLORIDE	100	OP7	+40	+45	3236	
<u>(7-METHOXY-5-METHYL-BENZOTHIOPHEN-2-YL) BORONIC ACID</u>	<u>88-100</u>	<u>OP7</u>			<u>3230</u>	<u>(11)</u>
2-(N,N-METHYLAMINOETHYL CARBONYL)-4-(3,4-DIMETHYLPHENYLSULPHONYL) BENZENEDIAZONIUM HYDROGEN SULPHATE	96	OP7	+45	+50	3236	
4-METHYLBENZENESULPHONYLHYDRAZIDE	100	OP7			3226	

SELF-REACTIVE SUBSTANCE	Concentration (%)	Packing method	Control temperature (°C)	Emergency temperature (°C)	UN generic entry	Remarks
3-METHYL-4-(PYRROLIDIN-1-YL) BENZENEDIAZONIUM TETRAFLUOROBORATE	95	OP6	+45	+50	3234	
4-NITROSOPHENOL	100	OP7	+35	+40	3236	
PHOSPHOROTHIOIC ACID, O-[(CYANOPHENYL METHYLENE) AZANYL] O,O-DIETHYL ESTER	82-91 (Z isomer)	OP8			3227	(10)
SELF-REACTIVE LIQUID, SAMPLE		OP2			3223	(8)
SELF-REACTIVE LIQUID, SAMPLE, TEMPERATURE CONTROLLED		OP2			3233	(8)
SELF-REACTIVE SOLID, SAMPLE		OP2			3224	(8)
SELF-REACTIVE SOLID, SAMPLE, TEMPERATURE CONTROLLED		OP2			3234	(8)
SODIUM 2-DIAZO-1-NAPHTHOL-4-SULPHONATE	100	OP7			3226	
SODIUM 2-DIAZO-1-NAPHTHOL-5-SULPHONATE	100	OP7			3226	
TETRAMINE PALLADIUM (II) NITRATE	100	OP6	+30	+35	3234	

Remarks

- (1) Azodicarbonamide formulations which fulfil the criteria of paragraph 20.4.2 (b) of the Manual of Tests and Criteria. The control and emergency temperatures shall be determined by the procedure given in 7.1.7.3.1 to 7.1.7.3.6.
- (2) "EXPLOSIVE" subsidiary hazard label required (Model No. 1, see 5.2.2.2.2).
- (3) Azodicarbonamide formulations which fulfil the criteria of paragraph 20.4.2 (c) of the Manual of Tests and Criteria.
- (4) Azodicarbonamide formulations which fulfil the criteria of paragraph 20.4.2 (c) of the Manual of Tests and Criteria. The control and emergency temperatures shall be determined by the procedure given in 7.1.7.3.1 to 7.1.7.3.6.
- (5) Azodicarbonamide formulations which fulfil the criteria of paragraph 20.4.2 (d) of the Manual of Tests and Criteria.
- (6) Azodicarbonamide formulations which fulfil the criteria of paragraph 20.4.2 (d) of the Manual of Tests and Criteria. The control and emergency temperatures shall be determined by the procedure given in 7.1.7.3.1 to 7.1.7.3.6.
- (7) With a compatible diluent having a boiling point of not less than 150 °C.
- (8) See 2.2.41.1.15.
- (9) This entry applies to mixtures of esters of 2-diazo-1-naphthol-4-sulphonic acid and 2-diazo-1-naphthol-5-sulphonic acid which fulfil the criteria of paragraph 20.4.2 (d) of the Manual of Test and Criteria.
- (10) This entry applies to the technical mixture in n-butanol within the specified concentration limits of the (Z) isomer.
- (11) The technical compound with the specified concentration limits may contain up to 12 % water and up to 1 % organic impurities.

2.2.42 Class 4.2 Substances liable to spontaneous combustion**2.2.42.1 Criteria**

2.2.42.1.1 The heading of Class 4.2 covers:

- *Pyrophoric substances* which are substances, including mixtures and solutions (liquid or solid), which even in small quantities ignite on contact with air within five minutes. These are the Class 4.2 substances the most liable to spontaneous combustion; and
- *Self-heating substances and articles* which are substances and articles, including mixtures and solutions, which, on contact with air, without energy supply, are liable to self-heating. These substances will ignite only in large amounts (kilograms) and after long periods of time (hours or days).

2.2.42.1.2 The substances and articles of Class 4.2 are subdivided as follows:

S Substances liable to spontaneous combustion, without subsidiary hazard:

- S1 Organic, liquid;
- S2 Organic, solid;
- S3 Inorganic, liquid;
- S4 Inorganic, solid;
- S5 Organometallic;
- S6 Articles

SW Substances liable to spontaneous combustion, which, in contact with water, emit flammable gases;

SO Substances liable to spontaneous combustion, oxidizing;

ST Substances liable to spontaneous combustion, toxic:

- ST1 Organic, toxic, liquid;
- ST2 Organic, toxic, solid;
- ST3 Inorganic, toxic, liquid;
- ST4 Inorganic, toxic, solid;

SC Substances liable to spontaneous combustion, corrosive:

- SC1 Organic, corrosive, liquid;
- SC2 Organic, corrosive, solid;
- SC3 Inorganic, corrosive, liquid;
- SC4 Inorganic, corrosive, solid.

Properties

2.2.42.1.3 Self-heating of a substance is a process where the gradual reaction of that substance with oxygen (in air) generates heat. If the rate of heat production exceeds the rate of heat loss, then the temperature of the substance will rise which, after an induction time, may lead to self-ignition and combustion.

Classification

2.2.42.1.4 Substances and articles classified in Class 4.2 are listed in Table A of Chapter 3.2. The assignment of substances and articles not mentioned by name in Table A of Chapter 3.2 to the relevant specific N.O.S. entry of 2.2.42.3 in accordance with the provisions of Chapter 2.1 can be based on experience or the results of the test procedures in accordance with the Manual of Tests and Criteria, Part III, Section 33.4. Assignment to general N.O.S. entries of Class 4.2 shall be based on the results of the test procedures in accordance with the Manual of Tests and Criteria, Part III, Section 33.4; experience shall also be taken into account when it leads to a more stringent assignment.

2.2.42.1.5 When substances or articles not mentioned by name are assigned to one of the entries listed in 2.2.42.3 on the basis of the test procedures in accordance with the Manual of Tests and Criteria, Part III, section 33.4, the following criteria shall apply:

- (a) Solids liable to spontaneous combustion (pyrophoric) shall be assigned to Class 4.2 when they ignite on falling from a height of 1 m or within five minutes;
- (b) Liquids liable to spontaneous combustion (pyrophoric) shall be assigned to Class 4.2 when:
 - (i) on being poured on an inert carrier, they ignite within five minutes, or
 - (ii) in the event of a negative result of the test according to (i), when poured on a dry, indented filter paper (Whatman No. 3 filter), they ignite or carbonize it within five minutes;
- (c) Substances in which, in a 10 cm sample cube, at 140 °C test temperature, spontaneous combustion or a rise in temperature to over 200 °C is observed within 24 hours shall be assigned to Class 4.2. This criterion is based on the temperature of the spontaneous combustion of charcoal, which is at 50 °C for a sample cube of 27 m³. Substances with a temperature of spontaneous combustion higher than 50 °C for a volume of 27 m³ are not to be assigned to Class 4.2.

NOTE 1: *Substances carried in packages with a volume of not more than 3 m³ are exempted from Class 4.2 if, tested with a 10 cm sample cube at 120 °C, no spontaneous combustion nor a rise in temperature to over 180 °C is observed within 24 hours.*

NOTE 2: *Substances carried in packages with a volume of not more than 450 litres are exempted from Class 4.2 if, tested with a 10 cm sample cube at 100 °C, no spontaneous combustion nor a rise in temperature to over 160 °C is observed within 24 hours.*

NOTE 3: *Since organometallic substances can be classified in Class 4.2 or 4.3 with additional subsidiary hazards, depending on their properties, a specific classification flow chart for these substances is given in 2.3.5.*

2.2.42.1.6 If substances of Class 4.2, as a result of admixtures, come into different categories of hazard from those to which the substances mentioned by name in Table A of Chapter 3.2 belong, these mixtures shall be assigned to the entries to which they belong on the basis of their actual degree of danger.

NOTE: *For the classification of solutions and mixtures (such as preparations and wastes), see also 2.1.3.*

2.2.42.1.7 On the basis of the test procedure in the Manual of Tests and Criteria, Part III, section 33.4 and the criteria set out in 2.2.42.1.5, it may also be determined whether the nature of a substance mentioned by name is such that the substance is not subject to the provisions for this Class.

Assignment of packing groups

2.2.42.1.8 Substances and articles classified under the various entries in Table A of Chapter 3.2 shall be assigned to packing groups I, II or III on the basis of test procedures of the Manual of Tests and Criteria, Part III, section 33.4, in accordance with the following criteria:

- (a) Substances liable to spontaneous combustion (pyrophoric) shall be assigned to packing group I;
- (b) Self-heating substances and articles in which, in a 2.5 cm sample cube, at 140 °C test temperature, spontaneous combustion or a rise in temperature to over 200 °C is observed within 24 hours, shall be assigned to packing group II;

Substances with a temperature of spontaneous combustion higher than 50 °C for a volume of 450 litres are not to be assigned to packing group II;

- (c) Slightly self-heating substances in which, in a 2.5 cm sample cube, the phenomena referred to under (b) are not observed, in the given conditions, but in which in a 10 cm sample cube at 140 °C test temperature spontaneous combustion or a rise in temperature to over 200 °C is observed within 24 hours, shall be assigned to packing group III.

2.2.42.2 *Substances not accepted for carriage*

The following substances shall not be accepted for carriage:

- UN No. 3255 tert-BUTYL HYPOCHLORITE; and
- Self-heating solids, oxidizing, assigned to UN No. 3127 unless they meet the requirements for Class 1 (see 2.1.3.7).

2.2.42.3 *List of collective entries*

Substances liable to spontaneous combustion	organic	liquid	S1	2845 PYROPHORIC LIQUID, ORGANIC, N.O.S. 3183 SELF-HEATING LIQUID, ORGANIC, N.O.S.
		solid	S2	1373 FIBRES or FABRICS, ANIMAL or 1373 VEGETABLE or SYNTHETIC, N.O.S. with oil 2006 PLASTICS, NITROCELLULOSE-BASED, SELF-HEATING, N.O.S. 3313 ORGANIC PIGMENTS, SELF HEATING 2846 PYROPHORIC SOLID, ORGANIC, N.O.S. 3088 SELF-HEATING SOLID, ORGANIC, N.O.S.
Without subsidiary hazard				
S	inorganic	liquid	S3	3194 PYROPHORIC LIQUID, INORGANIC, N.O.S. 3186 SELF-HEATING LIQUID, INORGANIC, N.O.S.
		solid	S4	1383 PYROPHORIC METAL, N.O.S. or 1383 PYROPHORIC ALLOY, N.O.S. 1378 METAL CATALYST, WETTED with a visible excess of liquid 2881 METAL CATALYST, DRY 3189 ^a METAL POWDER, SELF-HEATING, N.O.S. 3205 ALKALINE EARTH METAL ALCOHOLATES, N.O.S. 3200 PYROPHORIC SOLID, INORGANIC, N.O.S. 3190 SELF-HEATING SOLID, INORGANIC, N.O.S.
	organometallic	S5	3392 ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC 3391 ORGANOMETALLIC SUBSTANCE, SOLID, PYROPHORIC 3400 ORGANOMETALLIC SUBSTANCE, SOLID, SELF-HEATING	
	articles	S6	3542 ARTICLES CONTAINING A SUBSTANCE LIABLE TO SPONTANEOUS COMBUSTION, N.O.S.	
	Water-reactive		SW	3394 ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER-REACTIVE 3393 ORGANOMETALLIC SUBSTANCE, SOLID, PYROPHORIC, WATER-REACTIVE
Oxidizing			SO	3127 SELF-HEATING SOLID, OXIDIZING, N.O.S. (not allowed, see 2.2.42.2)
Toxic	organic	liquid	ST1	3184 SELF-HEATING LIQUID, TOXIC, ORGANIC, N.O.S.
		solid	ST2	3128 SELF-HEATING SOLID, TOXIC, ORGANIC, N.O.S.
ST	inorganic	liquid	ST3	3187 SELF-HEATING LIQUID, TOXIC, INORGANIC, N.O.S.
		solid	ST4	3191 SELF-HEATING SOLID, TOXIC, INORGANIC, N.O.S.
Corrosive	organic	liquid	SC1	3185 SELF-HEATING LIQUID, CORROSIVE, ORGANIC, N.O.S.
		solid	SC2	3126 SELF-HEATING SOLID, CORROSIVE, ORGANIC, N.O.S.
	inorganic	liquid	SC3	3188 SELF-HEATING LIQUID, CORROSIVE, INORGANIC, N.O.S.
		solid	SC4	3206 ALKALI METAL ALCOHOLATES, SELF-HEATING, CORROSIVE, N.O.S. 3192 SELF-HEATING SOLID, CORROSIVE, INORGANIC, N.O.S.
SC				

^a Dust and powder of metals, non toxic in a non-spontaneous combustible form which nevertheless, in contact with water, emit flammable gases, are substances of Class 4.3.

2.2.43 Class 4.3 Substances which, in contact with water, emit flammable gases**2.2.43.1 Criteria**

2.2.43.1.1 The heading of Class 4.3 covers substances which react with water to emit flammable gases liable to form explosive mixtures with air, and articles containing such substances.

2.2.43.1.2 Substances and articles of Class 4.3 are subdivided as follows:

W Substances which, in contact with water, emit flammable gases, without subsidiary hazard, and articles containing such substances:

W1 Liquid;

W2 Solid;

W3 Articles;

WF1 Substances which, in contact with water, emit flammable gases, liquid, flammable;

WF2 Substances which, in contact with water, emit flammable gases, solid, flammable;

WS Substances which, in contact with water, emit flammable gases, solid, self-heating;

WO Substances which, in contact with water, emit flammable gases, oxidizing, solid;

WT Substances which, in contact with water, emit flammable gases, toxic:

WT1 Liquid;

WT2 Solid;

WC Substances which, in contact with water, emit flammable gases, corrosive:

WC1 Liquid;

WC2 Solid;

WFC Substances which, in contact with water, emit flammable gases, flammable, corrosive.

Properties

2.2.43.1.3 Certain substances in contact with water may emit flammable gases that can form explosive mixtures with air. Such mixtures are easily ignited by all ordinary sources of ignition, for example naked lights, sparking handtools or unprotected lamps. The resulting blast wave and flames may endanger people and the environment. The test method referred to in 2.2.43.1.4 below is used to determine whether the reaction of a substance with water leads to the development of a dangerous amount of gases which may be flammable. This test method shall not be applied to pyrophoric substances.

Classification

2.2.43.1.4 Substances and articles classified in Class 4.3 are listed in Table A of Chapter 3.2. The assignment of substances and articles not mentioned by name in Table A of Chapter 3.2 to the relevant entry of 2.2.43.3 in accordance with the provisions of Chapter 2.1 shall be based on the results of the test procedure in accordance with the Manual of Tests and Criteria, Part III, Section 33.5; experience shall also be taken into account when it leads to a more stringent assignment.

2.2.43.1.5 When substances not mentioned by name are assigned to one of the entries listed in 2.2.43.3 on the basis of the test procedure in accordance with the Manual of Tests and Criteria, Part III, Section 33.5, the following criteria shall apply:

A substance shall be assigned to Class 4.3 if:

- (a) spontaneous ignition of the gas emitted takes place in any step of the test procedure; or
- (b) there is an evolution of flammable gas at a rate greater than 1 litre per kilogram of the substance to be tested per hour.

NOTE: *Since organometallic substances can be classified in Class 4.2 or 4.3 with additional subsidiary hazards, depending on their properties, a specific classification flow chart for these substances is given in 2.3.5.*

2.2.43.1.6 If substances of Class 4.3, as a result of admixtures, come into different categories of hazard from those to which the substances mentioned by name in Table A of Chapter 3.2 belong, these mixtures shall be assigned to the entries to which they belong on the basis of their actual degree of danger.

NOTE: *For the classification of solutions and mixtures (such as preparations and wastes) see also 2.1.3.*

2.2.43.1.7 On the basis of the test procedures in accordance with the Manual of Tests and Criteria, Part III, Section 33.5, and the criteria set out in paragraph 2.2.43.1.5, it may also be determined whether the nature of a substance mentioned by name is such that the substance is not subject to the provisions for this Class.

Assignment of packing groups

2.2.43.1.8 Substances and articles classified under the various entries in Table A of Chapter 3.2 shall be assigned to packing groups I, II or III on the basis of test procedures of the Manual of Tests and Criteria, Part III, section 33.5, in accordance with the following criteria:

- (a) Packing group I shall be assigned to any substance which reacts vigorously with water at ambient temperature and generally demonstrates a tendency for the gas produced to ignite spontaneously, or one which reacts readily with water at ambient temperatures such that the rate of evolution of flammable gas is equal to or greater than 10 litres per kilogram of substance over any one minute period;
- (b) Packing group II shall be assigned to any substance which reacts readily with water at ambient temperature such that the maximum rate of evolution of flammable gas is equal to or greater than 20 litres per kilogram of substance per hour, and which does not meet the criteria of packing group I;
- (c) Packing group III shall be assigned to any substance which reacts slowly with water at ambient temperature such that the maximum rate of evolution of flammable gas is greater than 1 litre per kilogram of substance per hour, and which does not meet the criteria of packing groups I or II.

2.2.43.2 *Substances not accepted for carriage*

Water-reactive solids, oxidizing, assigned to UN No. 3133 shall not be accepted for carriage unless they meet the requirements for Class 1 (see also 2.1.3.7).

2.2.43.3 *List of collective entries*

Substances which, in contact with water, emit flammable gases	liquid	W1	1389 ALKALI METAL AMALGAM, LIQUID 1391 ALKALI METAL DISPERSION or 1391 ALKALINE EARTH METAL DISPERSION 1392 ALKALINE EARTH METAL AMALGAM, LIQUID 1420 POTASSIUM METAL ALLOYS, LIQUID 1421 ALKALI METAL ALLOY, LIQUID, N.O.S. 1422 POTASSIUM SODIUM ALLOYS, LIQUID 3398 ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE 3148 WATER-REACTIVE LIQUID, N.O.S.
	solid	W2 ^a	1390 ALKALI METAL AMIDES 3401 ALKALI METAL AMALGAM, SOLID 3402 ALKALINE EARTH METAL AMALGAM, SOLID 3170 ALUMINIUM SMELTING BY-PRODUCTS or 3170 ALUMINIUM REMELTING BY-PRODUCTS 3403 POTASSIUM METAL ALLOYS, SOLID 3404 POTASSIUM SODIUM ALLOYS, SOLID 1393 ALKALINE EARTH METAL ALLOY, N.O.S. 1409 METAL HYDRIDES, WATER-REACTIVE, N.O.S. 3208 METALLIC SUBSTANCE, WATER-REACTIVE, N.O.S. 3395 ORGANOMETALLIC SUBSTANCE, SOLID, WATER-REACTIVE 2813 WATER-REACTIVE SOLID, N.O.S.
Without subsidiary hazard	articles	W3	3292 BATTERIES, CONTAINING SODIUM or 3292 CELLS, CONTAINING SODIUM 3543 ARTICLES CONTAINING A SUBSTANCE WHICH IN CONTACT WITH WATER EMITS FLAMMABLE GASES, N.O.S.
Liquid, flammable		WF1	3482 ALKALI METAL DISPERSION, FLAMMABLE or 3482 ALKALINE EARTH METAL DISPERSION, FLAMMABLE 3399 ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE
Solid, flammable		WF2	3396 ORGANOMETALLIC SUBSTANCE, SOLID, WATER-REACTIVE, FLAMMABLE 3132 WATER-REACTIVE SOLID, FLAMMABLE, N.O.S.
Solid, self-heating		WS ^b	3397 ORGANOMETALLIC SUBSTANCE, SOLID, WATER-REACTIVE, SELF-HEATING 3209 METALLIC SUBSTANCE, WATER-REACTIVE, SELF-HEATING, N.O.S. 3135 WATER-REACTIVE SOLID, SELF-HEATING, N.O.S.
Solid, oxidizing		WO	3133 WATER-REACTIVE SOLID, OXIDIZING, N.O.S. (not allowed, see 2.2.43.2)
Toxic	liquid	WT1	3130 WATER-REACTIVE LIQUID, TOXIC, N.O.S.
	solid	WT2	3134 WATER-REACTIVE SOLID, TOXIC, N.O.S.
Corrosive	liquid	WC1	3129 WATER-REACTIVE LIQUID, CORROSIVE, N.O.S.
	solid	WC2	3131 WATER-REACTIVE SOLID, CORROSIVE, N.O.S.
Flammable, corrosive		WFC ^c	2988 CHLOROSILANES, WATER-REACTIVE, FLAMMABLE, CORROSIVE, N.O.S. (No other collective entry with this classification code available, if need be, classification under a collective entry with a classification code to be determined according to the table of precedence of hazard in 2.1.3.10.)

^a *Metals and metal alloys which, in contact with water, do not emit flammable gases and are not pyrophoric or self-heating, but which are readily flammable, are substances of Class 4.1. Alkaline-earth metals and alkaline-earth metal alloys in pyrophoric form are substances of Class 4.2. Dust and powders of metals in pyrophoric form are substances of Class 4.2. Metals and metal alloys in pyrophoric form are substances of Class 4.2. Compounds of phosphorus with heavy metals such as iron, copper, etc. are not subject to the provisions of ADR.*

^b *Metals and metal alloys in pyrophoric form are substances of Class 4.2.*

^c *Chlorosilanes, having a flash-point of less than 23 °C and which, in contact with water, do not emit flammable gases, are substances of Class 3. Chlorosilanes, having a flash-point equal to or greater than 23 °C and which, in contact with water, do not emit flammable gases, are substances of Class 8.*

2.2.51 Class 5.1 Oxidizing substances**2.2.51.1 Criteria**

2.2.51.1.1 The heading of Class 5.1 covers substances which, while in themselves not necessarily combustible, may, generally by yielding oxygen, cause or contribute to the combustion of other material, and articles containing such substances.

2.2.51.1.2 The substances of Class 5.1 and articles containing such substances are subdivided as follows:

O Oxidizing substances without subsidiary hazard or articles containing such substances:

O1 Liquid;

O2 Solid;

O3 Articles;

OF Oxidizing substances, solid, flammable;

OS Oxidizing substances, solid, self-heating;

OW Oxidizing substances, solid which, in contact with water, emit flammable gases;

OT Oxidizing substances, toxic:

OT1 Liquid;

OT2 Solid;

OC Oxidizing substances, corrosive:

OC1 Liquid;

OC2 Solid;

OTC Oxidizing substances, toxic, corrosive.

2.2.51.1.3 Substances and articles classified in Class 5.1 are listed in Table A of Chapter 3.2. The assignment of substances and articles not mentioned by name in Table A of Chapter 3.2 to the relevant entry of 2.2.51.3 in accordance with the provisions of Chapter 2.1 can be based on the tests, methods and criteria in paragraphs 2.2.51.1.6-2.2.51.1.10 below and the Manual of Tests and Criteria, Part III, Section 34.4 or, for solid ammonium nitrate based fertilizers, Section 39 subject to the restrictions of 2.2.51.2.2, thirteenth and fourteenth indents. In the event of divergence between test results and known experience, judgement based on known experience shall take precedence over test results.

2.2.51.1.4 If substances of Class 5.1, as a result of admixtures, come into different categories of hazard from those to which the substances mentioned by name in Table A of Chapter 3.2 belong, these mixtures or solutions shall be assigned to the entries to which they belong on the basis of their actual degree of danger.

NOTE: For the classification of solutions and mixtures (such as preparations and wastes), see also Section 2.1.3.

2.2.51.1.5 On the basis of the test procedures in the Manual of Tests and Criteria, Part III, Section 34.4 and the criteria set out in 2.2.51.1.6 to 2.2.51.1.10 it may also be determined whether the nature of a substance mentioned by name in Table A of Chapter 3.2 is such that the substance is not subject to the provisions for this class.

Oxidizing solids*Classification*

2.2.51.1.6 When oxidizing solid substances not mentioned by name in Table A of Chapter 3.2 are assigned to one of the entries listed in 2.2.51.3 on the basis of the test procedure in accordance with the Manual of Tests and Criteria, Part III, sub-section 34.4.1 (test O.1) or alternatively, sub section 34.4.3 (test O.3), the following criteria shall apply:

- (a) In the test O.1, a solid substance shall be assigned to Class 5.1 if, in the 4:1 or the 1:1 sample-to-cellulose ratio (by mass) tested, it ignites or burns or exhibits mean burning times equal to or less than that of a 3:7 mixture (by mass) of potassium bromate and cellulose; or
- (b) In the test O.3, a solid substance shall be assigned to Class 5.1 if, in the 4:1 or the 1:1 sample-to-cellulose ratio (by mass) tested, it exhibits a mean burning rate equal to or greater than the mean burning rate of a 1:2 mixture (by mass) of calcium peroxide and cellulose.

2.2.51.1.7 By exception, solid ammonium nitrate based fertilizers shall be classified in accordance with the procedure as set out in the Manual of Tests and Criteria, Part III, Section 39.

Assignment of packing groups

2.2.51.1.8 Oxidizing solids classified under the various entries in Table A of Chapter 3.2 shall be assigned to packing groups I, II or III on the basis of test procedures of the Manual of Tests and Criteria, Part III, sub-section 34.4.1 (test O.1) or sub-section 34.4.3 (test O.3), in accordance with the following criteria:

- (a) Test O.1:
 - (i) Packing group I: any substance which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time less than the mean burning time of a 3:2 mixture, by mass, of potassium bromate and cellulose;
 - (ii) Packing group II: any substance which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time equal to or less than the mean burning time of a 2:3 mixture (by mass) of potassium bromate and cellulose and the criteria for packing group I are not met;
 - (iii) Packing group III: any substance which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time equal to or less than the mean burning time of a 3:7 mixture (by mass) of potassium bromate and cellulose and the criteria for packing groups I and II are not met;
- (b) Test O.3:
 - (i) Packing group I: any substance which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning rate greater than the mean burning rate of a 3:1 mixture (by mass) of calcium peroxide and cellulose;
 - (ii) Packing group II: any substance which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning rate equal to or greater than the mean burning rate of a 1:1 mixture (by mass) of calcium peroxide and cellulose, and the criteria for packing group I are not met;
 - (iii) Packing group III: any substance which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning rate equal to or greater than the mean burning rate of a 1:2 mixture (by mass) of calcium peroxide and cellulose, and the criteria for packing groups I and II are not met.

Oxidizing liquids*Classification*

2.2.51.1.9 When oxidizing liquid substances not mentioned by name in Table A of Chapter 3.2 are assigned to one of the entries listed in sub-section 2.2.51.3 on the basis of the test procedure in accordance with the Manual of Tests and Criteria, Part III, sub-section 34.4.2, the following criteria shall apply:

A liquid substance shall be assigned to Class 5.1 if, in the 1:1 mixture, by mass, of substance and cellulose tested, it exhibits a pressure rise of 2070 kPa gauge or more and a mean pressure rise time equal to or less than the mean pressure rise time of a 1:1 mixture, by mass, of 65 % aqueous nitric acid and cellulose.

Assignment of packing groups

2.2.51.1.10 Oxidizing liquids classified under the various entries in Table A of Chapter 3.2 shall be assigned to packing groups I, II or III on the basis of test procedures of the Manual of Tests and Criteria, Part III, section 34.4.2, in accordance with the following criteria:

- (a) Packing group I: any substance which, in the 1:1 mixture, by mass, of substance and cellulose tested, spontaneously ignites; or the mean pressure rise time of a 1:1 mixture, by mass, of substance and cellulose is less than that of a 1:1 mixture, by mass, of 50 % perchloric acid and cellulose;
- (b) Packing group II: any substance which, in the 1:1 mixture, by mass, of substance and cellulose tested, exhibits a mean pressure rise time less than or equal to the mean pressure rise time of a 1:1 mixture, by mass, of 40 % aqueous sodium chlorate solution and cellulose; and the criteria for packing group I are not met;
- (c) Packing group III: any substance which, in the 1:1 mixture, by mass, of substance and cellulose tested, exhibits a mean pressure rise time less than or equal to the mean pressure rise time of a 1:1 mixture, by mass, of 65 % aqueous nitric acid and cellulose; and the criteria for packing groups I and II are not met.

2.2.51.2 *Substances not accepted for carriage*

2.2.51.2.1 The chemically unstable substances of Class 5.1 shall not be accepted for carriage unless the necessary steps have been taken to prevent their dangerous decomposition or polymerization during carriage. To this end it shall in particular be ensured that receptacles and tanks do not contain any material liable to promote these reactions.

2.2.51.2.2 The following substances and mixtures shall not be accepted for carriage:

- oxidizing solids, self-heating, assigned to UN No. 3100, oxidizing solids, water-reactive, assigned to UN No. 3121 and oxidizing solids, flammable, assigned to UN No. 3137, unless they meet the requirements for Class 1 (see also 2.1.3.7);
- hydrogen peroxide, not stabilized or hydrogen peroxide, aqueous solutions, not stabilized containing more than 60 % hydrogen peroxide;
- tetranitromethane not free from combustible impurities;
- perchloric acid solutions containing more than 72 % (mass) acid, or mixtures of perchloric acid with any liquid other than water;
- chloric acid solution containing more than 10 % chloric acid or mixtures of chloric acid with any liquid other than water;
- halogenated fluor compounds other than UN Nos. 1745 BROMINE PENTAFLUORIDE; 1746 BROMINE TRIFLUORIDE and 2495 IODINE PENTAFLUORIDE of Class 5.1 as well as UN Nos. 1749 CHLORINE TRIFLUORIDE and 2548 CHLORINE PENTAFLUORIDE of Class 2;
- ammonium chlorate and its aqueous solutions and mixtures of a chlorate with an ammonium salt;
- ammonium chlorite and its aqueous solutions and mixtures of a chlorite with an ammonium salt;
- mixtures of a hypochlorite with an ammonium salt;
- ammonium bromate and its aqueous solutions and mixtures of a bromate with an ammonium salt;
- ammonium permanganate and its aqueous solutions and mixtures of a permanganate with an ammonium salt;
- ammonium nitrate containing more than 0.2 % combustible substances (including any organic substance calculated as carbon) unless it is a constituent of a substance or article of Class 1;

- ammonium nitrate based fertilizers with compositions that lead to exit boxes 4, 6, 8, 15, 31, or 33 of the flowchart of paragraph 39.5.1 of the Manual of Tests and Criteria, Part III, Section 39, unless they have been assigned a suitable UN number in Class 1;
- ammonium nitrate based fertilizers with compositions that lead to exit boxes 20, 23 or 39 of the flowchart of paragraph 39.5.1 of the Manual of Tests and Criteria, Part III, Section 39, unless they have been assigned a suitable UN number in Class 1 or, provided that the suitability for carriage has been demonstrated and that this has been approved by the competent authority, in Class 5.1 other than UN No. 2067;

NOTE: The term “competent authority” means the competent authority of the country of origin. If the country of origin is not a Contracting Party to ADR, the classification and conditions of carriage shall be recognized by the competent authority of the first country Contracting Party to ADR reached by the consignment.

- ammonium nitrite and its aqueous solutions and mixtures of an inorganic nitrite with an ammonium salt;
- mixtures of potassium nitrate, sodium nitrite and an ammonium salt.

2.2.51.3 List of collective entries

Oxidizing substances and articles containing such substances	liquid	O1	3210 CHLORATES, INORGANIC, AQUEOUS SOLUTION, N.O.S. 3211 PERCHLORATES, INORGANIC, AQUEOUS SOLUTION, N.O.S. 3213 BROMATES, INORGANIC, AQUEOUS SOLUTION, N.O.S. 3214 PERMANGANATES, INORGANIC, AQUEOUS SOLUTION, N.O.S. 3216 PERSULPHATES, INORGANIC, AQUEOUS SOLUTION, N.O.S. 3218 NITRATES, INORGANIC, AQUEOUS SOLUTION, N.O.S. 3219 NITRITES, INORGANIC, AQUEOUS SOLUTION, N.O.S. 3139 OXIDIZING LIQUID, N.O.S.
	solid	O2	1450 BROMATES, INORGANIC, N.O.S. 1461 CHLORATES, INORGANIC, N.O.S. 1462 CHLORITES, INORGANIC, N.O.S. 1477 NITRATES, INORGANIC, N.O.S. 1481 PERCHLORATES, INORGANIC, N.O.S. 1482 PERMANGANATES, INORGANIC, N.O.S. 1483 PEROXIDES, INORGANIC, N.O.S. 2627 NITRITES, INORGANIC, N.O.S. 3212 HYPOCHLORITES, INORGANIC, N.O.S. 3215 PERSULPHATES, INORGANIC, N.O.S. 1479 OXIDIZING SOLID, N.O.S.
Without subsidiary hazard	articles	O3	3356 OXYGEN GENERATOR, CHEMICAL 3544 ARTICLES CONTAINING OXIDIZING SUBSTANCE, N.O.S.
Solid, flammable		OF	3137 OXIDIZING SOLID, FLAMMABLE, N.O.S. (not allowed, see 2.2.51.2)
Solid, self-heating		OS	3100 OXIDIZING SOLID, SELF-HEATING, N.O.S. (not allowed, see 2.2.51.2)
Solid, water reactive		OW	3121 OXIDIZING SOLID, WATER REACTIVE, N.O.S. (not allowed, see 2.2.51.2)
Toxic	liquid	OT1	3099 OXIDIZING LIQUID, TOXIC, N.O.S.
OT	solid	OT2	3087 OXIDIZING SOLID, TOXIC, N.O.S.
Corrosive	liquid	OC1	3098 OXIDIZING LIQUID, CORROSIVE, N.O.S.
OC	solid	OC2	3085 OXIDIZING SOLID, CORROSIVE, N.O.S.
Toxic, corrosive		OTC	(No collective entry with this classification code available; if need be, classification under a collective entry with a classification code to be determined according to the table of precedence of hazard in 2.1.3.10.)

2.2.52 Class 5.2 Organic peroxides**2.2.52.1 Criteria**

2.2.52.1.1 The heading of Class 5.2 covers organic peroxides and formulations of organic peroxides.

2.2.52.1.2 The substances of Class 5.2 are subdivided as follows:

P1 Organic peroxides, not requiring temperature control;

P2 Organic peroxides, requiring temperature control.

Definition

2.2.52.1.3 *Organic peroxides* are organic substances which contain the bivalent -O-O- structure and may be considered derivatives of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals.

Properties

2.2.52.1.4 Organic peroxides are liable to exothermic decomposition at normal or elevated temperatures. The decomposition can be initiated by heat, contact with impurities (e.g. acids, heavy-metal compounds, amines), friction or impact. The rate of decomposition increases with temperature and varies with the organic peroxide formulation. Decomposition may result in the evolution of harmful, or flammable, gases or vapours. For certain organic peroxides the temperature shall be controlled during carriage. Some organic peroxides may decompose explosively, particularly if confined. This characteristic may be modified by the addition of diluents or by the use of appropriate packagings. Many organic peroxides burn vigorously. Contact of organic peroxides with the eyes is to be avoided. Some organic peroxides will cause serious injury to the cornea, even after brief contact, or will be corrosive to the skin.

NOTE: *Test methods for determining the flammability of organic peroxides are set out in the Manual of Tests and Criteria, Part III, sub-section 32.4. Because organic peroxides may react vigorously when heated, it is recommended to determine their flash-point using small sample sizes such as described in ISO 3679:1983.*

Classification

2.2.52.1.5 Any organic peroxide shall be considered for classification in Class 5.2 unless the organic peroxide formulation contains:

- (a) Not more than 1.0 % available oxygen from the organic peroxides when containing not more than 1.0 % hydrogen peroxide;
- (b) Not more than 0.5 % available oxygen from the organic peroxides when containing more than 1.0 % but not more than 7.0 % hydrogen peroxide.

NOTE: *The available oxygen content (%) of an organic peroxide formulation is given by the formula*

$$16 \times \sum (n_i \times c_i / m_i)$$

where:

- n_i = number of peroxygen groups per molecule of organic peroxide i ;
 c_i = concentration (mass %) of organic peroxide i ; and
 m_i = molecular mass of organic peroxide i .

2.2.52.1.6 Organic peroxides are classified into seven types according to the degree of danger they present. The types of organic peroxide range from type A, which is not accepted for carriage in the packaging in which it is tested, to type G, which is not subject to the provisions of Class 5.2. The classification of types B to F is directly related to the maximum quantity allowed in one package. The principles to be applied to the classification of substances not listed in 2.2.52.4 are set out in the Manual of Tests and Criteria, Part II.

2.2.52.1.7 Organic peroxides which have already been classified and are already permitted for carriage in packagings are listed in 2.2.52.4, those already permitted for carriage in IBCs are listed in 4.1.4.2, packing instruction IBC520 and those already permitted for carriage in tanks in accordance with

Chapters 4.2 and 4.3 are listed in 4.2.5.2, portable tank instruction T23. Each permitted substance listed is assigned to a generic entry of Table A of Chapter 3.2 (UN Nos. 3101 to 3120) and appropriate subsidiary hazards and remarks providing relevant transport information are given.

These generic entries specify:

- the type (B to F) of organic peroxide (see 2.2.52.1.6 above);
- physical state (liquid/solid); and
- temperature control (when required), see 2.2.52.1.15 and 2.2.52.1.16.

Mixtures of these formulations may be classified as the same type of organic peroxide as that of the most dangerous component and be carried under the conditions of carriage given for this type. However, as two stable components can form a thermally less stable mixture, the self-accelerating decomposition temperature (SADT) of the mixture shall be determined and, if necessary, the control and emergency temperatures derived from the SADT in accordance with 7.1.7.3.6.

2.2.52.1.8 Classification of organic peroxides not listed in 2.2.52.4, 4.1.4.2 packing instruction IBC520 or 4.2.5.2, portable tank instruction T23, and assignment to a collective entry shall be made by the competent authority of the country of origin. The statement of approval shall contain the classification and the relevant conditions of carriage. If the country of origin is not a Contracting Party to ADR, the classification and conditions of carriage shall be recognized by the competent authority of the first country Contracting Party to ADR reached by the consignment.

2.2.52.1.9 Samples of organic peroxides or formulations of organic peroxides not listed in 2.2.52.4, for which a complete set of test results is not available and which are to be carried for further testing or evaluation, shall be assigned to one of the appropriate entries for organic peroxides type C provided the following conditions are met:

- the available data indicate that the sample would be no more dangerous than organic peroxides type B;
- the sample is packaged in accordance with packing method OP2 and the quantity per transport unit is limited to 10 kg;
- the available data indicate that the control temperature, if any, is sufficiently low to prevent any dangerous decomposition and sufficiently high to prevent any dangerous phase separation.

Desensitization of organic peroxides

2.2.52.1.10 In order to ensure safety during carriage, organic peroxides are in many cases desensitized by organic liquids or solids, inorganic solids or water. Where a percentage of a substance is stipulated, this refers to the percentage by mass, rounded to the nearest whole number. In general, desensitization shall be such that, in case of spillage, the organic peroxide will not concentrate to a dangerous extent.

2.2.52.1.11 Unless otherwise stated for the individual organic peroxide formulation, the following definition(s) shall apply to diluents used for desensitization:

- diluents type A are organic liquids which are compatible with the organic peroxide and which have a boiling point of not less than 150 °C. Type A diluents may be used for desensitizing all organic peroxides;
- diluents type B are organic liquids which are compatible with the organic peroxide and which have a boiling point of less than 150 °C but not less than 60 °C and a flash-point of not less than 5 °C.

Type B diluents may be used for desensitization of all organic peroxides provided that the boiling point of the liquid is at least 60 °C higher than the SADT in a 50 kg package.

2.2.52.1.12 Diluents, other than type A or type B, may be added to organic peroxide formulations as listed in 2.2.52.4 provided that they are compatible. However, replacement of all or part of a type A or type B diluent by another diluent with differing properties requires that the organic peroxide formulation be re-assessed in accordance with the normal acceptance procedure for Class 5.2.

2.2.52.1.13 Water may only be used for the desensitization of organic peroxides which are listed in 2.2.52.4 or in the competent authority decision according to 2.2.52.1.8 as being "with water" or "as a stable dispersion in water". Samples of organic peroxides or formulations of organic peroxides not listed in 2.2.52.4 may also be desensitized with water provided the requirements of 2.2.52.1.9 are met.

2.2.52.1.14 Organic and inorganic solids may be used for desensitization of organic peroxides provided that they are compatible. Compatible liquids and solids are those which have no detrimental influence on the thermal stability and hazard type of the organic peroxide formulation.

Temperature control requirements

2.2.52.1.15 The following organic peroxides shall be subject to temperature control during carriage:

- organic peroxides types B and C with an SADT ≤ 50 °C;
- organic peroxides type D showing a medium effect when heated under confinement with an SADT ≤ 50 °C or showing a low or no effect when heated under confinement with an SADT ≤ 45 °C; and
- organic peroxides types E and F with an SADT ≤ 45 °C.

NOTE: Provisions for the determination of the effects of heating under confinement are given in the Manual of Tests and Criteria, Part II, Section 20 and test series E in Section 25.

See 7.1.7.

2.2.52.1.16 Where applicable, control and emergency temperatures are listed in 2.2.52.4. The actual temperature during carriage may be lower than the control temperature but shall be selected so as to avoid dangerous separation of phases.

2.2.52.2 Substances not accepted for carriage

Organic peroxides, type A, shall not be accepted for carriage under the provisions of Class 5.2 (see Manual of Tests and Criteria, Part II, paragraph 20.4.3 (a)).

2.2.52.3 List of collective entries

Organic peroxides <hr/> Not requiring temperature control P1 <hr/> Requiring temperature control P2	3101 ORGANIC PEROXIDE TYPE A, LIQUID 3102 ORGANIC PEROXIDE TYPE A, SOLID 3103 ORGANIC PEROXIDE TYPE B, LIQUID 3104 ORGANIC PEROXIDE TYPE B, SOLID 3105 ORGANIC PEROXIDE TYPE C, LIQUID 3106 ORGANIC PEROXIDE TYPE C, SOLID 3107 ORGANIC PEROXIDE TYPE D, LIQUID 3108 ORGANIC PEROXIDE TYPE D, SOLID 3109 ORGANIC PEROXIDE TYPE E, LIQUID 3110 ORGANIC PEROXIDE TYPE E, SOLID 3111 ORGANIC PEROXIDE TYPE F, LIQUID 3112 ORGANIC PEROXIDE TYPE F, SOLID 3545 ARTICLES CONTAINING ORGANIC PEROXIDE, N.O.S.	} Not accepted for carriage, see 2.2.52.2
	3113 ORGANIC PEROXIDE TYPE G, LIQUID 3114 ORGANIC PEROXIDE TYPE G, SOLID 3115 ORGANIC PEROXIDE TYPE B, LIQUID, TEMPERATURE CONTROLLED 3116 ORGANIC PEROXIDE TYPE B, SOLID, TEMPERATURE CONTROLLED 3117 ORGANIC PEROXIDE TYPE C, LIQUID, TEMPERATURE CONTROLLED 3118 ORGANIC PEROXIDE TYPE C, SOLID, TEMPERATURE CONTROLLED 3119 ORGANIC PEROXIDE TYPE D, LIQUID, TEMPERATURE CONTROLLED 3120 ORGANIC PEROXIDE TYPE D, SOLID, TEMPERATURE CONTROLLED 3121 ORGANIC PEROXIDE TYPE E, LIQUID, TEMPERATURE CONTROLLED 3122 ORGANIC PEROXIDE TYPE E, SOLID, TEMPERATURE CONTROLLED 3123 ORGANIC PEROXIDE TYPE F, LIQUID, TEMPERATURE CONTROLLED 3124 ORGANIC PEROXIDE TYPE F, SOLID, TEMPERATURE CONTROLLED 3545 ARTICLES CONTAINING ORGANIC PEROXIDE, N.O.S.	} Not subject to the provisions applicable to Class 5.2, see 2.2.52.1.6

2.2.52.4

List of currently assigned organic peroxides in packagings

In the column "Packing Method", codes "OP1" to "OP8" refer to packing methods in 4.1.4.1, packing instruction P520 (see also 4.1.7.1). Organic peroxides to be carried shall fulfil the classification and the control and emergency temperatures (derived from the SADT) as listed. For substances permitted in IBCs, see 4.1.4.2, packing instruction IBC520 and, for those permitted in tanks according to Chapters 4.2 and 4.3, see 4.2.5.2.6, portable tank instruction T23. The formulations [not listed in this sub-section](#) [but](#) listed in packing instruction IBC520 of 4.1.4.2 and in portable tank instruction T23 of 4.2.5.2.6 may also be carried packed in accordance with packing method OP8 of packing instruction P520 of 4.1.4.1, with the same control and emergency temperatures, if applicable.

ORGANIC PEROXIDE	Concentration (%)	Diluent type A (%)	Diluent type B (%) 1)	Inert solid (%)	Water	Packing Method	Control temperature (°C)	Emergency temperature (°C)	Number (Generic entry)	Subsidiary hazards and remarks
ACETYL ACETONE PEROXIDE	≤ 42	≥ 48			≥ 8	OP7			3105	2)
"	≤ 35	≥ 57			≥ 8	OP8			3107	32)
"	≤ 32 as a paste					OP7			3106	20)
ACETYL CYCLOHEXANESULPHONYL PEROXIDE	≤ 82				≥ 12	OP4	-10	0	3112	3)
"	≤ 32		≥ 68			OP7	-10	0	3115	
tert-AMYL HYDROPEROXIDE	≤ 88	≥ 6			≥ 6	OP8			3107	
tert-AMYL PEROXYACETATE	≤ 62	≥ 38				OP7			3105	
tert-AMYL PEROXYBENZOATE	≤ 100					OP5			3103	
tert-AMYL PEROXY-2-ETHYLHEXANOATE	≤ 100					OP7	+20	+25	3115	
tert-AMYL PEROXY-2-ETHYLHEXYL CARBONATE	≤ 100					OP7			3105	
tert-AMYL PEROXY ISOPROPYL CARBONATE	≤ 77	≥ 23				OP5			3103	
tert-AMYL PEROXYNEODECANOATE	≤ 77		≥ 23			OP7	0	+10	3115	
"	≤ 47	≥ 53				OP8	0	+10	3119	
tert-AMYL PEROXYPIVALATE	≤ 77		≥ 23			OP5	+10	+15	3113	
tert-AMYLPEROXY-3,5,5-TRIMETHYLHEXANOATE	≤ 100					OP7			3105	
tert-BUTYL CUMYL PEROXIDE	> 42 - 100					OP8			3109	
"	≤ 52			≥ 48		OP8			3108	
n-BUTYL-4,4-DI-(tert-BUTYLPEROXY)VALERATE	> 52 - 100					OP5			3103	
"	≤ 52			≥ 48		OP8			3108	
tert-BUTYL HYDROPEROXIDE	>79 - 90				≥ 10	OP5			3103	13)
"	≤ 80	≥ 20				OP7			3105	4) 13)
"	≤ 79				> 14	OP8			3107	13) 23)
"	≤ 72				≥ 28	OP8			3109	13)
tert-BUTYL HYDROPEROXIDE + DI-tert-BUTYLPEROXIDE	< 82 + >9				≥ 7	OP5			3103	13)

ORGANIC PEROXIDE	Concentration (%)	Diluent type A (%)	Diluent type B (%) 1)	Inert solid (%)	Water	Packing Method	Control temperature (°C)	Emergency temperature (°C)	Number (Generic entry)	Subsidiary hazards and remarks
tert-BUTYL MONOPEROXYMALEATE	> 52 - 100					OP5			3102	3)
"	≤ 52	≥ 48				OP6			3103	
"	≤ 52			≥ 48		OP8			3108	
"	≤ 52 as a paste					OP8			3108	
tert-BUTYL PEROXYACETATE	> 52 - 77	≥ 23				OP5			3101	3)
"	> 32 - 52	≥ 48				OP6			3103	
"	≤ 32		≥ 68			OP8			3109	
tert-BUTYL PEROXYBENZOATE	> 77 - 100					OP5			3103	
"	> 52 - 77	≥ 23				OP7			3105	
"	≤ 52			≥ 48		OP7			3106	
tert-BUTYL PEROXYBUTYL FUMARATE	≤ 52	≥ 48				OP7			3105	
tert-BUTYL PEROXYCROTONATE	≤ 77	≥ 23				OP7			3105	
tert-BUTYL PEROXYDIETHYLACETATE	≤ 100					OP5	+20	+25	3113	
tert-BUTYL PEROXY-2-ETHYLHEXANOATE	> 52 - 100					OP6	+20	+25	3113	
"	> 32 - 52		≥ 48			OP8	+30	+35	3117	
"	≤ 52			≥ 48		OP8	+20	+25	3118	
"	≤ 32		≥ 68			OP8	+40	+45	3119	
tert-BUTYL PEROXY-2-ETHYLHEXANOATE + 2,2-DI-(tert-BUTYLPEROXY)BUTANE	≤ 12 + ≤ 14	≥ 14		≥ 60		OP7			3106	
"	≤ 31 + ≤ 36		≥ 33			OP7	+35	+40	3115	
tert-BUTYL PEROXY-2-ETHYLHEXYLCARBONATE	≤ 100					OP7			3105	
tert-BUTYL PEROXYISOBUTYRATE	> 52 - 77		≥ 23			OP5	+15	+20	3111	3)
"	≤ 52		≥ 48			OP7	+15	+20	3115	
tert-BUTYLPEROXY ISOPROPYLCARBONATE	≤ 77	≥ 23				OP5			3103	
"	≤ 62		≥ 38			OP7			3105	

ORGANIC PEROXIDE	Concentration (%)	Diluent type A (%)	Diluent type B (%) 1)	Inert solid (%)	Water	Packing Method	Control temperature (°C)	Emergency temperature (°C)	Number (Generic entry)	Subsidiary hazards and remarks
1-(2-tert-BUTYLPEROXY ISOPROPYL)-3-ISOPROPENYLBENZENE	≤ 77	≥ 23				OP7			3105	
"	≤ 42			≥ 58		OP8			3108	
tert-BUTYL PEROXY-2-METHYLBENZOATE	≤ 100					OP5			3103	
tert-BUTYL PEROXYNEODECANOATE	> 77 - 100					OP7	-5	+5	3115	
"	≤ 77		≥ 23			OP7	0	+10	3115	
"	≤ 52 as a stable dispersion in water					OP8	0	+10	3119	
"	≤ 42 as a stable dispersion in water (frozen)					OP8	0	+10	3118	
"	≤ 32	≥ 68				OP8	0	+10	3119	
tert-BUTYL PEROXYNEOHEPTANOATE	≤ 77	≥ 23				OP7	0	+10	3115	
"	≤ 42 as a stable dispersion in water					OP8	0	+10	3117	
tert-BUTYL PEROXYPIVALATE	> 67 - 77	≥ 23				OP5	0	+10	3113	
"	> 27 - 67		≥ 33			OP7	0	+10	3115	
"	≤ 27		≥ 73			OP8	+30	+35	3119	
tert-BUTYLPEROXY STEARYLCARBONATE	≤ 100					OP7			3106	
tert-BUTYL PEROXY-3,5,5-TRIMETHYLHEXANOATE	> 37 - 100					OP7			3105	
"	≤ 42			≥ 58		OP7			3106	
"	≤ 37		≥ 63			OP8			3109	
3-CHLOROPEROXYBENZOIC ACID	> 57 - 86			≥ 14		OP1			3102	3)
"	≤ 57			≥ 3	≥ 40	OP7			3106	
"	≤ 77			≥ 6	≥ 17	OP7			3106	
CUMYL HYDROPEROXIDE	> 90 - 98	≤ 10				OP8			3107	13)
"	≤ 90	≥ 10				OP8			3109	13) 18)

ORGANIC PEROXIDE	Concentration (%)	Diluent type A (%)	Diluent type B (%) 1)	Inert solid (%)	Water	Packing Method	Control temperature (°C)	Emergency temperature (°C)	Number (Generic entry)	Subsidiary hazards and remarks
CUMYL PEROXYNEODECANOATE	≤ 87	≥ 13				OP7	- 10	0	3115	
"	≤ 77		≥ 23			OP7	-10	0	3115	
"	≤ 52 as a stable dispersion in water					OP8	-10	0	3119	
CUMYL PEROXYNEOHEPTANOATE	≤ 77	≥ 23				OP7	-10	0	3115	
CUMYL PEROXYPIVALATE	≤ 77		≥ 23			OP7	-5	+5	3115	
CYCLOHEXANONE PEROXIDE(S)	≤ 91				≥ 9	OP6			3104	13)
"	≤ 72	≥ 28				OP7			3105	5)
"	≤ 72 as a paste					OP7			3106	5) 20)
"	≤ 32			≥ 68					Exempt	29)
{[3R-(3R,5aS,6S,8aS,9R,10R,12S,12aR**)]-DECAHYDRO-10-METHOXY-3,6,9-TRIMETHYL-3,12-EPOXY-12H-PYRANO[4,3-j]-1,2-BENZODIOXEPIN}	≤ 100					OP7			3106	
DIACETONE ALCOHOL PEROXIDES	≤ 57		≥ 26		≥ 8	OP7	+40	+45	3115	6)
DIACETYL PEROXIDE	≤ 27		≥ 73			OP7	+20	+25	3115	7) 13)
DI-tert-AMYL PEROXIDE	≤ 100					OP8			3107	
2,2-DI-(tert-AMYLPEROXY)BUTANE	≤ 57	≥ 43				OP7			3105	
1,1-DI-(tert-AMYLPEROXY)CYCLOHEXANE	≤ 82	≥ 18				OP6			3103	
DIBENZOYL PEROXIDE	> 52 - 100			≤ 48		OP2			3102	3)
"	> 77 - 94				≥ 6	OP4			3102	3)
"	≤ 77				≥ 23	OP6			3104	
"	≤ 62			≥ 28	≥ 10	OP7			3106	
"	> 52 – 62 as a paste					OP7			3106	20)
"	> 35 - 52			≥ 48		OP7			3106	
"	> 36 - 42	≥ 18			≤ 40	OP8			3107	
"	≤ 56.5 as a paste				≥ 15	OP8			3108	
"	≤ 52 as a paste					OP8			3108	20)
"	≤ 42 as a stable dispersion in water					OP8			3109	
"	≤ 35			≥ 65					Exempt	29)

ORGANIC PEROXIDE	Concentration (%)	Diluent type A (%)	Diluent type B (%) 1)	Inert solid (%)	Water	Packing Method	Control temperature (°C)	Emergency temperature (°C)	Number (Generic entry)	Subsidiary hazards and remarks
DI-(4-tert-BUTYLCYCLOHEXYL) PEROXYDICARBONATE	≤ 100					OP6	+30	+35	3114	
"	≤ 42 as a stable dispersion in water					OP8	+30	+35	3119	
"	≤ 42 (as a paste)					OP8	+35	+40	3118	
DI-tert-BUTYL PEROXIDE	> 52 - 100					OP8			3107	
"	≤ 52		≥ 48			OP8			3109	25)
DI-tert-BUTYL PEROXYAZELATE	≤ 52	≥ 48				OP7			3105	
2,2-DI-(tert-BUTYLPEROXY)BUTANE	≤ 52	≥ 48				OP6			3103	
1,6-Di-(tert-BUTYLPEROXYCARBONYLOXY) HEXANE	≤ 72	≥ 28				OP5			3103	
1,1-DI-(tert-BUTYLPEROXY) CYCLOHEXANE	> 80 - 100					OP5			3101	3)
"	≤ 72		≥ 28			OP5			3103	30)
"	> 52 - 80	≥ 20				OP5			3103	
"	> 42 - 52	≥ 48				OP7			3105	
"	≤ 42	≥ 13		≥ 45		OP7			3106	
"	≤ 42	≥ 58				OP8			3109	
"	≤ 27	≥ 25				OP8			3107	21)
"	≤ 13	≥ 13	≥ 74			OP8			3109	
1,1-DI-(tert-BUTYLPEROXY) CYCLOHEXANE + tert-BUTYL PEROXY-2-ETHYLHEXANOATE	≤ 43 + ≤ 16	≥ 41				OP 7			3105	
DI-n-BUTYL PEROXYDICARBONATE	> 27 - 52		≥ 48			OP7	-15	-5	3115	
"	≤ 27		≥ 73			OP8	-10	0	3117	
"	≤ 42 as a stable dispersion in water (frozen)					OP8	-15	-5	3118	
DI-sec-BUTYL PEROXYDICARBONATE	> 52 - 100					OP4	-20	-10	3113	
"	≤ 52		≥ 48			OP7	-15	-5	3115	

ORGANIC PEROXIDE	Concentration (%)	Diluent type A (%)	Diluent type B (%) 1)	Inert solid (%)	Water	Packing Method	Control temperature (°C)	Emergency temperature (°C)	Number (Generic entry)	Subsidiary hazards and remarks
DI-(tert-BUTYLPEROXYISOPROPYL)BENZENE(S)	> 42 - 100			≤ 57		OP7			3106	
"	≤ 42			≥ 58					Exempt	29)
DI-(tert-BUTYLPEROXY) PHTHALATE	> 42 - 52	≥ 48				OP7			3105	
"	≤ 52 as a paste					OP7			3106	20)
"	≤ 42	≥ 58				OP8			3107	
2,2-DI-(tert-BUTYLPEROXY)PROPANE	≤ 52	≥ 48				OP7			3105	
"	≤ 42	≥ 13		≥ 45		OP7			3106	
1,1-DI-(tert-BUTYLPEROXY)-3,3,5-TRIMETHYLCYCLOHEXANE	> 90 - 100					OP5			3101	3)
"	≤ 90		≥ 10			OP5			3103	30)
"	> 57 - 90	≥ 10				OP5			3103	
"	≤ 77		≥ 23			OP5			3103	
"	≤ 57			≥ 43		OP8			3110	
"	≤ 57	≥ 43				OP8			3107	
"	≤ 32	≥ 26	≥ 42			OP8			3107	
DICETYL PEROXYDICARBONATE	≤ 100					OP8	+30	+35	3120	
"	≤ 42 as a stable dispersion in water					OP8	+30	+35	3119	
DI-4-CHLOROBENZOYL PEROXIDE	≤ 77				≥ 23	OP5			3102	3)
"	≤ 52 as a paste					OP7			3106	20)
"	≤ 32			≥ 68					Exempt	29)
DICUMYL PEROXIDE	> 52 - 100					OP8			3110	12)
"	≤ 52			≥ 48					Exempt	29)
DICYCLOHEXYL PEROXYDICARBONATE	> 91 - 100					OP3	+10	+15	3112	3)
"	≤ 91				≥ 9	OP5	+10	+15	3114	
"	≤ 42 as a stable dispersion in water					OP8	+15	+20	3119	

ORGANIC PEROXIDE	Concentration (%)	Diluent type A (%)	Diluent type B (%) 1)	Inert solid (%)	Water	Packing Method	Control temperature (°C)	Emergency temperature (°C)	Number (Generic entry)	Subsidiary hazards and remarks
DIDECANOYL PEROXIDE	≤ 100					OP6	+30	+35	3114	
2,2-DI-(4,4-DI (tert-BUTYLPEROXY) CYCLOHEXYL) PROPANE	≤ 42			≥ 58		OP7			3106	
"	≤ 22		≥ 78			OP8			3107	
DI-2,4-DICHLOROBENZOYL PEROXIDE	≤ 77				≥ 23	OP5			3102	3)
"	≤ 52 as a paste					OP8	+ 20	+ 25	3118	
"	≤ 52 as a paste with silicon oil					OP7			3106	
DI-(2-ETHOXYETHYL) PEROXYDICARBONATE	≤ 52		≥ 48			OP7	-10	0	3115	
DI-(2-ETHYLHEXYL) PEROXYDICARBONATE	> 77 – 100					OP5	-20	-10	3113	
"	≤ 77		≥ 23			OP7	-15	-5	3115	
"	≤ 62 as a stable dispersion in water					OP8	-15	-5	3119	
"	≤ 52 as a stable dispersion in water (frozen)					OP8	-15	-5	3120	
2,2-DIHYDROPEROXYPROPANE	≤ 27			≥ 73		OP5			3102	3)
DI-(1-HYDROXYCYCLOHEXYL) PEROXIDE	≤ 100					OP7			3106	
DIISOBUTYRYL PEROXIDE	> 32 – 52		≥ 48			OP5	-20	-10	3111	3)
"	≤ 32		≥ 68			OP7	-20	-10	3115	
"	≤ 42 (as a stable dispersion in water)					OP8	-20	-10	3119	
DIISOPROPYLBENZENE DIHYDROPEROXIDE	≤ 82	≥ 5			≥ 5	OP7			3106	24)
DIISOPROPYL PEROXYDICARBONATE	> 52-100					OP2	-15	-5	3112	3)
"	≤ 52		≥ 48			OP7	-20	-10	3115	
"	≤ 32	≥ 68				OP7	-15	-5	3115	
DILAUROYL PEROXIDE	≤ 100					OP7			3106	
"	≤ 42 as a stable dispersion in water					OP8			3109	

ORGANIC PEROXIDE	Concentration (%)	Diluent type A (%)	Diluent type B (%) 1)	Inert solid (%)	Water	Packing Method	Control temperature (°C)	Emergency temperature (°C)	Number (Generic entry)	Subsidiary hazards and remarks
DI-(3-METHOXYBUTYL) PEROXYDICARBONATE	≤ 52		≥ 48			OP7	-5	+5	3115	
DI-(2-METHYLBENZOYL) PEROXIDE	≤ 87				≥ 13	OP5	+30	+35	3112	3)
DI-(3-METHYLBENZOYL) PEROXIDE + BENZOYL (3-METHYLBENZOYL) PEROXIDE + DIBENZOYL PEROXIDE	≤ 20 + ≤ 18 + ≤ 4		≥ 58			OP7	+35	+40	3115	
DI-(4-METHYLBENZOYL) PEROXIDE □	≤ 52 as a paste with silicon oil					OP7			3106	
2,5-DIMETHYL-2,5-DI-(BENZOYLPEROXY)HEXANE	> 82-100					OP5			3102	3)
"	≤ 82			≥ 18		OP7			3106	
"	≤ 82				≥ 18	OP5			3104	
2,5-DIMETHYL-2,5-DI-(tert-BUTYLPEROXY)HEXANE	> 90 - 100					OP5			3103	
"	> 52 - 90	≥ 10				OP7			3105	
"	≤ 77			≥ 23		OP8			3108	
"	≤ 52	≥ 48				OP8			3109	
"	≤ 47 as a paste					OP8			3108	
2,5-DIMETHYL-2,5-DI-(tert-BUTYLPEROXY)HEXYNE-3	> 86-100					OP5			3101	3)
"	>52-86	≥ 14				OP5			3103	26)
"	≤ 52			≥ 48		OP7			3106	
2,5-DIMETHYL-2,5-DI-(2-ETHYLHEXANOYLPEROXY)HEXANE □	≤ 100					OP5	+20	+25	3113	
2,5-DIMETHYL-2,5-DIHYDROPEROXYHEXANE □	≤ 82				≥ 18	OP6			3104	
2,5-DIMETHYL-2,5-DI-(3,5,5-TRIMETHYLHEXANOYLPEROXY)HEXANE	≤ 77	≥ 23				OP7			3105	
1,1-DIMETHYL-3-HYDROXYBUTYL PEROXYNEOHEPTANOATE	≤ 52	≥ 48				OP8	0	+10	3117	
DIMYRISTYL PEROXYDICARBONATE	≤ 100					OP7	+20	+25	3116	
"	≤ 42 as a stable dispersion in water					OP8	+20	+25	3119	

ORGANIC PEROXIDE	Concentration (%)	Diluent type A (%)	Diluent type B (%) 1)	Inert solid (%)	Water	Packing Method	Control temperature (°C)	Emergency temperature (°C)	Number (Generic entry)	Subsidiary hazards and remarks
DI-(2-NEODECANOYLPEROXYISOPROPYL) BENZENE	≤ 52	≥ 48				OP7	-10	0	3115	
DI-n-NONANOYL PEROXIDE	≤ 100					OP7	0	+10	3116	
DI-n-OCTANOYL PEROXIDE	≤ 100					OP5	+10	+15	3114	
DI-(2-PHENOXYETHYL) PEROXYDICARBONATE	>85-100					OP5			3102	3)
"	≤ 85				≥ 15	OP7			3106	
DIPROPIONYL PEROXIDE	≤ 27		≥ 73			OP8	+15	+20	3117	
DI-n-PROPYL PEROXYDICARBONATE	≤ 100					OP3	-25	-15	3113	
"	≤ 77		≥ 23			OP5	-20	-10	3113	
DISUCCINIC ACID PEROXIDE	> 72-100					OP4			3102	3) 17)
"	≤ 72				≥ 28	OP7	+10	+15	3116	
DI-(3,5,5-TRIMETHYLHEXANOYL) PEROXIDE	> 52-82	≥ 18				OP7	0	+10	3115	
"	≤ 52 as a stable dispersion in water					OP8	+10	+15	3119	
"	> 38-52	≥ 48				OP8	+10	+15	3119	
"	≤ 38	≥ 62				OP8	+20	+25	3119	
ETHYL 3,3-DI-(tert-AMYLPEROXY)BUTYRATE	≤ 67	≥ 33				OP7			3105	
ETHYL 3,3-DI-(tert-BUTYLPEROXY)BUTYRATE	> 77 - 100					OP5			3103	
"	≤ 77	≥ 23				OP7			3105	
"	≤ 52			≥ 48		OP7			3106	
1-(2-ETHYLHEXANOYLPEROXY)-1,3-DIMETHYLBUTYL PEROXYPIVALATE	≤ 52	≥ 45	≥ 10			OP7	-20	-10	3115	
tert-HEXYL PEROXYNEODECANOATE	≤ 71	≥ 29				OP7	0	+10	3115	
tert-HEXYL PEROXYPIVALATE	≤ 72		≥ 28			OP7	+10	+15	3115	
"	≤ 52 as a stable dispersion in water					OP8	+15	+20	3117	

ORGANIC PEROXIDE	Concentration (%)	Diluent type A (%)	Diluent type B (%) 1)	Inert solid (%)	Water	Packing Method	Control temperature (°C)	Emergency temperature (°C)	Number (Generic entry)	Subsidiary hazards and remarks
3-HYDROXY-1,1-DIMETHYLBUTYL PEROXYNEODECANOATE	≤ 77	≥ 23				OP 7	- 5	+ 5	3115	
"	≤ 52	≥ 48				OP 8	- 5	+ 5	3117	
"	≤ 52 as a stable dispersion in water					OP 8	- 5	+ 5	3119	
ISOPROPYL sec-BUTYL PEROXYDICARBONATE +DI-sec-BUTYL PEROXYDICARBONATE +DI-ISOPROPYL PEROXYDICARBONATE	≤ 32 + ≤ 15 – 18 ≤ 12 – 15	≥ 38				OP7	-20	-10	3115	
"	≤ 52 + ≤ 28 + ≤ 22					OP5	-20	-10	3111	3)
ISOPROPYLCUMYL HYDROPEROXIDE	≤ 72	≥ 28				OP8			3109	13)
p-MENTHYL HYDROPEROXIDE	> 72 - 100					OP7			3105	13)
"	≤ 72	≥ 28				OP8			3109	27)
METHYLCYCLOHEXANONE PEROXIDE(S)	≤ 67		≥ 33			OP7	+35	+40	3115	
METHYL ETHYL KETONE PEROXIDE(S)	see remark 8)	≥ 48				OP5			3101	3) 8) 13)
"	see remark 9)	≥ 55				OP7			3105	9)
"	see remark 10)	≥ 60				OP8			3107	10)
METHYL ISOBUTYL KETONE PEROXIDE(S)	≤ 62	≥ 19				OP7			3105	22)
METHYL ISOPROPYL KETONE PEROXIDE(S)	see remark 31)	≥ 70				OP8			3109	31)
ORGANIC PEROXIDE, LIQUID, SAMPLE						OP2			3103	11)
ORGANIC PEROXIDE, LIQUID, SAMPLE, TEMPERATURE CONTROLLED						OP2			3113	11)
ORGANIC PEROXIDE, SOLID, SAMPLE						OP2			3104	11)
ORGANIC PEROXIDE, SOLID, SAMPLE, TEMPERATURE CONTROLLED						OP2			3114	11)
3,3,5,7,7-PENTAMETHYL-1,2,4-TRIOXEPANE	≤ 100					OP8			3107	
PEROXYACETIC ACID, TYPE D, stabilized	≤ 43					OP7			3105	13) 14) 19)
PEROXYACETIC ACID, TYPE E, stabilized	≤ 43					OP8			3107	13) 15) 19)
PEROXYACETIC ACID, TYPE F, stabilized	≤ 43					OP8			3109	13) 16) 19)
PEROXYLAURIC ACID	≤ 100					OP8	+35	+40	3118	

ORGANIC PEROXIDE	Concentration (%)	Diluent type A (%)	Diluent type B (%) 1)	Inert solid (%)	Water	Packing Method	Control temperature (°C)	Emergency temperature (°C)	Number (Generic entry)	Subsidiary hazards and remarks
1-PHENYLETHYL HYDROPEROXIDE	≤ 38		≥ 62			OP8			3109	
PINANYL HYDROPEROXIDE	> 56 – 100					OP7			3105	13)
"	≤ 56	≥ 44				OP8			3109	
POLYETHER POLY-tert-BUTYLPEROXY-CARBONATE	≤ 52		≥ 48			OP8			3107	
1,1,3,3-TETRAMETHYLBUTYL HYDROPEROXIDE	≤ 100					OP7			3105	
1,1,3,3-TETRAMETHYLBUTYL PEROXY-2-ETHYLHEXANOATE	≤ 100					OP7	+15	+20	3115	
1,1,3,3-TETRAMETHYLBUTYL PEROXYNEODECANOATE	≤ 72		≥ 28			OP7	-5	+5	3115	
"	≤ 52 as a stable dispersion in water					OP8	-5	+5	3119	
1,1,3,3-TETRAMETHYLBUTYL PEROXYPIVALATE	≤ 77	≥ 23				OP7	0	+10	3115	
3,6,9-TRIETHYL-3,6,9-TRIMETHYL-1,4,7 TRIPEROXONANE	≤ 17	≥ 18		≥ 65		OP8			3110	
3,6,9-TRIETHYL-3,6,9-TRIMETHYL-1,4,7 TRIPEROXONANE	≤ 42	≥ 58				OP7			3105	28)

Remarks (refer to the last column of the Table in 2.2.52.4):

- 1) Diluent type B may always be replaced by diluent type A. The boiling point of diluent type B shall be at least 60 °C higher than the SADT of the organic peroxide.
- 2) Available oxygen $\leq 4.7\%$.
- 3) "EXPLOSIVE" subsidiary hazard label required (Model No.1, see 5.2.2.2.2).
- 4) Diluent may be replaced by di-tert-butyl peroxide.
- 5) Available oxygen $\leq 9\%$.
- 6) With $\leq 9\%$ hydrogen peroxide; available oxygen $\leq 10\%$.
- 7) Only non-metallic packagings allowed.
- 8) Available oxygen $> 10\%$ and $\leq 10.7\%$, with or without water.
- 9) Available oxygen $\leq 10\%$, with or without water.
- 10) Available oxygen $\leq 8.2\%$, with or without water.
- 11) See 2.2.52.1.9.
- 12) Up to 2000 kg per receptacle assigned to ORGANIC PEROXIDE TYPE F on the basis of large scale trials.
- 13) "CORROSIVE" subsidiary hazard label required (Model No.8, see 5.2.2.2.2).
- 14) Peroxyacetic acid formulations which fulfil the criteria of the Manual of Tests and Criteria, paragraph 20.4.3 (d).
- 15) Peroxyacetic acid formulations which fulfil the criteria of the Manual of Tests and Criteria, paragraph 20.4.3 (e).
- 16) Peroxyacetic acid formulations which fulfil the criteria of the Manual of Tests and Criteria, paragraph 20.4.3 (f).
- 17) Addition of water to this organic peroxide will decrease its thermal stability.
- 18) No "CORROSIVE" subsidiary hazard label (Model No.8, see 5.2.2.2.2) required for concentrations below 80 %.
- 19) Mixtures with hydrogen peroxide, water and acid(s).
- 20) With diluent type A, with or without water.
- 21) With $\geq 25\%$ diluent type A by mass, and in addition ethylbenzene.
- 22) With $\geq 19\%$, diluent type A by mass, and in addition methyl isobutyl ketone.
- 23) With $< 6\%$ di-tert-butyl peroxide.
- 24) With $\leq 8\%$ 1-isopropylhydroperoxy-4-isopropylhydroxybenzene.
- 25) Diluent type B with boiling point $> 110\text{ °C}$.
- 26) With $< 0.5\%$ hydroperoxides content.
- 27) For concentrations more than 56 %, "CORROSIVE" subsidiary hazard label required (Model No.8, see 5.2.2.2.2).
- 28) Available active oxygen $\leq 7.6\%$ in diluent type A having a 95 % boil-off point in the range of 200 - 260 °C.
- 29) Not subject to the requirements of ADR for Class 5.2.
- 30) Diluent type B with boiling point $> 130\text{ °C}$.
- 31) Active oxygen $\leq 6.7\%$.
- 32) Active oxygen $\leq 4.15\%$

2.2.61 Class 6.1 Toxic substances**2.2.61.1 Criteria**

2.2.61.1.1 The heading of Class 6.1 covers substances of which it is known by experience or regarding which it is presumed from experiments on animals that in relatively small quantities they are able by a single action or by action of short duration to cause damage to human health, or death, by inhalation, by cutaneous absorption or by ingestion.

***NOTE:** Genetically modified microorganisms and organisms shall be assigned to this Class if they meet the conditions for this Class.*

2.2.61.1.2 Substances of Class 6.1 are subdivided as follows:

T Toxic substances without subsidiary hazard:

- T1 Organic, liquid;
- T2 Organic, solid;
- T3 Organometallic substances;
- T4 Inorganic, liquid;
- T5 Inorganic, solid;
- T6 Liquid, used as pesticides;
- T7 Solid, used as pesticides;
- T8 Samples;
- T9 Other toxic substances;
- T10 Articles;

TF Toxic substances, flammable:

- TF1 Liquid;
- TF2 Liquid, used as pesticides;
- TF3 Solid;

TS Toxic substances, self-heating, solid;

TW Toxic substances, which, in contact with water, emit flammable gases:

- TW1 Liquid;
- TW2 Solid;

TO Toxic substances, oxidizing:

- TO1 Liquid;
- TO2 Solid;

TC Toxic substances, corrosive:

- TC1 Organic, liquid;
- TC2 Organic, solid;
- TC3 Inorganic, liquid;
- TC4 Inorganic, solid;

TFC Toxic substances, flammable, corrosive;

TFW Toxic substances, flammable, which, in contact with water, emit flammable gases.

Definitions

2.2.61.1.3 For the purposes of ADR:

LD₅₀ (median lethal dose) for acute oral toxicity is the statistically derived single dose of a substance that can be expected to cause death within 14 days in 50 per cent of young adult albino rats when administered by the oral route. The LD₅₀ value is expressed in terms of mass of test substance per mass of test animal (mg/kg);

LD₅₀ for acute dermal toxicity is that dose of the substance which, administered by continuous contact for 24 hours with the bare skin of albino rabbits, is most likely to cause death within 14 days in one half of the animals tested. The number of animals tested shall be sufficient to give a statistically significant result and be in conformity with good pharmacological practice. The result is expressed in milligrams per kg body mass;

LC₅₀ for acute toxicity on inhalation is that concentration of vapour, mist or dust which, administered by continuous inhalation to both male and female young adult albino rats for one hour, is most likely to cause death within 14 days in one half of the animals tested. A solid substance shall be tested if at least 10 % (by mass) of its total mass is likely to be dust in a respirable range, e.g. the aerodynamic diameter of that particle-fraction is 10 µm or less. A liquid substance shall be tested if a mist is likely to be generated in a leakage of the transport containment. Both for solid and liquid substances more than 90 % (by mass) of a specimen prepared for inhalation toxicity shall be in the respirable range as defined above. The result is expressed in milligrams per litre of air for dusts and mists or in millilitres per cubic metre of air (parts per million) for vapours.

Classification and assignment of packing groups

2.2.61.1.4 Substances of Class 6.1 shall be classified in three packing groups according to the degree of danger they present for carriage, as follows:

Packing group I: highly toxic substances

Packing group II: toxic substances

Packing group III: slightly toxic substances.

2.2.61.1.5 Substances, mixtures, solutions and articles classified in Class 6.1 are listed in Table A of Chapter 3.2. The assignment of substances, mixtures and solutions not mentioned by name in Table A of Chapter 3.2 to the relevant entry of sub-section 2.2.61.3 and to the relevant packing group in accordance with the provisions of Chapter 2.1, shall be made according to the following criteria in 2.2.61.1.6 to 2.2.61.1.11.

2.2.61.1.6 To assess the degree of toxicity, account shall be taken of human experience of instances of accidental poisoning, as well as special properties possessed by any individual substances: liquid state, high volatility, any special likelihood of cutaneous absorption, and special biological effects.

2.2.61.1.7 In the absence of observations on humans, the degree of toxicity shall be assessed using the available data from animal experiments in accordance with the table below:

	Packing group	Oral toxicity LD ₅₀ (mg/kg)	Dermal toxicity LD ₅₀ (mg/kg)	Inhalation toxicity by dusts and mists LC ₅₀ (mg/l)
Highly toxic	I	≤ 5	≤ 50	≤ 0.2
Toxic	II	> 5 and ≤ 50	> 50 and ≤ 200	> 0.2 and ≤ 2
Slightly toxic	III ^a	> 50 and ≤ 300	> 200 and ≤ 1 000	> 2 and ≤ 4

^a *Tear gas substances shall be included in packing group II even if data concerning their toxicity correspond to packing group III criteria.*

2.2.61.1.7.1 Where a substance exhibits different degrees of toxicity for two or more kinds of exposure, it shall be classified under the highest such degree of toxicity.

2.2.61.1.7.2 Substances meeting the criteria of Class 8 and with an inhalation toxicity of dusts and mists (LC_{50}) leading to packing group I shall only be accepted for an allocation to Class 6.1 if the toxicity through oral ingestion or dermal contact is at least in the range of packing groups I or II. Otherwise an assignment to Class 8 shall be made if appropriate (see 2.2.8.1.4.5).

2.2.61.1.7.3 The criteria for inhalation toxicity of dusts and mists are based on LC_{50} data relating to 1-hour exposure, and where such information is available it shall be used. However, where only LC_{50} data relating to 4-hour exposure are available, such figures can be multiplied by four and the product substituted in the above criteria, i.e. LC_{50} value multiplied by four (4 hour) is considered the equivalent of LC_{50} (1 hour).

Inhalation toxicity of vapours

2.2.61.1.8 Liquids giving off toxic vapours shall be classified into the following groups where "V" is the saturated vapour concentration (in ml/m³ of air) (volatility) at 20 °C and standard atmospheric pressure:

	Packing group	
Highly toxic	I	Where $V \geq 10 LC_{50}$ and $LC_{50} \leq 1\ 000\ \text{ml/m}^3$
Toxic	II	Where $V \geq LC_{50}$ and $LC_{50} \leq 3\ 000\ \text{ml/m}^3$ and the criteria for packing group I are not met
Slightly toxic	III ^a	Where $V \geq 1/5 LC_{50}$ and $LC_{50} \leq 5\ 000\ \text{ml/m}^3$ and the criteria for packing groups I and II are not met

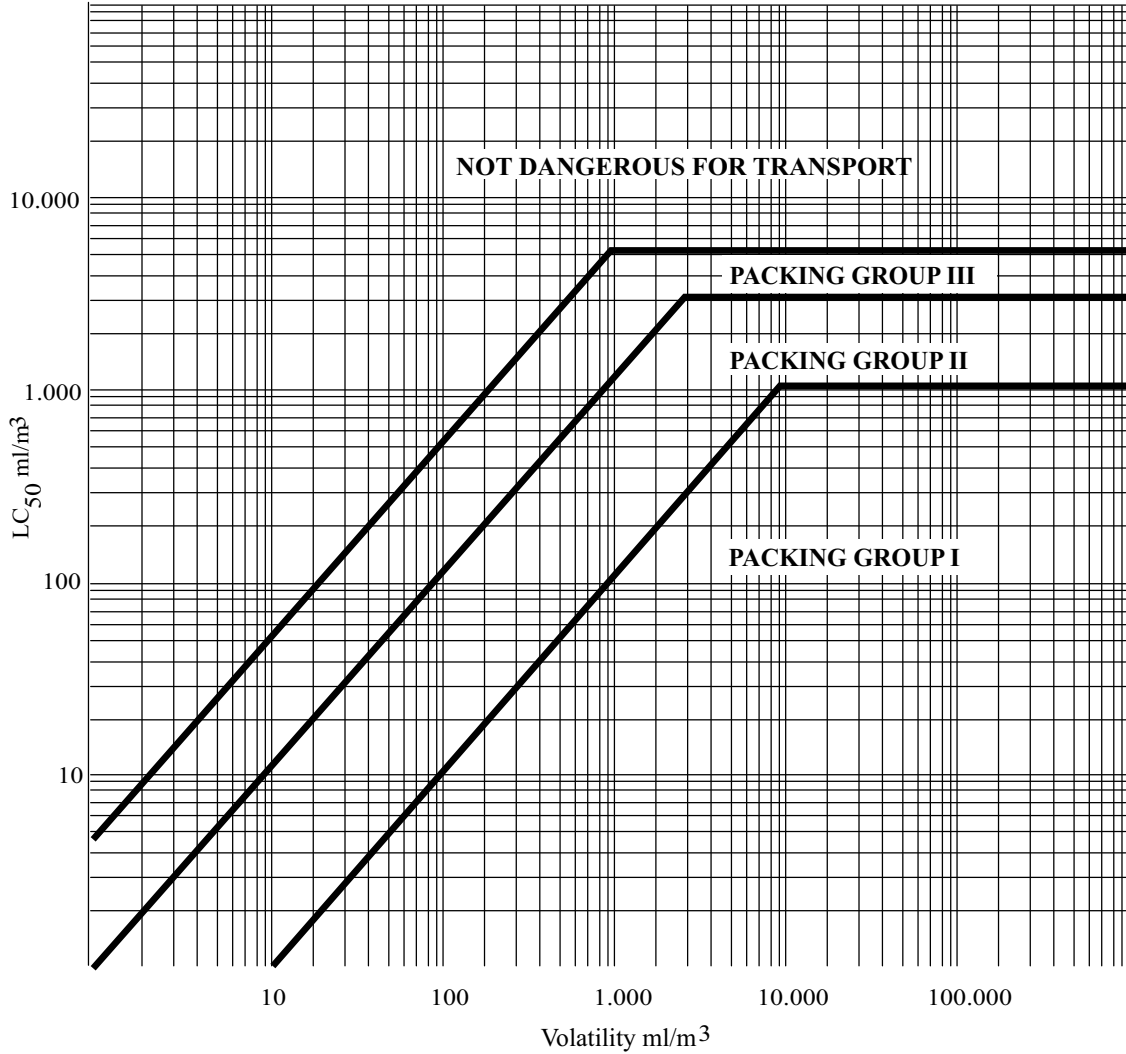
^a *Tear gas substances shall be included in packing group II even if data concerning their toxicity correspond to packing group III criteria.*

These criteria for inhalation toxicity of vapours are based on LC_{50} data relating to 1-hour exposure, and where such information is available, it shall be used.

However, where only LC_{50} data relating to 4-hour exposure to the vapours are available, such figures can be multiplied by two and the product substituted in the above criteria, i.e. LC_{50} (4 hour) \times 2 is considered the equivalent of LC_{50} (1 hour).

In this figure, the criteria are expressed in graphical form, as an aid to easy classification. However, due to approximations inherent in the use of graphs, substances falling on or near group borderlines shall be checked using numerical criteria.

GROUP BORDERLINES INHALATION TOXICITY OF VAPOURS



Mixtures of liquids

2.2.61.1.9 Mixtures of liquids which are toxic on inhalation shall be assigned to packing groups according to the following criteria:

2.2.61.1.9.1 If LC₅₀ is known for each of the toxic substances constituting the mixture, the packing group may be determined as follows:

(a) calculation of the LC₅₀ of the mixture:

$$LC_{50} \text{ (mixture)} = \frac{1}{\sum_{i=1}^n \frac{f_i}{LC_{50i}}}$$

where f_i = molar fraction of constituent i of the mixture;

LC_{50i} = average lethal concentration of constituent i in ml/m³.

(b) calculation of volatility of each mixture constituent:

$$V_i = P_i \times \frac{10^6}{101.3} \text{ (ml/m}^3\text{)}$$

where P_i = partial pressure of constituent i in kPa at 20 °C and at standard atmospheric pressure.

- (c) calculation of the ratio of volatility to LC₅₀:

$$R = \sum_{i=1}^n \frac{V_i}{LC_{50i}}$$

- (d) the values calculated for LC₅₀ (mixture) and R are then used to determine the packing group of the mixture:

Packing group I	$R \geq 10$ and LC_{50} (mixture) $\leq 1\ 000$ ml/m ³ ;
Packing group II	$R \geq 1$ and LC_{50} (mixture) $\leq 3\ 000$ ml/m ³ , if the mixture does not meet the criteria for packing group I;
Packing group III	$R \geq 1/5$ and LC_{50} (mixture) $\leq 5\ 000$ ml/m ³ , if the mixture does not meet the criteria of packing groups I or II.

2.2.61.1.9.2 In the absence of LC₅₀ data on the toxic constituent substances, the mixture may be assigned to a group based on the following simplified threshold toxicity tests. When these threshold tests are used, the most restrictive group shall be determined and used for carrying the mixture.

2.2.61.1.9.3 A mixture is assigned to packing group I only if it meets both of the following criteria:

- A sample of the liquid mixture is vaporized and diluted with air to create a test atmosphere of 1 000 ml/m³ vaporized mixture in air. Ten albino rats (5 male and 5 female) are exposed to the test atmosphere for 1 hour and observed for 14 days. If five or more of the animals die within the 14-day observation period, the mixture is presumed to have an LC₅₀ equal to or less than 1 000 ml/m³;
- A sample of vapour in equilibrium with the liquid mixture is diluted with 9 equal volumes of air to form a test atmosphere. Ten albino rats (5 male and 5 female) are exposed to the test atmosphere for 1 hour and observed for 14 days. If five or more of the animals die within the 14-day observation period, the mixture is presumed to have a volatility equal to or greater than 10 times the mixture LC₅₀.

2.2.61.1.9.4 A mixture is assigned to packing group II only if it meets both of the following criteria, and does not meet the criteria for packing group I:

- A sample of the liquid mixture is vaporized and diluted with air to create a test atmosphere of 3 000 ml/m³ vaporized mixture in air. Ten albino rats (5 male and 5 female) are exposed to the test atmosphere for 1 hour and observed for 14 days. If five or more of the animals die within the 14-day observation period, the mixture is presumed to have an LC₅₀ equal to or less than 3 000 ml/m³;
- A sample of the vapour in equilibrium with the liquid mixture is used to form a test atmosphere. Ten albino rats (5 male and 5 female) are exposed to the test atmosphere for 1 hour and observed for 14 days. If five or more of the animals die within the 14-day observation period, the mixture is presumed to have a volatility equal to or greater than the mixture LC₅₀.

2.2.61.1.9.5 A mixture is assigned to packing group III only if it meets both of the following criteria, and does not meet the criteria for packing groups I or II:

- A sample of the liquid mixture is vaporized and diluted with air to create a test atmosphere of 5 000 ml/m³ vaporized mixture in air. Ten albino rats (5 male and 5 female) are exposed to the test atmosphere for 1 hour and observed for 14 days. If five or more of the animals die within the 14-day observation period, the mixture is presumed to have an LC₅₀ equal to or less than 5 000 ml/m³;
- The vapour concentration (volatility) of the liquid mixture is measured and if the vapour concentration is equal to or greater than 1 000 ml/m³, the mixture is presumed to have a volatility equal to or greater than 1/5 the mixture LC₅₀.

Methods for determining oral and dermal toxicity of mixtures

2.2.61.1.10 When classifying and assigning the appropriate packing group to mixtures in Class 6.1 in accordance with the oral and dermal toxicity criteria (see 2.2.61.1.3), it is necessary to determine the acute LD₅₀ of the mixture.

2.2.61.1.10.1 If a mixture contains only one active substance, and the LD₅₀ of that constituent is known, in the absence of reliable acute oral and dermal toxicity data on the actual mixture to be carried, the oral or dermal LD₅₀ may be obtained by the following method:

$$\text{LD}_{50} \text{ value of preparation} = \frac{\text{LD}_{50} \text{ value of active substance} \times 100}{\text{percentage of active substance by mass}}$$

2.2.61.1.10.2 If a mixture contains more than one active constituent, there are three possible approaches that may be used to determine the oral or dermal LD₅₀ of the mixture. The preferred method is to obtain reliable acute oral and dermal toxicity data on the actual mixture to be carried. If reliable, accurate data are not available, then either of the following methods may be performed:

(a) Classify the formulation according to the most hazardous constituent of the mixture as if that constituent were present in the same concentration as the total concentration of all active constituents; or

(b) Apply the formula:

$$\frac{C_A}{T_A} + \frac{C_B}{T_B} + \dots + \frac{C_Z}{T_Z} = \frac{100}{T_M}$$

where:

C = the percentage concentration of constituent A, B, ..., Z in the mixture;

T = the oral LD₅₀ values of constituent A, B, ... Z;

T_M = the oral LD₅₀ value of the mixture.

NOTE: This formula can also be used for dermal toxicities provided that this information is available on the same species for all constituents. The use of this formula does not take into account any potentiation or protective phenomena.

Classification of pesticides

2.2.61.1.11 All active pesticide substances and their preparations for which the LC₅₀ and/or LD₅₀ values are known and which are classified in Class 6.1 shall be classified under appropriate packing groups in accordance with the criteria given in 2.2.61.1.6 to 2.2.61.1.9. Substances and preparations which are characterized by subsidiary hazards shall be classified according to the precedence of hazard Table in 2.1.3.10 with the assignment of appropriate packing groups.

2.2.61.1.11.1 If the oral or dermal LD₅₀ value for a pesticide preparation is not known, but the LD₅₀ value of its active substance(s) is known, the LD₅₀ value for the preparation may be obtained by applying the procedures in 2.2.61.1.10.

NOTE: LD₅₀ toxicity data for a number of common pesticides may be obtained from the most current edition of the document "The WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification" available from the International Programme on Chemical Safety, World Health Organisation (WHO), 1211 Geneva 27, Switzerland. While that document may be used as a source of LD₅₀ data for pesticides, its classification system shall not be used for purposes of transport classification of, or assignment of packing groups to, pesticides, which shall be in accordance with the requirements of ADR.

2.2.61.1.11.2 The proper shipping name used in the carriage of the pesticide shall be selected on the basis of the active ingredient, of the physical state of the pesticide and any subsidiary hazards it may exhibit (see 3.1.2).

2.2.61.1.12 If substances of Class 6.1, as a result of admixtures, come into categories of hazard different from those to which the substances mentioned by name in Table A of Chapter 3.2 belong, these mixtures or solutions shall be assigned to the entries to which they belong on the basis of their actual degree of danger.

NOTE: For the classification of solutions and mixtures (such as preparations and wastes), see also 2.1.3.

2.2.61.1.13 On the basis of the criteria of 2.2.61.1.6 to 2.2.61.1.11, it may also be determined whether the nature of a solution or mixture mentioned by name or containing a substance mentioned by name is such that the solution or mixture is not subject to the requirements for this Class.

2.2.61.1.14 Substances, solutions and mixtures, with the exception of substances and preparations used as pesticides, which are not classified as acute toxic category 1, 2 or 3 according to Regulation (EC) No 1272/2008³, may be considered as substances not belonging to class 6.1.

2.2.61.2 Substances not accepted for carriage

2.2.61.2.1 Chemically unstable substances of Class 6.1 shall not be accepted for carriage unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of carriage. For the precautions necessary to prevent polymerization, see special provision 386 of Chapter 3.3. To this end particular care shall be taken to ensure that receptacles and tanks do not contain any substances liable to promote these reactions.

2.2.61.2.2 The following substances and mixtures shall not be accepted for carriage:

- Hydrogen cyanide, anhydrous or in solution, which do not meet the descriptions of UN Nos. 1051, 1613, 1614 and 3294;
- metal carbonyls, having a flash-point below 23 °C, other than UN Nos. 1259 NICKEL CARBONYL and 1994 IRON PENTACARBONYL;
- 2,3,7,8-TETRACHLORODIBENZO-P-DIOXINE (TCDD) in concentrations considered highly toxic in accordance with the criteria in 2.2.61.1.7;
- UN No. 2249 DICHLORODIMETHYL ETHER, SYMMETRICAL;
- Preparations of phosphides without additives inhibiting the emission of toxic flammable gases.

³ Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directive 67/548/EEC and 1999/45/EC; and amending Regulation (EC) No 1907/2006, published in the Official Journal of the European Union, L 353, 31 December 2008, p 1-1355.

2.2.61.3 *List of collective entries***Toxic substances without subsidiary hazard(s)**

Organic	liquid^a	T1	1583 CHLOROPICRIN MIXTURE, N.O.S.
			1602 DYE, LIQUID, TOXIC, N.O.S., or
			1602 DYE INTERMEDIATE, LIQUID, TOXIC, N.O.S.
			1693 TEAR GAS SUBSTANCE, LIQUID, N.O.S.
			1851 MEDICINE, LIQUID, TOXIC, N.O.S.
			2206 ISOCYANATES, TOXIC, N.O.S. or
			2206 ISOCYANATE SOLUTION, TOXIC, N.O.S.
			3140 ALKALOIDS, LIQUID, N.O.S. or
			3140 ALKALOID SALTS, LIQUID, N.O.S.
			3142 DISINFECTANT, LIQUID, TOXIC, N.O.S.
			3144 NICOTINE COMPOUND, LIQUID, N.O.S. or
			3144 NICOTINE PREPARATION, LIQUID, N.O.S.
			3172 TOXINS, EXTRACTED FROM LIVING SOURCES, LIQUID, N.O.S.
			3276 NITRILES, LIQUID, TOXIC, N.O.S.
			3278 ORGANOPHOSPHORUS COMPOUND, LIQUID, TOXIC, N.O.S.
3381 TOXIC BY INHALATION LIQUID, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀			
3382 TOXIC BY INHALATION LIQUID, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀			
2810 TOXIC LIQUID, ORGANIC, N.O.S.			
Organic	solid^{a, b}	T2	1544 ALKALOIDS, SOLID, N.O.S. or
			1544 ALKALOID SALTS, SOLID, N.O.S.
			1601 DISINFECTANT, SOLID, TOXIC, N.O.S.
			1655 NICOTINE COMPOUND, SOLID, N.O.S., or
			1655 NICOTINE PREPARATION, SOLID, N.O.S.
			3448 TEAR GAS SUBSTANCE, SOLID, N.O.S.
			3143 DYE, SOLID, TOXIC, N.O.S. or
			3143 DYE INTERMEDIATE, SOLID, TOXIC, N.O.S.
			3462 TOXINS, EXTRACTED FROM LIVING SOURCES, SOLID, N.O.S.
			3249 MEDICINE, SOLID, TOXIC, N.O.S.
			3464 ORGANOPHOSPHORUS COMPOUND, SOLID, TOXIC, N.O.S.
			3439 NITRILES, SOLID, TOXIC, N.O.S.
2811 TOXIC SOLID, ORGANIC, N.O.S.			
Organometallic^{c, d}		T3	2026 PHENYLMERCURIC COMPOUND, N.O.S.
			2788 ORGANOTIN COMPOUND, LIQUID, N.O.S.
			3146 ORGANOTIN COMPOUND, SOLID, N.O.S.
			3280 ORGANOARSENIC COMPOUND, LIQUID, N.O.S.
			3465 ORGANOARSENIC COMPOUND, SOLID, N.O.S.
			3281 METAL CARBONYLS, LIQUID, N.O.S.
			3466 METAL CARBONYLS, SOLID, N.O.S.
			3282 ORGANOMETALLIC COMPOUND, LIQUID, TOXIC, N.O.S.
3467 ORGANOMETALLIC COMPOUND, SOLID, TOXIC, N.O.S.			

(cont'd on next page)

^a Substances and preparations containing alkaloids or nicotine used as pesticides shall be classified under UN No. 2588 PESTICIDES, SOLID, TOXIC, N.O.S., UN No. 2902 PESTICIDES, LIQUID, TOXIC, N.O.S. or UN No. 2903 PESTICIDES, LIQUID, TOXIC, FLAMMABLE, N.O.S.

^b Active substances and triturations or mixtures of substances intended for laboratories and experiments and for the manufacture of pharmaceutical products with other substances shall be classified according to their toxicity (see 2.2.61.1.7 to 2.2.61.1.11).

^c Self-heating substances, slightly toxic and spontaneously combustible organometallic compounds, are substances of Class 4.2.

^d Water-reactive substances, slightly toxic, and water-reactive organometallic compounds, are substances of Class 4.3.

2.2.61.3 *List of collective entries (cont'd)***Toxic substances without subsidiary hazard(s) (cont'd)**

Inorganic	liquid^e T4	1556 ARSENIC COMPOUND, LIQUID, N.O.S., inorganic including: Arsenates, n.o.s., Arsenites, n.o.s.; and Arsenic sulphides, n.o.s. 1935 CYANIDE SOLUTION, N.O.S. 2024 MERCURY COMPOUND, LIQUID, N.O.S. 3141 ANTIMONY COMPOUND, INORGANIC, LIQUID, N.O.S. 3440 SELENIUM COMPOUND, LIQUID, N.O.S. 3381 TOXIC BY INHALATION LIQUID, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀ 3382 TOXIC BY INHALATION LIQUID, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀ 3287 TOXIC LIQUID, INORGANIC, N.O.S.
	solids^{f,g} T5	1549 ANTIMONY COMPOUND, INORGANIC, SOLID, N.O.S 1557 ARSENIC COMPOUND, SOLID, N.O.S., including: Arsenates, n.o.s.; Arsenites, n.o.s.; and Arsenic sulphides, n.o.s. 1564 BARIUM COMPOUND, N.O.S. 1566 BERYLLIUM COMPOUND, N.O.S. 1588 CYANIDES, INORGANIC, SOLID, N.O.S. 1707 THALLIUM COMPOUND, N.O.S. 2025 MERCURY COMPOUND, SOLID, N.O.S. 2291 LEAD COMPOUND, SOLUBLE, N.O.S. 2570 CADMIUM COMPOUND 2630 SELENATES or 2630 SELENITES 2856 FLUOROSILICATES, N.O.S. 3283 SELENIUM COMPOUND, SOLID, N.O.S. 3284 TELLURIUM COMPOUND, N.O.S. 3285 VANADIUM COMPOUND, N.O.S. 3288 TOXIC SOLID, INORGANIC, N.O.S.
Pesticides	liquid^h T6	2992 CARBAMATE PESTICIDE, LIQUID, TOXIC 2994 ARSENICAL PESTICIDE, LIQUID, TOXIC 2996 ORGANOCHLORINE PESTICIDE, LIQUID, TOXIC 2998 TRIAZINE PESTICIDE, LIQUID, TOXIC 3006 THIOCARBAMATE PESTICIDE, LIQUID, TOXIC 3010 COPPER BASED PESTICIDE, LIQUID, TOXIC 3012 MERCURY BASED PESTICIDE, LIQUID, TOXIC 3014 SUBSTITUTED NITROPHENOL PESTICIDE, LIQUID, TOXIC 3016 BIPYRIDILUM PESTICIDE, LIQUID, TOXIC 3018 ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC 3020 ORGANOTIN PESTICIDE, LIQUID, TOXIC 3026 COUMARIN DERIVATIVE PESTICIDE, LIQUID, TOXIC 3348 PHENOXYACETIC ACID DERIVATIVE PESTICIDE, LIQUID, TOXIC 3352 PYRETHROID PESTICIDE, LIQUID, TOXIC 2902 PESTICIDE, LIQUID, TOXIC, N.O.S.

(cont'd on next page)

^e Mercury fulminate, wetted with not less than 20 % water, or mixture of alcohol and water by mass is a substance of Class 1, UN No. 0135.

^f Ferricyanides, ferrocyanides, alkaline thiocyanates and ammonium thiocyanates are not subject to the provisions of ADR.

^g Lead salts and lead pigments which, when mixed in a ratio of 1:1,000 with 0.07M hydrochloric acid and stirred for one hour at a temperature of 23 °C ± 2 °C, exhibit a solubility of 5 % or less, are not subject to the provisions of ADR.

^h Articles impregnated with this pesticide, such as fibreboard plates, paper strips, cotton-wool balls, sheets of plastics material, in hermetically closed wrappings, are not subject to the provisions of ADR.

2.2.61.3 *List of collective entries (cont'd)***Toxic substances without subsidiary hazard(s) (cont'd)**

Pesticides (cont'd)		
		2757 CARBAMATE PESTICIDE, SOLID, TOXIC
		2759 ARSENICAL PESTICIDE, SOLID, TOXIC
		2761 ORGANOCHLORINE PESTICIDE, SOLID, TOXIC
		2763 TRIAZINE PESTICIDE, SOLID, TOXIC
		2771 THIOCARBAMATE PESTICIDE, SOLID, TOXIC
		2775 COPPER BASED PESTICIDE, SOLID, TOXIC
		2777 MERCURY BASED PESTICIDE, SOLID, TOXIC
		2779 SUBSTITUTED NITROPHENOL PESTICIDE, SOLID, TOXIC
		2781 BIPYRIDILUM PESTICIDE, SOLID, TOXIC
		2783 ORGANOPHOSPHORUS PESTICIDE, SOLID, TOXIC
		2786 ORGANOTIN PESTICIDE, SOLID, TOXIC
		3027 COUMARIN DERIVATIVE PESTICIDE, SOLID, TOXIC
		3048 ALUMINIUM PHOSPHIDE PESTICIDE
		3345 PHENOXYACETIC ACID DERIVATIVE PESTICIDE, SOLID, TOXIC
		3349 PYRETHROID PESTICIDE, SOLID, TOXIC
		2588 PESTICIDE, SOLID, TOXIC, N.O.S.
	Solid^h	T7
		2781 BIPYRIDILUM PESTICIDE, SOLID, TOXIC
		2783 ORGANOPHOSPHORUS PESTICIDE, SOLID, TOXIC
		2786 ORGANOTIN PESTICIDE, SOLID, TOXIC
		3027 COUMARIN DERIVATIVE PESTICIDE, SOLID, TOXIC
		3048 ALUMINIUM PHOSPHIDE PESTICIDE
		3345 PHENOXYACETIC ACID DERIVATIVE PESTICIDE, SOLID, TOXIC
		3349 PYRETHROID PESTICIDE, SOLID, TOXIC
		2588 PESTICIDE, SOLID, TOXIC, N.O.S.
	Samples	T8
		3315 CHEMICAL SAMPLE, TOXIC
	Other toxic substancesⁱ	T9
		3243 SOLIDS CONTAINING TOXIC LIQUID, N.O.S.
	Articles	T10
		3546 ARTICLES CONTAINING TOXIC SUBSTANCE, N.O.S.

Toxic substances with subsidiary hazard(s)

		3071 MERCAPTANS, LIQUID, TOXIC, FLAMMABLE, N.O.S. or
		3071 MERCAPTAN MIXTURE, LIQUID, TOXIC, FLAMMABLE, N.O.S.
		3080 ISOCYANATES, TOXIC, FLAMMABLE, N.O.S. or
		3080 ISOCYANATE SOLUTION, TOXIC, FLAMMABLE, N.O.S.
		3275 NITRILES, TOXIC, FLAMMABLE, N.O.S.
		3279 ORGANOPHOSPHORUS COMPOUND, TOXIC, FLAMMABLE, N.O.S.
		3383 TOXIC BY INHALATION LIQUID, FLAMMABLE, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀
		3384 TOXIC BY INHALATION LIQUID, FLAMMABLE, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀
		2929 TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S.
	Liquid^{j,k}	TF1
	Flammable	
	TF	

(cont'd on next page)

^h Articles impregnated with this pesticide, such as fibreboard plates, paper strips, cotton-wool balls, sheets of plastics material, in hermetically closed wrappings, are not subject to the provisions of ADR.

ⁱ Mixtures of solids which are not subject to the provisions of ADR and of toxic liquids may be carried under UN No. 3243 without first applying the classification criteria of Class 6.1, provided there is no free liquid visible at the time the substance is loaded or at the time the packaging, container or transport unit is closed. Each packaging shall correspond to a design type that has passed a leakproofness test at the packing group II level. This entry shall not be used for solids containing a packing group I liquid.

^j Highly toxic and toxic flammable liquids having a flash-point below 23 °C are substances of Class 3 except those which are highly toxic by inhalation, as defined in 2.2.61.1.4 to 2.2.61.1.9. Liquids which are highly toxic by inhalation are indicated as "toxic by inhalation" in their proper shipping name in Column (2) or by special provision 354 in Column (6) of Table A of Chapter 3.2.

^k Flammable liquids, slightly toxic, with the exception of substances and preparations used as pesticides, having a flash-point between 23 °C and 60 °C inclusive, are substances of Class 3.

2.2.61.3 *List of collective entries (cont'd)**Toxic substances with subsidiary hazard(s) (cont'd)*

Flammable TF (cont'd)	pesticides, liquid (flash- point not less than 23 °C)	TF2	2991 CARBAMATE PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			2993 ARSENICAL PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			2995 ORGANOCHLORINE PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			2997 TRIAZINE PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			3005 THIOCARBAMATE PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			3009 COPPER BASED PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			3011 MERCURY BASED PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			3013 SUBSTITUTED NITROPHENOL PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			3015 BIPYRIDILUM PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			3017 ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			3019 ORGANOTIN PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			3025 COUMARIN DERIVATIVE PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			3347 PHENOXYACETIC ACID DERIVATIVE PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			3351 PYRETHROID PESTICIDE, LIQUID, TOXIC, FLAMMABLE
			2903 PESTICIDE, LIQUID, TOXIC, FLAMMABLE, N.O.S.
	solid	TF3	1700 TEAR GAS CANDLES
			2930 TOXIC SOLID, FLAMMABLE, ORGANIC, N.O.S.
			3535 TOXIC SOLID, FLAMMABLE, INORGANIC, N.O.S.
Solid, self-heating ^c			3124 TOXIC SOLID, SELF-HEATING, N.O.S.
TS			
	liquid	TW1	3385 TOXIC BY INHALATION LIQUID, WATER-REACTIVE, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀
			3386 TOXIC BY INHALATION LIQUID, WATER-REACTIVE, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀
			3123 TOXIC LIQUID, WATER-REACTIVE, N.O.S.
Water-reactive ^d			
TW	solid ⁿ	TW2	3125 TOXIC SOLID, WATER-REACTIVE, N.O.S.
	liquid	TO1	3387 TOXIC BY INHALATION LIQUID, OXIDIZING, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀
			3388 TOXIC BY INHALATION LIQUID, OXIDIZING, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀
			3122 TOXIC LIQUID, OXIDIZING, N.O.S.
Oxidizing ^l			
TO	solid	TO2	3086 TOXIC SOLID, OXIDIZING, N.O.S.
	liquid	TC1	3277 CHLOROFORMATES, TOXIC, CORROSIVE, N.O.S.
			3361 CHLOROSILANES, TOXIC, CORROSIVE, N.O.S.
			3389 TOXIC BY INHALATION LIQUID, CORROSIVE, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀
			3390 TOXIC BY INHALATION LIQUID, CORROSIVE, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀
			2927 TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S.
Corro- sive ^m	organic		
TC	solid	TC2	2928 TOXIC SOLID, CORROSIVE, ORGANIC, N.O.S.

(cont'd on next page)

^c Self-heating substances, slightly toxic and spontaneously combustible organometallic compounds, are substances of Class 4.2.

^d Water-reactive substances, slightly toxic, and water-reactive organometallic compounds, are substances of Class 4.3.

^l Oxidizing substances, slightly toxic, are substances of Class 5.1.

^m Substances slightly toxic and slightly corrosive, are substances of Class 8.

ⁿ Metal phosphides assigned to UN Nos. 1360, 1397, 1432, 1714, 2011 and 2013 are substances of Class 4.3.

2.2.61.3 List of collective entries (cont'd)

Toxic substances with subsidiary hazard(s) (cont'd)

Corrosive^m		
TC (cont'd)	inorganic	liquid TC3
		3389 TOXIC BY INHALATION LIQUID, CORROSIVE, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀
		3390 TOXIC BY INHALATION LIQUID, CORROSIVE, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀
	solid TC4	3289 TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S.
		3290 TOXIC SOLID, CORROSIVE, INORGANIC, N.O.S.
Flammable, corrosive		2742 CHLOROFORMATES, TOXIC, CORROSIVE, FLAMMABLE, N.O.S.
TFC		3362 CHLOROSILANES, TOXIC, CORROSIVE, FLAMMABLE, N.O.S.
		3488 TOXIC BY INHALATION LIQUID, FLAMMABLE, CORROSIVE, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀
		3489 TOXIC BY INHALATION LIQUID, FLAMMABLE, CORROSIVE, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀
Flammable, water-reactive		3490 TOXIC BY INHALATION LIQUID, WATER-REACTIVE, FLAMMABLE, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀
TFW		3491 TOXIC BY INHALATION LIQUID, WATER-REACTIVE, FLAMMABLE, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀

^m Substances slightly toxic and slightly corrosive, are substances of Class 8.

2.2.62 Class 6.2 Infectious substances

2.2.62.1 Criteria

2.2.62.1.1 The heading of Class 6.2 covers infectious substances. For the purposes of ADR, infectious substances are substances which are known or are reasonably expected to contain pathogens. Pathogens are defined as microorganisms (including bacteria, viruses, parasites, fungi) and other agents such as prions, which can cause disease in humans or animals.

NOTE 1: Genetically modified microorganisms and organisms, biological products, diagnostic specimens and intentionally infected live animals shall be assigned to this Class if they meet the conditions for this Class.

The carriage of unintentionally or naturally infected live animals is subject only to the relevant rules and regulations of the respective countries of origin, transit and destination.

NOTE 2: Toxins from plant, animal or bacterial sources which do not contain any infectious substances or organisms or which are not contained in them are substances of Class 6.1, UN Nos. 3172 or 3462.

2.2.62.1.2 Substances of Class 6.2 are subdivided as follows:

- I1 Infectious substances affecting humans;
- I2 Infectious substances affecting animals only;
- I3 Clinical waste;
- I4 Biological substances.

Definitions

2.2.62.1.3 For the purposes of ADR,

"Biological products" are those products derived from living organisms which are manufactured and distributed in accordance with the requirements of appropriate national authorities, which may have special licensing requirements, and are used either for prevention, treatment, or diagnosis of disease in humans or animals, or for development, experimental or investigational purposes related thereto. They include, but are not limited to, finished or unfinished products such as vaccines;

"Cultures" are the result of a process by which pathogens are intentionally propagated. This definition does not include human or animal patient specimens as defined in this paragraph;

"Medical or clinical wastes" are wastes derived from the veterinary treatment of animals, the medical treatment of humans or from bio-research;

"Patient specimens" are those collected directly from humans or animals, including, but not limited to, excreta, secreta, blood and its components, tissue and tissue fluid swabs, and body parts being carried for purposes such as research, diagnosis, investigational activities, disease treatment and prevention.

Classification

2.2.62.1.4 Infectious substances shall be classified in Class 6.2 and assigned to UN Nos. 2814, 2900, 3291, 3373 or 3549, as appropriate.

Infectious substances are divided into the following categories:

2.2.62.1.4.1 Category A: An infectious substance which is carried in a form that, when exposure to it occurs, is capable of causing permanent disability, life-threatening or fatal disease in otherwise healthy humans or animals. Indicative examples of substances that meet these criteria are given in the table in this paragraph.

NOTE: *An exposure occurs when an infectious substance is released outside of the protective packaging, resulting in physical contact with humans or animals.*

- (a) Infectious substances meeting these criteria which cause disease in humans or both in humans and animals shall be assigned to UN No. 2814. Infectious substances which cause disease only in animals shall be assigned to UN No. 2900;
- (b) Assignment to UN No. 2814 or UN No. 2900 shall be based on the known medical history and symptoms of the source human or animal, endemic local conditions, or professional judgement concerning individual circumstances of the source human or animal.

NOTE 1: *The proper shipping name for UN No. 2814 is "INFECTIOUS SUBSTANCE, AFFECTING HUMANS". The proper shipping name for UN No. 2900 is "INFECTIOUS SUBSTANCE, AFFECTING ANIMALS only".*

NOTE 2: *The following table is not exhaustive. Infectious substances, including new or emerging pathogens, which do not appear in the table but which meet the same criteria shall be assigned to Category A. In addition, if there is doubt as to whether or not a substance meets the criteria it shall be included in Category A.*

NOTE 3: *In the following table, the microorganisms written in italics are bacteria or fungi.*

INDICATIVE EXAMPLES OF INFECTIOUS SUBSTANCES INCLUDED IN CATEGORY A IN ANY FORM UNLESS OTHERWISE INDICATED (2.2.62.1.4.1)	
UN Number and name	Microorganism
UN No. 2814 Infectious substances affecting humans	<i>Bacillus anthracis (cultures only)</i> <i>Brucella abortus (cultures only)</i> <i>Brucella melitensis (cultures only)</i> <i>Brucella suis (cultures only)</i> <i>Burkholderia mallei - Pseudomonas mallei – Glanders (cultures only)</i> <i>Burkholderia pseudomallei – Pseudomonas pseudomallei (cultures only)</i> <i>Chlamydia psittaci - avian strains (cultures only)</i> <i>Clostridium botulinum (cultures only)</i> <i>Coccidioides immitis (cultures only)</i> <i>Coxiella burnetii (cultures only)</i> Crimean-Congo haemorrhagic fever virus Dengue virus (cultures only) Eastern equine encephalitis virus (cultures only) <i>Escherichia coli, verotoxigenic (cultures only) ^a</i> Ebola virus Flexal virus <i>Francisella tularensis (cultures only)</i> Guanarito virus Hantaan virus Hantavirus causing haemorrhagic fever with renal syndrome Hendra virus Hepatitis B virus (cultures only) Herpes B virus (cultures only) Human immunodeficiency virus (cultures only) Highly pathogenic avian influenza virus (cultures only) Japanese Encephalitis virus (cultures only) Junin virus Kyasanur Forest disease virus Lassa virus Machupo virus Marburg virus Monkeypox virus <i>Mycobacterium tuberculosis (cultures only) ^a</i> Nipah virus Omsk haemorrhagic fever virus Poliovirus (cultures only) Rabies virus (cultures only) <i>Rickettsia prowazekii (cultures only)</i> <i>Rickettsia rickettsii (cultures only)</i> Rift Valley fever virus (cultures only) Russian spring-summer encephalitis virus (cultures only) Sabia virus <i>Shigella dysenteriae type 1 (cultures only) ^a</i> Tick-borne encephalitis virus (cultures only) Variola virus Venezuelan equine encephalitis virus (cultures only) West Nile virus (cultures only) Yellow fever virus (cultures only) <i>Yersinia pestis (cultures only)</i>

^a Nevertheless, when the cultures are intended for diagnostic or clinical purposes, they may be classified as infectious substances of Category B.

INDICATIVE EXAMPLES OF INFECTIOUS SUBSTANCES INCLUDED IN CATEGORY A IN ANY FORM UNLESS OTHERWISE INDICATED (2.2.62.1.4.1)	
UN Number and name	Microorganism
UN No. 2900 Infectious substances affecting animals only	African swine fever virus (cultures only) Avian paramyxovirus Type 1 - Velogenic Newcastle disease virus (cultures only) Classical swine fever virus (cultures only) Foot and mouth disease virus (cultures only) Lumpy skin disease virus (cultures only) <i>Mycoplasma mycoides</i> - Contagious bovine pleuropneumonia (cultures only) Peste des petits ruminants virus (cultures only) Rinderpest virus (cultures only) Sheep-pox virus (cultures only) Goatpox virus (cultures only) Swine vesicular disease virus (cultures only) Vesicular stomatitis virus (cultures only)

2.2.62.1.4.2 Category B: An infectious substance which does not meet the criteria for inclusion in Category A. Infectious substances in Category B shall be assigned to UN No. 3373.

NOTE: *The proper shipping name of UN No. 3373 is "BIOLOGICAL SUBSTANCE, CATEGORY B".*

2.2.62.1.5 *Exemptions*

2.2.62.1.5.1 Substances which do not contain infectious substances or substances which are unlikely to cause disease in humans or animals are not subject to the provisions of ADR unless they meet the criteria for inclusion in another class.

2.2.62.1.5.2 Substances containing microorganisms which are non-pathogenic to humans or animals are not subject to ADR unless they meet the criteria for inclusion in another class.

2.2.62.1.5.3 Substances in a form that any present pathogens have been neutralized or inactivated such that they no longer pose a health risk are not subject to ADR unless they meet the criteria for inclusion in another class.

NOTE: *Medical equipment which has been drained of free liquid is deemed to meet the requirements of this paragraph and is not subject to the provisions of ADR.*

2.2.62.1.5.4 Substances where the concentration of pathogens is at a level naturally encountered (including foodstuff and water samples) and which are not considered to pose a significant risk of infection are not subject to ADR unless they meet the criteria for inclusion in another class.

2.2.62.1.5.5 Dried blood spots, collected by applying a drop of blood onto absorbent material, are not subject to ADR.

2.2.62.1.5.6 Faecal occult blood screening samples are not subject to ADR.

2.2.62.1.5.7 Blood or blood components which have been collected for the purposes of transfusion or for the preparation of blood products to be used for transfusion or transplantation and any tissues or organs intended for use in transplantation as well as samples drawn in connection with such purposes are not subject to ADR.

2.2.62.1.5.8 Human or animal specimens for which there is minimal likelihood that pathogens are present are not subject to ADR if the specimen is carried in a packaging which will prevent any leakage and which is marked with the words "Exempt human specimen" or "Exempt animal specimen", as appropriate.

The packaging is deemed to comply with the above requirements if it meets the following conditions:

- (a) The packaging consists of three components:
 - (i) a leak-proof primary receptacle(s);
 - (ii) a leak-proof secondary packaging; and

- (iii) an outer packaging of adequate strength for its capacity, mass and intended use, and with at least one surface having minimum dimensions of 100 mm × 100 mm;
- (b) For liquids, absorbent material in sufficient quantity to absorb the entire contents is placed between the primary receptacle(s) and the secondary packaging so that, during carriage, any release or leak of a liquid substance will not reach the outer packaging and will not compromise the integrity of the cushioning material;
- (c) When multiple fragile primary receptacles are placed in a single secondary packaging, they are either individually wrapped or separated to prevent contact between them.

***NOTE 1:** An element of professional judgment is required to determine if a substance is exempt under this paragraph. That judgment should be based on the known medical history, symptoms and individual circumstances of the source, human or animal, and endemic local conditions. Examples of specimens which may be carried under this paragraph include the blood or urine tests to monitor cholesterol levels, blood glucose levels, hormone levels, or prostate specific antibodies (PSA); those required to monitor organ function such as heart, liver or kidney function for humans or animals with non-infectious diseases, or for therapeutic drug monitoring; those conducted for insurance or employment purposes and are intended to determine the presence of drugs or alcohol; pregnancy test; biopsies to detect cancer; and antibody detection in humans or animals in the absence of any concern for infection (e.g. evaluation of vaccine induced immunity, diagnosis of autoimmune disease, etc.).*

***NOTE 2:** For air transport, packagings for specimens exempted under this paragraph shall meet the conditions in (a) to (c).*

2.2.62.1.5.9 Except for:

- (a) Medical waste (UN Nos. 3291 and 3549);
- (b) Medical devices or equipment contaminated with or containing infectious substances in Category A (UN No. 2814 or UN No. 2900); and
- (c) Medical devices or equipment contaminated with or containing other dangerous goods that meet the definition of another class,

medical devices or equipment potentially contaminated with or containing infectious substances which are being carried for disinfection, cleaning, sterilization, repair, or equipment evaluation are not subject to provisions of ADR other than those of this paragraph if packed in packagings designed and constructed in such a way that, under normal conditions of carriage, they cannot break, be punctured or leak their contents. Packagings shall be designed to meet the construction requirements listed in 6.1.4 or 6.6.4.

These packagings shall meet the general packing requirements of 4.1.1.1 and 4.1.1.2 and be capable of retaining the medical devices and equipment when dropped from a height of 1.2 m.

The packagings shall be marked "USED MEDICAL DEVICE" or "USED MEDICAL EQUIPMENT". When using overpacks, these shall be marked in the same way, except when the inscription remains visible.

2.2.62.1.6 to 2.2.62.1.8 (Reserved)

2.2.62.1.9 *Biological products*

For the purposes of ADR, biological products are divided into the following groups:

- (a) those which are manufactured and packaged in accordance with the requirements of appropriate national authorities and carried for the purposes of final packaging or distribution, and use for personal health care by medical professionals or individuals. Substances in this group are not subject to the provisions of ADR;
- (b) those which do not fall under paragraph (a) and are known or reasonably believed to contain infectious substances and which meet the criteria for inclusion in Category A or Category B. Substances in this group shall be assigned to UN Nos. 2814, 2900 or 3373, as appropriate.

NOTE: Some licensed biological products may present a biohazard only in certain parts of the world. In that case, competent authorities may require these biological products to be in compliance with local requirements for infectious substances or may impose other restrictions.

2.2.62.1.10 *Genetically modified microorganisms and organisms*

Genetically modified microorganisms not meeting the definition of infectious substance shall be classified according to section 2.2.9.

2.2.62.1.11 *Medical or clinical wastes*

2.2.62.1.11.1 Medical or clinical wastes containing

(a) Category A infectious substances shall be assigned to UN No. 2814, UN No. 2900 or UN No. 3549, as appropriate. Solid medical waste containing Category A infectious substances generated from the medical treatment of humans or veterinary treatment of animals may be assigned to UN No. 3549. The UN No. 3549 entry shall not be used for waste from bio-research or liquid waste;

(b) Category B infectious substances shall be assigned to UN No. 3291.

NOTE 1: The proper shipping name for UN No. 3549 is "MEDICAL WASTE, CATEGORY A, AFFECTING HUMANS, solid" or "MEDICAL WASTE, CATEGORY A, AFFECTING ANIMALS only, solid".

NOTE 2: Medical or clinical wastes assigned to number 18 01 03 (Wastes from human or animal health care and/or related research – wastes from natal care, diagnosis, treatment or prevention of disease in humans – wastes whose collection and disposal is subject to special requirements in order to prevent infection) or 18 02 02 (Wastes from human or animal health care and/or related research – wastes from research, diagnosis, treatment or prevention of disease involving animals – wastes whose collection and disposal is subject to special requirements in order to prevent infection) according to the list of wastes annexed to the Commission Decision 2000/532/EC⁴ as amended, shall be classified according to the provisions set out in this paragraph, based on the medical or veterinary diagnosis concerning the patient or the animal.

2.2.62.1.11.2 Medical or clinical wastes which are reasonably believed to have a low probability of containing infectious substances shall be assigned to UN No. 3291. For the assignment, international, regional or national waste catalogues may be taken into account.

NOTE 1: The proper shipping name for UN No. 3291 is "CLINICAL WASTE, UNSPECIFIED, N.O.S." or "(BIO) MEDICAL WASTE, N.O.S." or "REGULATED MEDICAL WASTE, N.O.S.".

NOTE 2: Notwithstanding the classification criteria set out above, medical or clinical wastes assigned to number 18 01 04 (Wastes from human or animal health care and/or related research – wastes from natal care, diagnosis, treatment or prevention of disease in humans – wastes whose collection and disposal is not subject to special requirements in order to prevent infection) or 18 02 03 (Wastes from human or animal health care and/or related research – wastes from research, diagnosis, treatment or prevention of disease involving animals – wastes whose collection and disposal is not subject to special requirements in order to prevent infection) according to the list of wastes annexed to the Commission Decision 2000/532/EC⁴ as amended, are not subject to the provisions of ADR.

2.2.62.1.11.3 Decontaminated medical or clinical wastes which previously contained infectious substances are not subject to the provisions of ADR unless they meet the criteria for inclusion in another class.

2.2.62.1.11.4 (Deleted)

⁴ Commission Decision 2000/532/EC of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste (replaced by the Directive 2006/12/EC of the European Parliament and of the Council (Official Journal of the European Union No. L 114 of 27 April 2006, page 9)) and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste (Official Journal of the European Communities No. L 226 of 6 September 2000, page 3).

2.2.62.1.12 *Infected animals*

2.2.62.1.12.1 Unless an infectious substance cannot be consigned by any other means, live animals shall not be used to consign such a substance. A live animal which has been intentionally infected and is known or suspected to contain an infectious substance shall only be carried under terms and conditions approved by the competent authority.

NOTE: *The approval of the competent authorities shall be issued on the basis of the relevant rules for the carriage of live animals, taking into consideration dangerous goods aspects. The authorities that are competent to lay down these conditions and rules for approval shall be regulated at national level.*

If there is no approval by a competent authority of a Contracting Party to ADR, the competent authority of a Contracting Party to ADR may recognize an approval issued by the competent authority of a country that is not a Contracting Party to ADR.

Rules for the carriage of livestock are, for example, contained in Council Regulation (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport (Official Journal of the European Union No L 3 of 5 January 2005) as amended.

2.2.62.1.12.2 *(Deleted)*

2.2.62.2 **Substances not accepted for carriage**

Live vertebrate or invertebrate animals shall not be used to carry an infectious agent unless the agent cannot be carried by other means or unless this carriage has been approved by the competent authority (see 2.2.62.1.12.1).

2.2.62.3 **List of collective entries**

Effects on humans	11	2814 INFECTIOUS SUBSTANCE, AFFECTING HUMANS
Effects on animals only	12	2900 INFECTIOUS SUBSTANCE, AFFECTING ANIMALS only
Clinical waste	13	3291 CLINICAL WASTE, UNSPECIFIED, N.O.S. or 3291 (BIO) MEDICAL WASTE, N.O.S. or 3291 REGULATED MEDICAL WASTE, N.O.S. 3549 MEDICAL WASTE, CATEGORY A, AFFECTING HUMANS, solid or 3549 MEDICAL WASTE, CATEGORY A, AFFECTING ANIMALS only, solid
Biological substances	14	3373 BIOLOGICAL SUBSTANCE, CATEGORY B

2.2.7 Class 7 Radioactive material

2.2.7.1 Definitions

2.2.7.1.1 *Radioactive material* means any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed the values specified in 2.2.7.2.2.1 to 2.2.7.2.2.6.

2.2.7.1.2 Contamination

Contamination means the presence of a radioactive substance on a surface in quantities in excess of 0.4 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters, or 0.04 Bq/cm² for all other alpha emitters.

Non-fixed contamination means contamination that can be removed from a surface during routine conditions of carriage.

Fixed contamination means contamination other than non-fixed contamination.

2.2.7.1.3 Definitions of specific terms

A_1 and A_2

A_1 means the activity value of special form radioactive material which is listed in the Table in 2.2.7.2.2.1 or derived in 2.2.7.2.2.2 and is used to determine the activity limits for the requirements of ADR.

A_2 means the activity value of radioactive material, other than special form radioactive material, which is listed in the Table in 2.2.7.2.2.1 or derived in 2.2.7.2.2.2 and is used to determine the activity limits for the requirements of ADR.

Fissile nuclides means uranium-233, uranium-235, plutonium-239 and plutonium-241. *Fissile material* means a material containing any of the fissile nuclides. Excluded from the definition of fissile material are the following:

- (a) Natural uranium or depleted uranium which is unirradiated;
- (b) Natural uranium or depleted uranium which has been irradiated in thermal reactors only;
- (c) Material with fissile nuclides less than a total of 0.25 g;
- (d) Any combination of (a), (b) and/or (c).

These exclusions are only valid if there is no other material with fissile nuclides in the package or in the consignment if shipped unpackaged.

Low dispersible radioactive material means either a solid radioactive material or a solid radioactive material in a sealed capsule, that has limited dispersibility and is not in powder form.

Low specific activity (LSA) material means radioactive material which by its nature has a limited specific activity, or radioactive material for which limits of estimated average specific activity apply. External shielding materials surrounding the LSA material shall not be considered in determining the estimated average specific activity.

Low toxicity alpha emitters are: natural uranium; depleted uranium; natural thorium; uranium-235 or uranium-238; thorium-232; thorium-228 and thorium-230 when contained in ores or physical and chemical concentrates; or alpha emitters with a half-life of less than 10 days.

Special form radioactive material means either:

- (a) An indispersible solid radioactive material; or
- (b) A sealed capsule containing radioactive material.

Specific activity of a radionuclide means the activity per unit mass of that nuclide. The specific activity of a material shall mean the activity per unit mass of the material in which the radionuclides are essentially uniformly distributed.

Surface contaminated object (SCO) means a solid object which is not itself radioactive but which has radioactive material distributed on its surface.

Unirradiated thorium means thorium containing not more than 10^{-7} g of uranium-233 per gram of thorium-232.

Unirradiated uranium means uranium containing not more than 2×10^3 Bq of plutonium per gram of uranium-235, not more than 9×10^6 Bq of fission products per gram of uranium-235 and not more than 5×10^{-3} g of uranium-236 per gram of uranium-235.

Uranium - natural, depleted, enriched means the following:

Natural uranium means uranium (which may be chemically separated) containing the naturally occurring distribution of uranium isotopes (approximately 99.28 % uranium-238, and 0.72 % uranium-235 by mass).

Depleted uranium means uranium containing a lesser mass percentage of uranium-235 than in natural uranium.

Enriched uranium means uranium containing a greater mass percentage of uranium-235 than 0.72 %.

In all cases, a very small mass percentage of uranium-234 is present.

2.2.7.2 **Classification**

2.2.7.2.1 *General provisions*

2.2.7.2.1.1 Radioactive material shall be assigned to one of the UN numbers specified in Table 2.2.7.2.1.1, in accordance with 2.2.7.2.4 and 2.2.7.2.5, taking into account the material characteristics determined in 2.2.7.2.3.

Table 2.2.7.2.1.1 Assignment of UN numbers

UN No.	Proper shipping name and description^a
Excepted packages (1.7.1.5)	
UN 2908	RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - EMPTY PACKAGING
UN 2909	RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - ARTICLES MANUFACTURED FROM NATURAL URANIUM or DEPLETED URANIUM or NATURAL THORIUM
UN 2910	RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - LIMITED QUANTITY OF MATERIAL
UN 2911	RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - INSTRUMENTS or ARTICLES
UN 3507	URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE less than 0.1 kg per package, non-fissile or fissile-excepted ^{b,c}
Low specific activity radioactive material (2.2.7.2.3.1)	
UN 2912	RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-I), non fissile or fissile-excepted ^b
UN 3321	RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-II), non fissile or fissile-excepted ^b
UN 3322	RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-III), non fissile or fissile-excepted ^b
UN 3324	RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-II), FISSILE
UN 3325	RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-III), FISSILE
Surface contaminated objects (2.2.7.2.3.2)	
UN 2913	RADIOACTIVE MATERIAL, SURFACE CONTAMINATED OBJECTS (SCO-I, SCO-II or SCO-III), non fissile or fissile-excepted ^b
UN 3326	RADIOACTIVE MATERIAL, SURFACE CONTAMINATED OBJECTS (SCO-I or SCO-II), FISSILE
Type A packages (2.2.7.2.4.4)	
UN 2915	RADIOACTIVE MATERIAL, TYPE A PACKAGE, non-special form, non fissile or fissile-excepted ^b
UN 3327	RADIOACTIVE MATERIAL, TYPE A PACKAGE, FISSILE, non-special form
UN 3332	RADIOACTIVE MATERIAL, TYPE A PACKAGE, SPECIAL FORM, non fissile or fissile-excepted ^b
UN 3333	RADIOACTIVE MATERIAL, TYPE A PACKAGE, SPECIAL FORM, FISSILE
Type B(U) packages (2.2.7.2.4.6)	
UN 2916	RADIOACTIVE MATERIAL, TYPE B(U) PACKAGE, non fissile or fissile-excepted ^b
UN 3328	RADIOACTIVE MATERIAL, TYPE B(U) PACKAGE, FISSILE
Type B(M) packages (2.2.7.2.4.6)	
UN 2917	RADIOACTIVE MATERIAL, TYPE B(M) PACKAGE, non fissile or fissile-excepted ^b
UN 3329	RADIOACTIVE MATERIAL, TYPE B(M) PACKAGE, FISSILE
Type C packages (2.2.7.2.4.6)	
UN 3323	RADIOACTIVE MATERIAL, TYPE C PACKAGE, non fissile or fissile-excepted ^b
UN 3330	RADIOACTIVE MATERIAL, TYPE C PACKAGE, FISSILE
Special arrangement (2.2.7.2.5)	
UN 2919	RADIOACTIVE MATERIAL, TRANSPORTED UNDER SPECIAL ARRANGEMENT, non fissile or fissile-excepted ^b
UN 3331	RADIOACTIVE MATERIAL, TRANSPORTED UNDER SPECIAL ARRANGEMENT, FISSILE
Uranium hexafluoride (2.2.7.2.4.5)	
UN 2977	RADIOACTIVE MATERIAL, URANIUM HEXAFLUORIDE, FISSILE
UN 2978	RADIOACTIVE MATERIAL, URANIUM HEXAFLUORIDE, non fissile or fissile-excepted ^b
UN 3507	URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE less than 0.1 kg per package, non-fissile or fissile-excepted ^{b,c}

^a The proper shipping name is found in the column "proper shipping name and description" and is restricted to that part shown in capital letters. In the cases of UN Nos. 2909, 2911, 2913 and 3326, where alternative proper shipping names are separated by the word "or" only the relevant proper shipping name shall be used.

^b The term "fissile-excepted" refers only to material excepted under 2.2.7.2.3.5.

^c For UN No. 3507, see also special provision 369 in Chapter 3.3.

2.2.7.2.2 *Determination of basic radionuclide values*

2.2.7.2.2.1 The following basic values for individual radionuclides are given in Table 2.2.7.2.2.1:

- (a) A_1 and A_2 in TBq;
- (b) Activity concentration limits for exempt material in Bq/g; and
- (c) Activity limits for exempt consignments in Bq.

Table 2.2.7.2.2.1: Basic radionuclides values for individual radionuclides

Radionuclide (atomic number)	A_1 (TBq)	A_2 (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Actinium (89)				
Ac-225 (a)	8×10^{-1}	6×10^{-3}	1×10^1	1×10^4
Ac-227 (a)	9×10^{-1}	9×10^{-5}	1×10^{-1}	1×10^3
Ac-228	6×10^{-1}	5×10^{-1}	1×10^1	1×10^6
Silver (47)				
Ag-105	2×10^0	2×10^0	1×10^2	1×10^6
Ag-108m (a)	7×10^{-1}	7×10^{-1}	1×10^1 (b)	1×10^6 (b)
Ag-110m (a)	4×10^{-1}	4×10^{-1}	1×10^1	1×10^6
Ag-111	2×10^0	6×10^{-1}	1×10^3	1×10^6
Aluminium (13)				
Al-26	1×10^{-1}	1×10^{-1}	1×10^1	1×10^5
Americium (95)				
Am-241	1×10^1	1×10^{-3}	1×10^0	1×10^4
Am-242m (a)	1×10^1	1×10^{-3}	1×10^0 (b)	1×10^4 (b)
Am-243 (a)	5×10^0	1×10^{-3}	1×10^0 (b)	1×10^3 (b)
Argon (18)				
Ar-37	4×10^1	4×10^1	1×10^6	1×10^8
Ar-39	4×10^1	2×10^1	1×10^7	1×10^4
Ar-41	3×10^{-1}	3×10^{-1}	1×10^2	1×10^9
Arsenic (33)				
As-72	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
As-73	4×10^1	4×10^1	1×10^3	1×10^7
As-74	1×10^0	9×10^{-1}	1×10^1	1×10^6
As-76	3×10^{-1}	3×10^{-1}	1×10^2	1×10^5
As-77	2×10^1	7×10^{-1}	1×10^3	1×10^6
Astatine (85)				
At-211 (a)	2×10^1	5×10^{-1}	1×10^3	1×10^7

Radionuclide (atomic number)	A₁ (TBq)	A₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Gold (79)				
Au-193	7×10^0	2×10^0	1×10^2	1×10^7
Au-194	1×10^0	1×10^0	1×10^1	1×10^6
Au-195	1×10^1	6×10^0	1×10^2	1×10^7
Au-198	1×10^0	6×10^{-1}	1×10^2	1×10^6
Au-199	1×10^1	6×10^{-1}	1×10^2	1×10^6
Barium (56)				
Ba-131 (a)	2×10^0	2×10^0	1×10^2	1×10^6
Ba-133	3×10^0	3×10^0	1×10^2	1×10^6
Ba-133m	2×10^1	6×10^{-1}	1×10^2	1×10^6
Ba-135m	2×10^1	6×10^{-1}	1×10^2	1×10^6
Ba-140 (a)	5×10^{-1}	3×10^{-1}	1×10^1 (b)	1×10^5 (b)
Beryllium (4)				
Be-7	2×10^1	2×10^1	1×10^3	1×10^7
Be-10	4×10^1	6×10^{-1}	1×10^4	1×10^6
Bismuth (83)				
Bi-205	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
Bi-206	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
Bi-207	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
Bi-210	1×10^0	6×10^{-1}	1×10^3	1×10^6
Bi-210m (a)	6×10^{-1}	2×10^{-2}	1×10^1	1×10^5
Bi-212 (a)	7×10^{-1}	6×10^{-1}	1×10^1 (b)	1×10^5 (b)
Berkelium (97)				
Bk-247	8×10^0	8×10^{-4}	1×10^0	1×10^4
Bk-249 (a)	4×10^1	3×10^{-1}	1×10^3	1×10^6
Bromine (35)				
Br-76	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
Br-77	3×10^0	3×10^0	1×10^2	1×10^6
Br-82	4×10^{-1}	4×10^{-1}	1×10^1	1×10^6
Carbon (6)				
C-11	1×10^0	6×10^{-1}	1×10^1	1×10^6
C-14	4×10^1	3×10^0	1×10^4	1×10^7

Radionuclide (atomic number)	A₁ (TBq)	A₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Calcium (20)				
Ca-41	Unlimited	Unlimited	1×10^5	1×10^7
Ca-45	4×10^1	1×10^0	1×10^4	1×10^7
Ca-47 (a)	3×10^0	3×10^{-1}	1×10^1	1×10^6
Cadmium (48)				
Cd-109	3×10^1	2×10^0	1×10^4	1×10^6
Cd-113m	4×10^1	5×10^{-1}	1×10^3	1×10^6
Cd-115 (a)	3×10^0	4×10^{-1}	1×10^2	1×10^6
Cd-115m	5×10^{-1}	5×10^{-1}	1×10^3	1×10^6
Cerium (58)				
Ce-139	7×10^0	2×10^0	1×10^2	1×10^6
Ce-141	2×10^1	6×10^{-1}	1×10^2	1×10^7
Ce-143	9×10^{-1}	6×10^{-1}	1×10^2	1×10^6
Ce-144 (a)	2×10^{-1}	2×10^{-1}	1×10^2 (b)	1×10^5 (b)
Californium (98)				
Cf-248	4×10^1	6×10^{-3}	1×10^1	1×10^4
Cf-249	3×10^0	8×10^{-4}	1×10^0	1×10^3
Cf-250	2×10^1	2×10^{-3}	1×10^1	1×10^4
Cf-251	7×10^0	7×10^{-4}	1×10^0	1×10^3
Cf-252	1×10^{-1}	3×10^{-3}	1×10^1	1×10^4
Cf-253 (a)	4×10^1	4×10^{-2}	1×10^2	1×10^5
Cf-254	1×10^{-3}	1×10^{-3}	1×10^0	1×10^3
Chlorine (17)				
Cl-36	1×10^1	6×10^{-1}	1×10^4	1×10^6
Cl-38	2×10^{-1}	2×10^{-1}	1×10^1	1×10^5
Curium (96)				
Cm-240	4×10^1	2×10^{-2}	1×10^2	1×10^5
Cm-241	2×10^0	1×10^0	1×10^2	1×10^6
Cm-242	4×10^1	1×10^{-2}	1×10^2	1×10^5
Cm-243	9×10^0	1×10^{-3}	1×10^0	1×10^4
Cm-244	2×10^1	2×10^{-3}	1×10^1	1×10^4
Cm-245	9×10^0	9×10^{-4}	1×10^0	1×10^3
Cm-246	9×10^0	9×10^{-4}	1×10^0	1×10^3

Radionuclide (atomic number)	A₁ (TBq)	A₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Cm-247 (a)	3×10^0	1×10^{-3}	1×10^0	1×10^4
Cm-248	2×10^{-2}	3×10^{-4}	1×10^0	1×10^3
Cobalt (27)				
Co-55	5×10^{-1}	5×10^{-1}	1×10^1	1×10^6
Co-56	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
Co-57	1×10^1	1×10^1	1×10^2	1×10^6
Co-58	1×10^0	1×10^0	1×10^1	1×10^6
Co-58m	4×10^1	4×10^1	1×10^4	1×10^7
Co-60	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
Chromium (24)				
Cr-51	3×10^1	3×10^1	1×10^3	1×10^7
Caesium (55)				
Cs-129	4×10^0	4×10^0	1×10^2	1×10^5
Cs-131	3×10^1	3×10^1	1×10^3	1×10^6
Cs-132	1×10^0	1×10^0	1×10^1	1×10^5
Cs-134	7×10^{-1}	7×10^{-1}	1×10^1	1×10^4
Cs-134m	4×10^1	6×10^{-1}	1×10^3	1×10^5
Cs-135	4×10^1	1×10^0	1×10^4	1×10^7
Cs-136	5×10^{-1}	5×10^{-1}	1×10^1	1×10^5
Cs-137 (a)	2×10^0	6×10^{-1}	1×10^1 (b)	1×10^4 (b)
Copper (29)				
Cu-64	6×10^0	1×10^0	1×10^2	1×10^6
Cu-67	1×10^1	7×10^{-1}	1×10^2	1×10^6
Dysprosium (66)				
Dy-159	2×10^1	2×10^1	1×10^3	1×10^7
Dy-165	9×10^{-1}	6×10^{-1}	1×10^3	1×10^6
Dy-166 (a)	9×10^{-1}	3×10^{-1}	1×10^3	1×10^6
Erbium (68)				
Er-169	4×10^1	1×10^0	1×10^4	1×10^7
Er-171	8×10^{-1}	5×10^{-1}	1×10^2	1×10^6
Europium (63)				
Eu-147	2×10^0	2×10^0	1×10^2	1×10^6
Eu-148	5×10^{-1}	5×10^{-1}	1×10^1	1×10^6

Radionuclide (atomic number)	A₁ (TBq)	A₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Eu-149	2×10^1	2×10^1	1×10^2	1×10^7
Eu-150(short lived)	2×10^0	7×10^{-1}	1×10^3	1×10^6
Eu-150(long lived)	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
Eu-152	1×10^0	1×10^0	1×10^1	1×10^6
Eu-152m	8×10^{-1}	8×10^{-1}	1×10^2	1×10^6
Eu-154	9×10^{-1}	6×10^{-1}	1×10^1	1×10^6
Eu-155	2×10^1	3×10^0	1×10^2	1×10^7
Eu-156	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
Fluorine (9)				
F-18	1×10^0	6×10^{-1}	1×10^1	1×10^6
Iron (26)				
Fe-52 (a)	3×10^{-1}	3×10^{-1}	1×10^1	1×10^6
Fe-55	4×10^1	4×10^1	1×10^4	1×10^6
Fe-59	9×10^{-1}	9×10^{-1}	1×10^1	1×10^6
Fe-60 (a)	4×10^1	2×10^{-1}	1×10^2	1×10^5
Gallium (31)				
Ga-67	7×10^0	3×10^0	1×10^2	1×10^6
Ga-68	5×10^{-1}	5×10^{-1}	1×10^1	1×10^5
Ga-72	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
Gadolinium (64)				
Gd-146 (a)	5×10^{-1}	5×10^{-1}	1×10^1	1×10^6
Gd-148	2×10^1	2×10^{-3}	1×10^1	1×10^4
Gd-153	1×10^1	9×10^0	1×10^2	1×10^7
Gd-159	3×10^0	6×10^{-1}	1×10^3	1×10^6
Germanium (32)				
Ge-68 (a)	5×10^{-1}	5×10^{-1}	1×10^1	1×10^5
Ge-69	1×10^0	1×10^0	1×10^1	1×10^6
Ge-71	4×10^1	4×10^1	1×10^4	1×10^8
Ge-77	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
Hafnium (72)				
Hf-172 (a)	6×10^{-1}	6×10^{-1}	1×10^1	1×10^6
Hf-175	3×10^0	3×10^0	1×10^2	1×10^6
Hf-181	2×10^0	5×10^{-1}	1×10^1	1×10^6

Radionuclide (atomic number)	A₁ (TBq)	A₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Hf-182	Unlimited	Unlimited	1×10^2	1×10^6
Mercury (80)				
Hg-194 (a)	1×10^0	1×10^0	1×10^1	1×10^6
Hg-195m (a)	3×10^0	7×10^{-1}	1×10^2	1×10^6
Hg-197	2×10^1	1×10^1	1×10^2	1×10^7
Hg-197m	1×10^1	4×10^{-1}	1×10^2	1×10^6
Hg-203	5×10^0	1×10^0	1×10^2	1×10^5
Holmium (67)				
Ho-166	4×10^{-1}	4×10^{-1}	1×10^3	1×10^5
Ho-166m	6×10^{-1}	5×10^{-1}	1×10^1	1×10^6
Iodine (53)				
I-123	6×10^0	3×10^0	1×10^2	1×10^7
I-124	1×10^0	1×10^0	1×10^1	1×10^6
I-125	2×10^1	3×10^0	1×10^3	1×10^6
I-126	2×10^0	1×10^0	1×10^2	1×10^6
I-129	Unlimited	Unlimited	1×10^2	1×10^5
I-131	3×10^0	7×10^{-1}	1×10^2	1×10^6
I-132	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
I-133	7×10^{-1}	6×10^{-1}	1×10^1	1×10^6
I-134	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
I-135 (a)	6×10^{-1}	6×10^{-1}	1×10^1	1×10^6
Indium (49)				
In-111	3×10^0	3×10^0	1×10^2	1×10^6
In-113m	4×10^0	2×10^0	1×10^2	1×10^6
In-114m (a)	1×10^1	5×10^{-1}	1×10^2	1×10^6
In-115m	7×10^0	1×10^0	1×10^2	1×10^6
Iridium (77)				
Ir-189 (a)	1×10^1	1×10^1	1×10^2	1×10^7
Ir-190	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
Ir-192	1×10^0 (c)	6×10^{-1}	1×10^1	1×10^4
Ir-193m	4×10^1	4×10^0	1×10^4	1×10^7
Ir-194	3×10^{-1}	3×10^{-1}	1×10^2	1×10^5
Potassium (19)				

Radionuclide (atomic number)	A₁ (TBq)	A₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
K-40	9×10^{-1}	9×10^{-1}	1×10^2	1×10^6
K-42	2×10^{-1}	2×10^{-1}	1×10^2	1×10^6
K-43	7×10^{-1}	6×10^{-1}	1×10^1	1×10^6
Krypton (36)				
Kr-79	4×10^0	2×10^0	1×10^3	1×10^5
Kr-81	4×10^1	4×10^1	1×10^4	1×10^7
Kr-85	1×10^1	1×10^1	1×10^5	1×10^4
Kr-85m	8×10^0	3×10^0	1×10^3	1×10^{10}
Kr-87	2×10^{-1}	2×10^{-1}	1×10^2	1×10^9
Lanthanum (57)				
La-137	3×10^1	6×10^0	1×10^3	1×10^7
La-140	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
Lutetium (71)				
Lu-172	6×10^{-1}	6×10^{-1}	1×10^1	1×10^6
Lu-173	8×10^0	8×10^0	1×10^2	1×10^7
Lu-174	9×10^0	9×10^0	1×10^2	1×10^7
Lu-174m	2×10^1	1×10^1	1×10^2	1×10^7
Lu-177	3×10^1	7×10^{-1}	1×10^3	1×10^7
Magnesium (12)				
Mg-28 (a)	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
Manganese (25)				
Mn-52	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
Mn-53	Unlimited	Unlimited	1×10^4	1×10^9
Mn-54	1×10^0	1×10^0	1×10^1	1×10^6
Mn-56	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
Molybdenum (42)				
Mo-93	4×10^1	2×10^1	1×10^3	1×10^8
Mo-99 (a)	1×10^0	6×10^{-1}	1×10^2	1×10^6
Nitrogen (7)				
N-13	9×10^{-1}	6×10^{-1}	1×10^2	1×10^9
Sodium (11)				
Na-22	5×10^{-1}	5×10^{-1}	1×10^1	1×10^6
Na-24	2×10^{-1}	2×10^{-1}	1×10^1	1×10^5

Radionuclide (atomic number)	A₁ (TBq)	A₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Niobium (41)				
Nb-93m	4×10^1	3×10^1	1×10^4	1×10^7
Nb-94	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
Nb-95	1×10^0	1×10^0	1×10^1	1×10^6
Nb-97	9×10^{-1}	6×10^{-1}	1×10^1	1×10^6
Neodymium (60)				
Nd-147	6×10^0	6×10^{-1}	1×10^2	1×10^6
Nd-149	6×10^{-1}	5×10^{-1}	1×10^2	1×10^6
Nickel (28)				
Ni-57	6×10^{-1}	6×10^{-1}	1×10^1	1×10^6
Ni-59	Unlimited	Unlimited	1×10^4	1×10^8
Ni-63	4×10^1	3×10^1	1×10^5	1×10^8
Ni-65	4×10^{-1}	4×10^{-1}	1×10^1	1×10^6
Neptunium (93)				
Np-235	4×10^1	4×10^1	1×10^3	1×10^7
Np-236(short-lived)	2×10^1	2×10^0	1×10^3	1×10^7
Np-236(long-lived)	9×10^0	2×10^{-2}	1×10^2	1×10^5
Np-237	2×10^1	2×10^{-3}	1×10^0 (b)	1×10^3 (b)
Np-239	7×10^0	4×10^{-1}	1×10^2	1×10^7
Osmium (76)				
Os-185	1×10^0	1×10^0	1×10^1	1×10^6
Os-191	1×10^1	2×10^0	1×10^2	1×10^7
Os-191m	4×10^1	3×10^1	1×10^3	1×10^7
Os-193	2×10^0	6×10^{-1}	1×10^2	1×10^6
Os-194 (a)	3×10^{-1}	3×10^{-1}	1×10^2	1×10^5
Phosphorus (15)				
P-32	5×10^{-1}	5×10^{-1}	1×10^3	1×10^5
P-33	4×10^1	1×10^0	1×10^5	1×10^8
Protactinium (91)				
Pa-230 (a)	2×10^0	7×10^{-2}	1×10^1	1×10^6
Pa-231	4×10^0	4×10^{-4}	1×10^0	1×10^3
Pa-233	5×10^0	7×10^{-1}	1×10^2	1×10^7
Lead (82)				

Radionuclide (atomic number)	A₁ (TBq)	A₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Pb-201	1×10^0	1×10^0	1×10^1	1×10^6
Pb-202	4×10^1	2×10^1	1×10^3	1×10^6
Pb-203	4×10^0	3×10^0	1×10^2	1×10^6
Pb-205	Unlimited	Unlimited	1×10^4	1×10^7
Pb-210 (a)	1×10^0	5×10^{-2}	1×10^1 (b)	1×10^4 (b)
Pb-212 (a)	7×10^{-1}	2×10^{-1}	1×10^1 (b)	1×10^5 (b)
Palladium (46)				
Pd-103 (a)	4×10^1	4×10^1	1×10^3	1×10^8
Pd-107	Unlimited	Unlimited	1×10^5	1×10^8
Pd-109	2×10^0	5×10^{-1}	1×10^3	1×10^6
Promethium (61)				
Pm-143	3×10^0	3×10^0	1×10^2	1×10^6
Pm-144	7×10^{-1}	7×10^{-1}	1×10^1	1×10^6
Pm-145	3×10^1	1×10^1	1×10^3	1×10^7
Pm-147	4×10^1	2×10^0	1×10^4	1×10^7
Pm-148m (a)	8×10^{-1}	7×10^{-1}	1×10^1	1×10^6
Pm-149	2×10^0	6×10^{-1}	1×10^3	1×10^6
Pm-151	2×10^0	6×10^{-1}	1×10^2	1×10^6
Polonium (84)				
Po-210	4×10^1	2×10^{-2}	1×10^1	1×10^4
Praseodymium (59)				
Pr-142	4×10^{-1}	4×10^{-1}	1×10^2	1×10^5
Pr-143	3×10^0	6×10^{-1}	1×10^4	1×10^6
Platinum (78)				
Pt-188 (a)	1×10^0	8×10^{-1}	1×10^1	1×10^6
Pt-191	4×10^0	3×10^0	1×10^2	1×10^6
Pt-193	4×10^1	4×10^1	1×10^4	1×10^7
Pt-193m	4×10^1	5×10^{-1}	1×10^3	1×10^7
Pt-195m	1×10^1	5×10^{-1}	1×10^2	1×10^6
Pt-197	2×10^1	6×10^{-1}	1×10^3	1×10^6
Pt-197m	1×10^1	6×10^{-1}	1×10^2	1×10^6
Plutonium (94)				
Pu-236	3×10^1	3×10^{-3}	1×10^1	1×10^4

Radionuclide (atomic number)	A₁ (TBq)	A₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Pu-237	2×10^1	2×10^1	1×10^3	1×10^7
Pu-238	1×10^1	1×10^{-3}	1×10^0	1×10^4
Pu-239	1×10^1	1×10^{-3}	1×10^0	1×10^4
Pu-240	1×10^1	1×10^{-3}	1×10^0	1×10^3
Pu-241 (a)	4×10^1	6×10^{-2}	1×10^2	1×10^5
Pu-242	1×10^1	1×10^{-3}	1×10^0	1×10^4
Pu-244 (a)	4×10^{-1}	1×10^{-3}	1×10^0	1×10^4
Radium (88)				
Ra-223 (a)	4×10^{-1}	7×10^{-3}	1×10^2 (b)	1×10^5 (b)
Ra-224 (a)	4×10^{-1}	2×10^{-2}	1×10^1 (b)	1×10^5 (b)
Ra-225 (a)	2×10^{-1}	4×10^{-3}	1×10^2	1×10^5
Ra-226 (a)	2×10^{-1}	3×10^{-3}	1×10^1 (b)	1×10^4 (b)
Ra-228 (a)	6×10^{-1}	2×10^{-2}	1×10^1 (b)	1×10^5 (b)
Rubidium (37)				
Rb-81	2×10^0	8×10^{-1}	1×10^1	1×10^6
Rb-83 (a)	2×10^0	2×10^0	1×10^2	1×10^6
Rb-84	1×10^0	1×10^0	1×10^1	1×10^6
Rb-86	5×10^{-1}	5×10^{-1}	1×10^2	1×10^5
Rb-87	Unlimited	Unlimited	1×10^4	1×10^7
Rb(nat)	Unlimited	Unlimited	1×10^4	1×10^7
Rhenium (75)				
Re-184	1×10^0	1×10^0	1×10^1	1×10^6
Re-184m	3×10^0	1×10^0	1×10^2	1×10^6
Re-186	2×10^0	6×10^{-1}	1×10^3	1×10^6
Re-187	Unlimited	Unlimited	1×10^6	1×10^9
Re-188	4×10^{-1}	4×10^{-1}	1×10^2	1×10^5
Re-189 (a)	3×10^0	6×10^{-1}	1×10^2	1×10^6
Re(nat)	Unlimited	Unlimited	1×10^6	1×10^9
Rhodium (45)				
Rh-99	2×10^0	2×10^0	1×10^1	1×10^6
Rh-101	4×10^0	3×10^0	1×10^2	1×10^7
Rh-102	5×10^{-1}	5×10^{-1}	1×10^1	1×10^6
Rh-102m	2×10^0	2×10^0	1×10^2	1×10^6

Radionuclide (atomic number)	A₁ (TBq)	A₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Rh-103m	4×10^1	4×10^1	1×10^4	1×10^8
Rh-105	1×10^1	8×10^{-1}	1×10^2	1×10^7
Radon (86)				
Rn-222 (a)	3×10^{-1}	4×10^{-3}	1×10^1 (b)	1×10^8 (b)
Ruthenium (44)				
Ru-97	5×10^0	5×10^0	1×10^2	1×10^7
Ru-103 (a)	2×10^0	2×10^0	1×10^2	1×10^6
Ru-105	1×10^0	6×10^{-1}	1×10^1	1×10^6
Ru-106 (a)	2×10^{-1}	2×10^{-1}	1×10^2 (b)	1×10^5 (b)
Sulphur (16)				
S-35	4×10^1	3×10^0	1×10^5	1×10^8
Antimony (51)				
Sb-122	4×10^{-1}	4×10^{-1}	1×10^2	1×10^4
Sb-124	6×10^{-1}	6×10^{-1}	1×10^1	1×10^6
Sb-125	2×10^0	1×10^0	1×10^2	1×10^6
Sb-126	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
Scandium (21)				
Sc-44	5×10^{-1}	5×10^{-1}	1×10^1	1×10^5
Sc-46	5×10^{-1}	5×10^{-1}	1×10^1	1×10^6
Sc-47	1×10^1	7×10^{-1}	1×10^2	1×10^6
Sc-48	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
Selenium (34)				
Se-75	3×10^0	3×10^0	1×10^2	1×10^6
Se-79	4×10^1	2×10^0	1×10^4	1×10^7
Silicon (14)				
Si-31	6×10^{-1}	6×10^{-1}	1×10^3	1×10^6
Si-32	4×10^1	5×10^{-1}	1×10^3	1×10^6
Samarium (62)				
Sm-145	1×10^1	1×10^1	1×10^2	1×10^7
Sm-147	Unlimited	Unlimited	1×10^1	1×10^4
Sm-151	4×10^1	1×10^1	1×10^4	1×10^8
Sm-153	9×10^0	6×10^{-1}	1×10^2	1×10^6
Tin (50)				

Radionuclide (atomic number)	A₁ (TBq)	A₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Sn-113 (a)	4×10^0	2×10^0	1×10^3	1×10^7
Sn-117m	7×10^0	4×10^{-1}	1×10^2	1×10^6
Sn-119m	4×10^1	3×10^1	1×10^3	1×10^7
Sn-121m (a)	4×10^1	9×10^{-1}	1×10^3	1×10^7
Sn-123	8×10^{-1}	6×10^{-1}	1×10^3	1×10^6
Sn-125	4×10^{-1}	4×10^{-1}	1×10^2	1×10^5
Sn-126 (a)	6×10^{-1}	4×10^{-1}	1×10^1	1×10^5
Strontium (38)				
Sr-82 (a)	2×10^{-1}	2×10^{-1}	1×10^1	1×10^5
Sr-83	1×10^0	1×10^0	1×10^1	1×10^6
Sr-85	2×10^0	2×10^0	1×10^2	1×10^6
Sr-85m	5×10^0	5×10^0	1×10^2	1×10^7
Sr-87m	3×10^0	3×10^0	1×10^2	1×10^6
Sr-89	6×10^{-1}	6×10^{-1}	1×10^3	1×10^6
Sr-90 (a)	3×10^{-1}	3×10^{-1}	1×10^2 (b)	1×10^4 (b)
Sr-91 (a)	3×10^{-1}	3×10^{-1}	1×10^1	1×10^5
Sr-92 (a)	1×10^0	3×10^{-1}	1×10^1	1×10^6
Tritium (1)				
T(H-3)	4×10^1	4×10^1	1×10^6	1×10^9
Tantalum (73)				
Ta-178(long-lived)	1×10^0	8×10^{-1}	1×10^1	1×10^6
Ta-179	3×10^1	3×10^1	1×10^3	1×10^7
Ta-182	9×10^{-1}	5×10^{-1}	1×10^1	1×10^4
Terbium (65)				
Tb-149	8×10^{-1}	8×10^{-1}	1×10^1	1×10^6
Tb-157	4×10^1	4×10^1	1×10^4	1×10^7
Tb-158	1×10^0	1×10^0	1×10^1	1×10^6
Tb-160	1×10^0	6×10^{-1}	1×10^1	1×10^6
Tb-161	3×10^1	7×10^{-1}	1×10^3	1×10^6
Technetium (43)				
Tc-95m (a)	2×10^0	2×10^0	1×10^1	1×10^6
Tc-96	4×10^{-1}	4×10^{-1}	1×10^1	1×10^6
Tc-96m (a)	4×10^{-1}	4×10^{-1}	1×10^3	1×10^7

Radionuclide (atomic number)	A₁ (TBq)	A₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Tc-97	Unlimited	Unlimited	1×10^3	1×10^8
Tc-97m	4×10^1	1×10^0	1×10^3	1×10^7
Tc-98	8×10^{-1}	7×10^{-1}	1×10^1	1×10^6
Tc-99	4×10^1	9×10^{-1}	1×10^4	1×10^7
Tc-99m	1×10^1	4×10^0	1×10^2	1×10^7
Tellurium (52)				
Te-121	2×10^0	2×10^0	1×10^1	1×10^6
Te-121m	5×10^0	3×10^0	1×10^2	1×10^6
Te-123m	8×10^0	1×10^0	1×10^2	1×10^7
Te-125m	2×10^1	9×10^{-1}	1×10^3	1×10^7
Te-127	2×10^1	7×10^{-1}	1×10^3	1×10^6
Te-127m (a)	2×10^1	5×10^{-1}	1×10^3	1×10^7
Te-129	7×10^{-1}	6×10^{-1}	1×10^2	1×10^6
Te-129m (a)	8×10^{-1}	4×10^{-1}	1×10^3	1×10^6
Te-131m (a)	7×10^{-1}	5×10^{-1}	1×10^1	1×10^6
Te-132 (a)	5×10^{-1}	4×10^{-1}	1×10^2	1×10^7
Thorium (90)				
Th-227	1×10^1	5×10^{-3}	1×10^1	1×10^4
Th-228 (a)	5×10^{-1}	1×10^{-3}	1×10^0 (b)	1×10^4 (b)
Th-229	5×10^0	5×10^{-4}	1×10^0 (b)	1×10^3 (b)
Th-230	1×10^1	1×10^{-3}	1×10^0	1×10^4
Th-231	4×10^1	2×10^{-2}	1×10^3	1×10^7
Th-232	Unlimited	Unlimited	1×10^1	1×10^4
Th-234 (a)	3×10^{-1}	3×10^{-1}	1×10^3 (b)	1×10^5 (b)
Th(nat)	Unlimited	Unlimited	1×10^0 (b)	1×10^3 (b)
Titanium (22)				
Ti-44 (a)	5×10^{-1}	4×10^{-1}	1×10^1	1×10^5
Thallium (81)				
Tl-200	9×10^{-1}	9×10^{-1}	1×10^1	1×10^6
Tl-201	1×10^1	4×10^0	1×10^2	1×10^6
Tl-202	2×10^0	2×10^0	1×10^2	1×10^6
Tl-204	1×10^1	7×10^{-1}	1×10^4	1×10^4
Thulium (69)				

Radionuclide (atomic number)	A₁ (TBq)	A₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Tm-167	7×10^0	8×10^{-1}	1×10^2	1×10^6
Tm-170	3×10^0	6×10^{-1}	1×10^3	1×10^6
Tm-171	4×10^1	4×10^1	1×10^4	1×10^8
Uranium (92)				
U-230 (fast lung absorption) (a)(d)	4×10^1	1×10^{-1}	1×10^1 (b)	1×10^5 (b)
U-230 (medium lung absorption) (a)(e)	4×10^1	4×10^{-3}	1×10^1	1×10^4
U-230 (slow lung absorption) (a)(f)	3×10^1	3×10^{-3}	1×10^1	1×10^4
U-232 (fast lung absorption) (d)	4×10^1	1×10^{-2}	1×10^0 (b)	1×10^3 (b)
U-232 (medium lung absorption) (e)	4×10^1	7×10^{-3}	1×10^1	1×10^4
U-232 (slow lung absorption) (f)	1×10^1	1×10^{-3}	1×10^1	1×10^4
U-233 (fast lung absorption) (d)	4×10^1	9×10^{-2}	1×10^1	1×10^4
U-233 (medium lung absorption) (e)	4×10^1	2×10^{-2}	1×10^2	1×10^5
U-233 (slow lung absorption) (f)	4×10^1	6×10^{-3}	1×10^1	1×10^5
U-234 (fast lung absorption) (d)	4×10^1	9×10^{-2}	1×10^1	1×10^4
U-234 (medium lung absorption) (e)	4×10^1	2×10^{-2}	1×10^2	1×10^5
U-234 (slow lung absorption) (f)	4×10^1	6×10^{-3}	1×10^1	1×10^5
U-235 (all lung absorption types) (a)(d)(e)(f)	Unlimited	Unlimited	1×10^1 (b)	1×10^4 (b)
U-236 (fast lung absorption) (d)	Unlimited	Unlimited	1×10^1	1×10^4
U-236 (medium lung absorption) (e)	4×10^1	2×10^{-2}	1×10^2	1×10^5
U-236 (slow lung absorption) (f)	4×10^1	6×10^{-3}	1×10^1	1×10^4
U-238 (all lung absorption types) (d)(e)(f)	Unlimited	Unlimited	1×10^1 (b)	1×10^4 (b)
U (nat)	Unlimited	Unlimited	1×10^0 (b)	1×10^3 (b)
U (enriched to 20 % or less) (g)	Unlimited	Unlimited	1×10^0	1×10^3
U (dep)	Unlimited	Unlimited	1×10^0	1×10^3
Vanadium (23)				
V-48	4×10^{-1}	4×10^{-1}	1×10^1	1×10^5
V-49	4×10^1	4×10^1	1×10^4	1×10^7
Tungsten (74)				
W-178 (a)	9×10^0	5×10^0	1×10^1	1×10^6
W-181	3×10^1	3×10^1	1×10^3	1×10^7
W-185	4×10^1	8×10^{-1}	1×10^4	1×10^7
W-187	2×10^0	6×10^{-1}	1×10^2	1×10^6
W-188 (a)	4×10^{-1}	3×10^{-1}	1×10^2	1×10^5

Radionuclide (atomic number)	A ₁ (TBq)	A ₂ (TBq)	Activity concentration limit for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Xenon (54)				
Xe-122 (a)	4×10^{-1}	4×10^{-1}	1×10^2	1×10^9
Xe-123	2×10^0	7×10^{-1}	1×10^2	1×10^9
Xe-127	4×10^0	2×10^0	1×10^3	1×10^5
Xe-131m	4×10^1	4×10^1	1×10^4	1×10^4
Xe-133	2×10^1	1×10^1	1×10^3	1×10^4
Xe-135	3×10^0	2×10^0	1×10^3	1×10^{10}
Yttrium (39)				
Y-87 (a)	1×10^0	1×10^0	1×10^1	1×10^6
Y-88	4×10^{-1}	4×10^{-1}	1×10^1	1×10^6
Y-90	3×10^{-1}	3×10^{-1}	1×10^3	1×10^5
Y-91	6×10^{-1}	6×10^{-1}	1×10^3	1×10^6
Y-91m	2×10^0	2×10^0	1×10^2	1×10^6
Y-92	2×10^{-1}	2×10^{-1}	1×10^2	1×10^5
Y-93	3×10^{-1}	3×10^{-1}	1×10^2	1×10^5
Ytterbium (70)				
Yb-169	4×10^0	1×10^0	1×10^2	1×10^7
Yb-175	3×10^1	9×10^{-1}	1×10^3	1×10^7
Zinc (30)				
Zn-65	2×10^0	2×10^0	1×10^1	1×10^6
Zn-69	3×10^0	6×10^{-1}	1×10^4	1×10^6
Zn-69m (a)	3×10^0	6×10^{-1}	1×10^2	1×10^6
Zirconium (40)				
Zr-88	3×10^0	3×10^0	1×10^2	1×10^6
Zr-93	Unlimited	Unlimited	1×10^3 (b)	1×10^7 (b)
Zr-95 (a)	2×10^0	8×10^{-1}	1×10^1	1×10^6
Zr-97 (a)	4×10^{-1}	4×10^{-1}	1×10^1 (b)	1×10^5 (b)

(a) A₁ and/or A₂ values for these parent radionuclides include contributions from their progeny with half-lives less than 10 days, as listed in the following:

Mg-28	Al-28
Ar-42	K-42
Ca-47	Sc-47
Ti-44	Sc-44
Fe-52	Mn-52m
Fe-60	Co-60m
Zn-69m	Zn-69
Ge-68	Ga-68

Rb-83	Kr-83m
Sr-82	Rb-82
Sr-90	Y-90
Sr-91	Y-91m
Sr-92	Y-92
Y-87	Sr-87m
Zr-95	Nb-95m
Zr-97	Nb-97m, Nb-97
Mo-99	Tc-99m
Tc-95m	Tc-95
Tc-96m	Tc-96
Ru-103	Rh-103m
Ru-106	Rh-106
Pd-103	Rh-103m
Ag-108m	Ag-108
Ag-110m	Ag-110
Cd-115	In-115m
In-114m	In-114
Sn-113	In-113m
Sn-121m	Sn-121
Sn-126	Sb-126m
Te-118	Sb-118
Te-127m	Te-127
Te-129m	Te-129
Te-131m	Te-131
Te-132	I-132
I-135	Xe-135m
Xe-122	I-122
Cs-137	Ba-137m
Ba-131	Cs-131
Ba-140	La-140
Ce-144	Pr-144m, Pr-144
Pm-148m	Pm-148
Gd-146	Eu-146
Dy-166	Ho-166
Hf-172	Lu-172
W-178	Ta-178
W-188	Re-188
Re-189	Os-189m
Os-194	Ir-194
Ir-189	Os-189m
Pt-188	Ir-188
Hg-194	Au-194
Hg-195m	Hg-195
Pb-210	Bi-210
Pb-212	Bi-212, Tl-208, Po-212
Bi-210m	Tl-206
Bi-212	Tl-208, Po-212
At-211	Po-211
Rn-222	Po-218, Pb-214, At-218, Bi-214, Po-214
Ra-223	Rn-219, Po-215, Pb-211, Bi-211, Po-211, Tl-207
Ra-224	Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212
Ra-225	Ac-225, Fr-221, At-217, Bi-213, Tl-209, Po-213, Pb-209
Ra-226	Rn-222, Po-218, Pb-214, At-218, Bi-214, Po-214
Ra-228	Ac-228
Ac-225	Fr-221, At-217, Bi-213, Tl-209, Po-213, Pb-209
Ac-227	Fr-223
Th-228	Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212
Th-234	Pa-234m, Pa-234
Pa-230	Ac-226, Th-226, Fr-222, Ra-222, Rn-218, Po-214
U-230	Th-226, Ra-222, Rn-218, Po-214
U-235	Th-231

Pu-241	U-237
Pu-244	U-240, Np-240m
Am-242m	Am-242, Np-238
Am-243	Np-239
Cm-247	Pu-243
Bk-249	Am-245
Cf-253	Cm-249

- (b) Parent nuclides and their progeny included in secular equilibrium are listed in the following (the activity to be taken into account is that of the parent nuclide only):

Sr-90	Y-90
Zr-93	Nb-93m
Zr-97	Nb-97
Ru-106	Rh-106
Ag-108m	Ag-108
Cs-137	Ba-137m
Ce-144	Pr-144
Ba-140	La-140
Bi-212	Tl-208 (0.36), Po-212 (0.64)
Pb-210	Bi-210, Po-210
Pb-212	Bi-212, Tl-208 (0.36), Po-212 (0.64)
Rn-222	Po-218, Pb-214, Bi-214, Po-214
Ra-223	Rn-219, Po-215, Pb-211, Bi-211, Tl-207
Ra-224	Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
Ra-226	Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
Ra-228	Ac-228
Th-228	Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
Th-229	Ra-225, Ac-225, Fr-221, At-217, Bi-213, Po-213, Pb-209
Th-nat ⁵	Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
Th-234	Pa-234m
U-230	Th-226, Ra-222, Rn-218, Po-214
U-232	Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
U-235	Th-231
U-238	Th-234, Pa-234m
U-nat ⁵	Th-234, Pa-234m, U-234, Th-230, Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
Np-237	Pa-233
Am-242m	Am-242
Am-243	Np-239

- (c) The quantity may be determined from a measurement of the rate of decay or a measurement of the dose rate at a prescribed distance from the source.
- (d) These values apply only to compounds of uranium that take the chemical form of UF₆, UO₂F₂ and UO₂(NO₃)₂ in both normal and accident conditions of carriage.
- (e) These values apply only to compounds of uranium that take the chemical form of UO₃, UF₄, UCl₄ and hexavalent compounds in both normal and accident conditions of carriage.
- (f) These values apply to all compounds of uranium other than those specified in (d) and (e) above.
- (g) These values apply to unirradiated uranium only.

2.2.7.2.2.2 For individual radionuclides:

- (a) Which are not listed in Table 2.2.7.2.2.1 the determination of the basic radionuclide values referred to in 2.2.7.2.2.1 shall require multilateral approval. For these radionuclides, activity concentration limits for exempt material and activity limits for exempt consignments shall be calculated in accordance with the principles established in "Radiation Protection and Safety of

⁵ In the case of Th-natural, the parent nuclide is Th-232, in the case of U-natural the parent nuclide is U-238.

Radiation Sources: International Basic Safety Standards", IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014). It is permissible to use an A_2 value calculated using a dose coefficient for the appropriate lung absorption type as recommended by the International Commission on Radiological Protection, if the chemical forms of each radionuclide under both normal and accident conditions of carriage are taken into consideration. Alternatively, the radionuclide values in Table 2.2.7.2.2.2 may be used without obtaining competent authority approval;

- (b) In instruments or articles in which the radioactive material is enclosed or is included as a component part of the instrument or other manufactured article and which meet 2.2.7.2.4.1.3 (c), alternative basic radionuclide values to those in Table 2.2.7.2.2.1 for the activity limit for an exempt consignment are permitted and shall require multilateral approval. Such alternative activity limits for an exempt consignment shall be calculated in accordance with the principles set out in GSR Part 3.

Table 2.2.7.2.2.2: Basic radionuclide values for unknown radionuclides or mixtures

Radioactive contents	A_1	A_2	Activity concentration limit for exempt material	Activity limit for exempt consignments
	(TBq)	(TBq)	(Bq/g)	(Bq)
Only beta or gamma emitting nuclides are known to be present	0.1	0.02	1×10^1	1×10^4
Alpha emitting nuclides but no neutron emitters are known to be present	0.2	9×10^{-5}	1×10^{-1}	1×10^3
Neutron emitting nuclides are known to be present or no relevant data are available	0.001	9×10^{-5}	1×10^{-1}	1×10^3

2.2.7.2.2.3 In the calculations of A_1 and A_2 for a radionuclide not in Table 2.2.7.2.2.1, a single radioactive decay chain in which the radionuclides are present in their naturally occurring proportions, and in which no progeny nuclide has a half-life either longer than 10 days or longer than that of the parent nuclide, shall be considered as a single radionuclide; and the activity to be taken into account and the A_1 or A_2 value to be applied shall be those corresponding to the parent nuclide of that chain. In the case of radioactive decay chains in which any progeny nuclide has a half-life either longer than 10 days or greater than that of the parent nuclide, the parent and such progeny nuclides shall be considered as mixtures of different nuclides.

2.2.7.2.2.4 For mixtures of radionuclides, the basic radionuclide values referred to in 2.2.7.2.2.1 may be determined as follows:

$$X_m = \frac{1}{\sum_i \frac{f(i)}{X(i)}}$$

where,

$f(i)$ is the fraction of activity or activity concentration of radionuclide i in the mixture;

$X(i)$ is the appropriate value of A_1 or A_2 , or the activity concentration limit for exempt material or the activity limit for an exempt consignment as appropriate for the radionuclide i ; and

X_m is the derived value of A_1 or A_2 , or the activity concentration limit for exempt material or the activity limit for an exempt consignment in the case of a mixture.

2.2.7.2.2.5 When the identity of each radionuclide is known but the individual activities of some of the radionuclides are not known, the radionuclides may be grouped and the lowest radionuclide value, as appropriate, for the radionuclides in each group may be used in applying the formulas in 2.2.7.2.2.4 and 2.2.7.2.4.4. Groups may be based on the total alpha activity and the total beta/gamma activity when these are known, using the lowest radionuclide values for the alpha emitters or beta/gamma emitters, respectively.

- 2.2.7.2.2.6 For individual radionuclides or for mixtures of radionuclides for which relevant data are not available, the values shown in Table 2.2.7.2.2.2 shall be used.
- 2.2.7.2.3 *Determination of other material characteristics*
- 2.2.7.2.3.1 Low specific activity (LSA) material
- 2.2.7.2.3.1.1 *(Reserved)*
- 2.2.7.2.3.1.2 LSA material shall be in one of three groups:
- (a) LSA-I
 - (i) uranium and thorium ores and concentrates of such ores, and other ores containing naturally occurring radionuclides;
 - (ii) natural uranium, depleted uranium, natural thorium or their compounds or mixtures, that are unirradiated and in solid or liquid form;
 - (iii) radioactive material for which the A_2 value is unlimited. Fissile material may be included only if excepted under 2.2.7.2.3.5;
 - (iv) other radioactive material in which the activity is distributed throughout and the estimated average specific activity does not exceed 30 times the values for activity concentration specified in 2.2.7.2.2.1 to 2.2.7.2.2.6. Fissile material may be included only if excepted under 2.2.7.2.3.5;
 - (b) LSA-II
 - (i) water with tritium concentration up to 0.8 TBq/l;
 - (ii) other material in which the activity is distributed throughout and the estimated average specific activity does not exceed 10^{-4} A_2/g for solids and gases, and 10^{-5} A_2/g for liquids;
 - (c) LSA-III - Solids (e.g. consolidated wastes, activated materials), excluding powders, in which:
 - (i) the radioactive material is distributed throughout a solid or a collection of solid objects, or is essentially uniformly distributed in a solid compact binding agent (such as concrete, bitumen and ceramic);
 - (ii) the estimated average specific activity of the solid, excluding any shielding material, does not exceed 2×10^{-3} A_2/g .
- 2.2.7.2.3.1.3 to 2.2.7.2.3.1.5 *(Deleted)*
- ~~2.2.7.2.3.1.4 LSA-III material shall be tested as follows:~~
- ~~A solid material sample representing the entire contents of the package shall be immersed for 7 days in water at ambient temperature. The volume of water to be used in the test shall be sufficient to ensure that at the end of the 7 day test period the free volume of the unabsorbed and unreacted water remaining shall be at least 10 % of the volume of the solid test sample itself. The water shall have an initial pH of 6-8 and a maximum conductivity of 1 mS/m at 20 °C. The total activity of the free volume of water shall be measured following the 7 day immersion of the test sample.~~
- ~~2.2.7.2.3.1.5 Demonstration of compliance with the performance standards in 2.2.7.2.3.1.4 shall be in accordance with 6.4.12.1 and 6.4.12.2.~~
- 2.2.7.2.3.2 Surface contaminated object (SCO)
- SCO is classified in one of three groups:
- (a) SCO-I: A solid object on which:
 - (i) the non-fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 4 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters, or 0.4 Bq/cm² for all other alpha emitters; and

- (ii) the fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 4×10^4 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters, or 4×10^3 Bq/cm² for all other alpha emitters; and
 - (iii) the non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 4×10^4 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters, or 4×10^3 Bq/cm² for all other alpha emitters;
- (b) SCO-II: A solid object on which either the fixed or non-fixed contamination on the surface exceeds the applicable limits specified for SCO-I in (a) above and on which:
- (i) the non-fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 400 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters, or 40 Bq/cm² for all other alpha emitters; and
 - (ii) the fixed contamination on the accessible surface, averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 8×10^5 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters, or 8×10^4 Bq/cm² for all other alpha emitters; and
 - (iii) the non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 8×10^5 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters, or 8×10^4 Bq/cm² for all other alpha emitters;
- (c) SCO-III: A large solid object which, because of its size, cannot be carried in a type of package described in ADR and for which:
- (i) All openings are sealed to prevent release of radioactive material during conditions defined in 4.1.9.2.4 (e);
 - (ii) The inside of the object is as dry as practicable;
 - (iii) The non-fixed contamination on the external surfaces does not exceed the limits specified in 4.1.9.1.2; and
 - (iv) The non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm² does not exceed 8×10^5 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters, or 8×10^4 Bq/cm² for all other alpha emitters.

2.2.7.2.3.3 Special form radioactive material

2.2.7.2.3.3.1 Special form radioactive material shall have at least one dimension not less than 5 mm. When a sealed capsule constitutes part of the special form radioactive material, the capsule shall be so manufactured that it can be opened only by destroying it. The design for special form radioactive material requires unilateral approval.

2.2.7.2.3.3.2 Special form radioactive material shall be of such a nature or shall be so designed that if it is subjected to the tests specified in 2.2.7.2.3.3.4 to 2.2.7.2.3.3.8, it shall meet the following requirements:

- (a) It would not break or shatter under the impact, percussion and bending tests 2.2.7.2.3.3.5 (a), (b), (c) and 2.2.7.2.3.3.6 (a) as applicable;
- (b) It would not melt or disperse in the applicable heat test 2.2.7.2.3.3.5 (d) or 2.2.7.2.3.3.6 (b) as applicable; and
- (c) The activity in the water from the leaching tests specified in 2.2.7.2.3.3.7 and 2.2.7.2.3.3.8 would not exceed 2 kBq; or alternatively for sealed sources, the leakage rate for the volumetric leakage assessment test specified in ISO 9978:1992 "Radiation Protection - Sealed Radioactive Sources - Leakage Test Methods", would not exceed the applicable acceptance threshold acceptable to the competent authority.

- 2.2.7.2.3.3.3 Demonstration of compliance with the performance standards in 2.2.7.2.3.3.2 shall be in accordance with 6.4.12.1 and 6.4.12.2.
- 2.2.7.2.3.3.4 Specimens that comprise or simulate special form radioactive material shall be subjected to the impact test, the percussion test, the bending test, and the heat test specified in 2.2.7.2.3.3.5 or alternative tests as authorized in 2.2.7.2.3.3.6. A different specimen may be used for each of the tests. Following each test, a leaching assessment or volumetric leakage test shall be performed on the specimen by a method no less sensitive than the methods given in 2.2.7.2.3.3.7 for indispersible solid material or 2.2.7.2.3.3.8 for encapsulated material.
- 2.2.7.2.3.3.5 The relevant test methods are:
- (a) Impact test: The specimen shall drop onto the target from a height of 9 m. The target shall be as defined in 6.4.14;
 - (b) Percussion test: The specimen shall be placed on a sheet of lead which is supported by a smooth solid surface and struck by the flat face of a mild steel bar so as to cause an impact equivalent to that resulting from a free drop of 1.4 kg from a height of 1 m. The lower part of the bar shall be 25 mm in diameter with the edges rounded off to a radius of (3.0 ± 0.3) mm. The lead, of hardness number 3.5 to 4.5 on the Vickers scale and not more than 25 mm thick, shall cover an area greater than that covered by the specimen. A fresh surface of lead shall be used for each impact. The bar shall strike the specimen so as to cause maximum damage;
 - (c) Bending test: The test shall apply only to long, slender sources with both a minimum length of 10 cm and a length to minimum width ratio of not less than 10. The specimen shall be rigidly clamped in a horizontal position so that one half of its length protrudes from the face of the clamp. The orientation of the specimen shall be such that the specimen will suffer maximum damage when its free end is struck by the flat face of a steel bar. The bar shall strike the specimen so as to cause an impact equivalent to that resulting from a free vertical drop of 1.4 kg from a height of 1 m. The lower part of the bar shall be 25 mm in diameter with the edges rounded off to a radius of (3.0 ± 0.3) mm;
 - (d) Heat test: The specimen shall be heated in air to a temperature of 800 °C and held at that temperature for a period of 10 minutes and shall then be allowed to cool.
- 2.2.7.2.3.3.6 Specimens that comprise or simulate radioactive material enclosed in a sealed capsule may be excepted from:
- (a) The tests prescribed in 2.2.7.2.3.3.5 (a) and (b) provided that the specimens are alternatively subjected to the impact test prescribed in ISO 2919:2012: "Radiation Protection - Sealed Radioactive Sources - General requirements and classification":
 - (i) The Class 4 impact test if the mass of the special form radioactive material is less than 200 g;
 - (ii) The Class 5 impact test if the mass of the special form radioactive material is equal to or more than 200 g but is less than 500 g;
 - (b) The test prescribed in 2.2.7.2.3.3.5 (d) provided they are alternatively subjected to the Class 6 temperature test specified in ISO 2919:2012 "Radiation protection - Sealed radioactive sources - General requirements and classification".
- 2.2.7.2.3.3.7 For specimens which comprise or simulate indispersible solid material, a leaching assessment shall be performed as follows:
- (a) The specimen shall be immersed for 7 days in water at ambient temperature. The volume of water to be used in the test shall be sufficient to ensure that at the end of the 7 day test period the free volume of the unabsorbed and unreacted water remaining shall be at least 10 % of the volume of the solid test sample itself. The water shall have an initial pH of 6-8 and a maximum conductivity of 1 mS/m at 20 °C;
 - (b) The water and the specimen shall then be heated to a temperature of (50 ± 5) °C and maintained at this temperature for 4 hours;
 - (c) The activity of the water shall then be determined;

- (d) The specimen shall then be kept for at least 7 days in still air at not less than 30 °C and relative humidity not less than 90 %;
- (e) The specimen shall then be immersed in water of the same specification as in (a) above and the water and the specimen heated to (50 ± 5) °C and maintained at this temperature for 4 hours;
- (f) The activity of the water shall then be determined.

2.2.7.2.3.3.8 For specimens which comprise or simulate radioactive material enclosed in a sealed capsule, either a leaching assessment or a volumetric leakage assessment shall be performed as follows:

- (a) The leaching assessment shall consist of the following steps:
 - (i) the specimen shall be immersed in water at ambient temperature. The water shall have an initial pH of 6-8 with a maximum conductivity of 1 mS/m at 20 °C;
 - (ii) the water and specimen shall then be heated to a temperature of (50 ± 5) °C and maintained at this temperature for 4 hours;
 - (iii) the activity of the water shall then be determined;
 - (iv) the specimen shall then be kept for at least 7 days in still air at not less than 30 °C and relative humidity of not less than 90 %;
 - (v) the process in (i), (ii) and (iii) shall be repeated;
- (b) The alternative volumetric leakage assessment shall comprise any of the tests prescribed in ISO 9978:1992 "Radiation Protection - Sealed radioactive sources - Leakage test methods", provided that they are acceptable to the competent authority.

2.2.7.2.3.4 Low dispersible radioactive material

2.2.7.2.3.4.1 The design for low dispersible radioactive material shall require multilateral approval. Low dispersible radioactive material shall be such that the total amount of this radioactive material in a package, taking into account the provisions of 6.4.8.14, shall meet the following requirements:

- (a) The dose rate at 3 m from the unshielded radioactive material does not exceed 10 mSv/h;
- (b) If subjected to the tests specified in 6.4.20.3 and 6.4.20.4, the airborne release in gaseous and particulate forms of up to 100 µm aerodynamic equivalent diameter would not exceed 100 A₂. A separate specimen may be used for each test; and
- (c) If subjected to the test specified in 2.2.7.2.3-4.3 the activity in the water would not exceed 100 A₂. In the application of this test, the damaging effects of the tests specified in (b) above shall be taken into account.

2.2.7.2.3.4.2 Low dispersible radioactive material shall be tested as follows:

A specimen that comprises or simulates low dispersible radioactive material shall be subjected to the enhanced thermal test specified in 6.4.20.3 and the impact test specified in 6.4.20.4. A different specimen may be used for each of the tests. Following each test, the specimen shall be subjected to the leach test specified in 2.2.7.2.3-4.3. After each test it shall be determined if the applicable requirements of 2.2.7.2.3.4.1 have been met.

2.2.7.2.3.4.3 A solid material sample representing the entire contents of the package shall be immersed for 7 days in water at ambient temperature. The volume of water to be used in the test shall be sufficient to ensure that at the end of the 7-day test period the free volume of the unabsorbed and unreacted water remaining shall be at least 10 % of the volume of the solid test sample itself. The water shall have an initial pH of 6-8 and a maximum conductivity of 1 mS/m at 20 °C. The total activity of the free volume of water shall be measured following the 7-day immersion of the test sample.

2.2.7.2.3.4.34 Demonstration of compliance with the performance standards in 2.2.7.2.3.4.1, ~~and~~ 2.2.7.2.3.4.2 and 2.2.7.2.3.4.3 shall be in accordance with 6.4.12.1 and 6.4.12.2.

2.2.7.2.3.5 Fissile material

Fissile material and packages containing fissile material shall be classified under the relevant entry as “FISSILE” in accordance with Table 2.2.7.2.1.1 unless excepted by one of the provisions of subparagraphs (a) to (f) below and carried subject to the requirements of 7.5.11 CV33 (4.3). All provisions apply only to material in packages that meets the requirements of 6.4.7.2 unless unpackaged material is specifically allowed in the provision.

- (a) Uranium enriched in uranium-235 to a maximum of 1 % by mass, and with a total plutonium and uranium-233 content not exceeding 1 % of the mass of uranium-235, provided that the fissile nuclides are distributed essentially homogeneously throughout the material. In addition, if uranium-235 is present in metallic, oxide or carbide forms, it shall not form a lattice arrangement;
- (b) Liquid solutions of uranyl nitrate enriched in uranium-235 to a maximum of 2 % by mass, with a total plutonium and uranium-233 content not exceeding 0.002 % of the mass of uranium, and with a minimum nitrogen to uranium atomic ratio (N/U) of 2;
- (c) Uranium with a maximum uranium enrichment of 5 % by mass uranium-235 provided:
 - (i) There is no more than 3.5 g of uranium-235 per package;
 - (ii) The total plutonium and uranium-233 content does not exceed 1 % of the mass of uranium-235 per package;
 - (iii) Carriage of the package is subject to the consignment limit provided in 7.5.11 CV33 (4.3) (c);
- (d) Fissile nuclides with a total mass not greater than 2.0 g per package provided the package is carried subject to the consignment limit provided in 7.5.11 CV33 (4.3) (d);
- (e) Fissile nuclides with a total mass not greater than 45 g either packaged or unpackaged subject to the requirements of 7.5.11 CV33 (4.3) (e);
- (f) A fissile material that meets the requirements of 7.5.11 CV33 (4.3) (b), 2.2.7.2.3.6 and 5.1.5.2.1.

2.2.7.2.3.6 Fissile material excepted from classification as “FISSILE” under 2.2.7.2.3.5 (f) shall be subcritical without the need for accumulation control under the following conditions:

- (a) The conditions of 6.4.11.1 (a);
- (b) The conditions consistent with the assessment provisions stated in 6.4.11.12 (b) and 6.4.11.13 (b) for packages.

2.2.7.2.4 *Classification of packages or unpacked material*

The quantity of radioactive material in a package shall not exceed the relevant limits for the package type as specified below.

2.2.7.2.4.1 Classification as excepted package

2.2.7.2.4.1.1 A package may be classified as an excepted package if it meets one of the following conditions:

- (a) It is an empty package having contained radioactive material;
- (b) It contains instruments or articles not exceeding the activity limits specified in columns (2) and (3) of Table 2.2.7.2.4.1.2;
- (c) It contains articles manufactured of natural uranium, depleted uranium or natural thorium;
- (d) It contains radioactive material not exceeding the activity limits specified in column (4) of Table 2.2.7.2.4.1.2; or
- (e) It contains less than 0.1 kg of uranium hexafluoride not exceeding the activity limits specified in column (4) of Table 2.2.7.2.4.1.2.

2.2.7.2.4.1.2 A package containing radioactive material may be classified as an excepted package provided that the dose rate at any point on its external surface does not exceed 5 µSv/h.

Table 2.2.7.2.4.1.2: Activity limits for excepted packages

Physical state of contents (1)	Instruments or articles		Materials Package limits ^a (4)
	Item limits ^a (2)	Package limits ^a (3)	
Solids			
special form	$10^{-2} A_1$	A_1	$10^{-3} A_1$
other form	$10^{-2} A_2$	A_2	$10^{-3} A_2$
Liquids	$10^{-3} A_2$	$10^{-1} A_2$	$10^{-4} A_2$
Gases			
tritium	$2 \times 10^{-2} A_2$	$2 \times 10^{-1} A_2$	$2 \times 10^{-2} A_2$
special form	$10^{-3} A_1$	$10^{-2} A_1$	$10^{-3} A_1$
other forms	$10^{-3} A_2$	$10^{-2} A_2$	$10^{-3} A_2$

^a For mixtures of radionuclides, see 2.2.7.2.2.4 to 2.2.7.2.2.6.

2.2.7.2.4.1.3 Radioactive material which is enclosed in or is included as a component part of an instrument or other manufactured article may be classified under UN No. 2911 RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - INSTRUMENTS or ARTICLES provided that:

- (a) The dose rate at 10 cm from any point on the external surface of any unpackaged instrument or article is not greater than 0.1 mSv/h;
- (b) Each instrument or manufactured article bears the mark "RADIOACTIVE" on its external surface except for the following:
 - (i) radioluminescent time-pieces or devices;
 - (ii) consumer products that have either received regulatory approval in accordance with 1.7.1.4 (e) or do not individually exceed the activity limit for an exempt consignment in Table 2.2.7.2.2.1 (column 5), provided such products are transported in a package that bears the mark "RADIOACTIVE" on its internal surface in such a manner that a warning of the presence of radioactive material is visible on opening the package; and
 - (iii) other instruments or articles too small to bear the mark "RADIOACTIVE", provided that they are transported in a package that bears the mark "RADIOACTIVE" on its internal surface in such a manner that a warning of the presence of radioactive material is visible on opening the package;
- (c) The active material is completely enclosed by non-active components (a device performing the sole function of containing radioactive material shall not be considered to be an instrument or manufactured article);
- (d) The limits specified in columns 2 and 3 of Table 2.2.7.2.4.1.2 are met for each individual item and each package, respectively;
- (e) *(Reserved)*;
- (f) If the package contains fissile material, one of the provisions of 2.2.7.2.3.5 (a) to (f) applies.

2.2.7.2.4.1.4 Radioactive material in forms other than as specified in 2.2.7.2.4.1.3 and with an activity not exceeding the limits specified in column 4 of Table 2.2.7.2.4.1.2, may be classified under UN No. 2910 RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - LIMITED QUANTITY OF MATERIAL provided that:

- (a) The package retains its radioactive contents under routine conditions of carriage;
- (b) The package bears the mark "RADIOACTIVE" on either:
 - (i) An internal surface in such a manner that a warning of the presence of radioactive material is visible on opening the package; or
 - (ii) The outside of the package, where it is impractical to mark an internal surface; and

(c) If the package contains fissile material, one of the provisions of 2.2.7.2.3.5 (a) to (f) applies.

2.2.7.2.4.1.5 Uranium hexafluoride not exceeding the limits specified in Column 4 of Table 2.2.7.2.4.1.2 may be classified under UN 3507 URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE, less than 0.1 kg per package, non-fissile or fissile-excepted provided that:

- (a) The mass of uranium hexafluoride in the package is less than 0.1 kg;
- (b) The conditions of 2.2.7.2.4.5.2 and 2.2.7.2.4.1.4 (a) and (b) are met.

2.2.7.2.4.1.6 Articles manufactured of natural uranium, depleted uranium or natural thorium and articles in which the sole radioactive material is unirradiated natural uranium, unirradiated depleted uranium or unirradiated natural thorium may be classified under UN No. 2909 RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - ARTICLES MANUFACTURED FROM NATURAL URANIUM or DEPLETED URANIUM or NATURAL THORIUM, provided that the outer surface of the uranium or thorium is enclosed in an inactive sheath made of metal or some other substantial material.

2.2.7.2.4.1.7 An empty packaging which had previously contained radioactive material may be classified under UN No. 2908 RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - EMPTY PACKAGING, provided that:

- (a) It is in a well-maintained condition and securely closed;
- (b) The outer surface of any uranium or thorium in its structure is covered with an inactive sheath made of metal or some other substantial material;
- (c) The level of internal non-fixed contamination, when averaged over any 300 cm², does not exceed:
 - (i) 400 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters; and
 - (ii) 40 Bq/cm² for all other alpha emitters;
- (d) Any labels which may have been displayed on it in conformity with 5.2.2.1.11.1 are no longer visible; and
- (e) If the packaging has contained fissile material, one of the provisions of 2.2.7.2.3.5 (a) to (f) or one of the provisions for exclusion in 2.2.7.1.3 applies.

2.2.7.2.4.2 Classification as Low specific activity (LSA) material

Radioactive material may only be classified as LSA material if the definition of LSA in 2.2.7.1.3 and the conditions of 2.2.7.2.3.1, 4.1.9.2 and 7.5.11 CV33 (2) are met.

2.2.7.2.4.3 Classification as Surface contaminated object (SCO)

Radioactive material may be classified as SCO if the definition of SCO in 2.2.7.1.3 and the conditions of 2.2.7.2.3.2, 4.1.9.2 and 7.5.11 CV33 (2) are met.

2.2.7.2.4.4 Classification as Type A package

Packages containing radioactive material may be classified as Type A packages provided that the following conditions are met:

Type A packages shall not contain activities greater than either of the following:

- (a) For special form radioactive material - A₁;
- (b) For all other radioactive material - A₂.

For mixtures of radionuclides whose identities and respective activities are known, the following condition shall apply to the radioactive contents of a Type A package:

$$\sum_i \frac{B(i)}{A_1(i)} + \sum_j \frac{C(j)}{A_2(j)} \leq 1$$

- where
- B(i) is the activity of radionuclide i as special form radioactive material;
 - A₁(i) is the A₁ value for radionuclide i;
 - C(j) is the activity of radionuclide j as other than special form radioactive material;
 - A₂(j) is the A₂ value for radionuclide j.

2.2.7.2.4.5 Classification of uranium hexafluoride

2.2.7.2.4.5.1 Uranium hexafluoride shall only be assigned to:

- (a) UN No. 2977, RADIOACTIVE MATERIAL, URANIUM HEXAFLUORIDE, FISSILE;
- (b) UN No. 2978, RADIOACTIVE MATERIAL, URANIUM HEXAFLUORIDE, non-fissile or fissile-excepted; or
- (c) UN No. 3507, URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE less than 0.1 kg per package, non-fissile or fissile-excepted.

2.2.7.2.4.5.2 The contents of a package containing uranium hexafluoride shall comply with the following requirements:

- (a) For UN Nos. 2977 and 2978, the mass of uranium hexafluoride shall not be different from that allowed for the package design, and for UN No. 3507, the mass of uranium hexafluoride shall be less than 0.1 kg;
- (b) The mass of uranium hexafluoride shall not be greater than a value that would lead to an ullage smaller than 5 % at the maximum temperature of the package as specified for the plant systems where the package shall be used; and
- (c) The uranium hexafluoride shall be in solid form and the internal pressure shall not be above atmospheric pressure when presented for carriage.

2.2.7.2.4.6 Classification as Type B(U), Type B(M) or Type C packages

2.2.7.2.4.6.1 Packages not otherwise classified in 2.2.7.2.4 (2.2.7.2.4.1 to 2.2.7.2.4.5) shall be classified in accordance with the competent authority certificate of approval for the package issued by the country of origin of design.

2.2.7.2.4.6.2 The contents of a Type B(U), Type B(M) or Type C package shall be as specified in the certificate of approval.

2.2.7.2.5 *Special arrangements*

Radioactive material shall be classified as transported under special arrangement when it is intended to be carried in accordance with 1.7.4.

2.2.8 Class 8 Corrosive substances**2.2.8.1 Definition, general provisions and criteria**

2.2.8.1.1 Corrosive substances are substances which, by chemical action, will cause irreversible damage to the skin, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport. The heading of this class also covers other substances which form a corrosive liquid only in the presence of water, or which produce corrosive vapour or mist in the presence of natural moisture of the air.

2.2.8.1.2 For substances and mixtures that are corrosive to skin, general classification provisions are provided in 2.2.8.1.4. Skin corrosion refers to the production of irreversible damage to the skin, namely, visible necrosis through the epidermis and into the dermis occurring after exposure to a substance or mixture.

2.2.8.1.3 Liquids and solids which may become liquid during carriage, which are judged not to be skin corrosive shall still be considered for their potential to cause corrosion to certain metal surfaces in accordance with the criteria in 2.2.8.1.5.3 (c) (ii).

2.2.8.1.4 General classification provisions

2.2.8.1.4.1 Substances and articles of Class 8 are subdivided as follows:

C1-C11 Corrosive substances without subsidiary risk and articles containing such substances:

C1-C4 Acid substances:

- C1 Inorganic, liquid;
- C2 Inorganic, solid;
- C3 Organic, liquid;
- C4 Organic, solid;

C5-C8 Basic substances:

- C5 Inorganic, liquid;
- C6 Inorganic, solid;
- C7 Organic, liquid;
- C8 Organic, solid;

C9-C10 Other corrosive substances:

- C9 Liquid;
- C10 Solid;

C11 Articles;

CF Corrosive substances, flammable:

- CF1 Liquid;
- CF2 Solid;

CS Corrosive substances, self-heating:

- CS1 Liquid;
- CS2 Solid;

CW Corrosive substances which, in contact with water, emit flammable gases:

- CW1 Liquid;
- CW2 Solid;

CO Corrosive substances, oxidizing:

- CO1 Liquid;
- CO2 Solid;

CT Corrosive substances, toxic and articles containing such substances:

CT1 Liquid;
CT2 Solid;
CT3 Articles;

CFT Corrosive substances, flammable, liquid, toxic;

COT Corrosive substances, oxidizing, toxic.

2.2.8.1.4.2 Substances and mixtures of Class 8 are divided among the three packing groups according to their degree of danger in carriage:

- (a) Packing group I: very dangerous substances and mixtures;
- (b) Packing group II: substances and mixtures presenting medium danger;
- (c) Packing group III: substances and mixtures that present minor danger.

2.2.8.1.4.3 Allocation of substances listed in Table A of Chapter 3.2 to the packing groups in Class 8 has been made on the basis of experience taking into account such additional factors as inhalation risk (see 2.2.8.1.4.5) and reactivity with water (including the formation of dangerous decomposition products).

2.2.8.1.4.4 New substances and mixtures can be assigned to packing groups on the basis of the length of time of contact necessary to produce irreversible damage of intact skin tissue in accordance with the criteria in 2.2.8.1.5. Alternatively, for mixtures, the criteria in 2.2.8.1.6 can be used.

2.2.8.1.4.5 A substance or mixture meeting the criteria of Class 8 having an inhalation toxicity of dusts and mists (LC₅₀) in the range of packing group I, but toxicity through oral ingestion or dermal contact only in the range of packing group III or less, shall be allocated to Class 8 (see 2.2.61.1.7.2).

2.2.8.1.5 *Packing group assignment for substances and mixtures*

2.2.8.1.5.1 Existing human and animal data including information from single or repeated exposure shall be the first line of evaluation, as they give information directly relevant to effects on the skin.

2.2.8.1.5.2 In assigning the packing group in accordance with 2.2.8.1.4.4, account shall be taken of human experience in instances of accidental exposure. In the absence of human experience classification shall be based on data obtained from experiments in accordance with OECD Test Guidelines [Nos. 404¹, 435², 431³ or 430⁹](#). A substance or mixture which is determined not to be corrosive in accordance with [one of these or non-classified in accordance with OECD Test Guideline No. 439⁴](#)~~OECD Test Guidelines^{6,7,8,9}~~ may be considered not to be corrosive to skin for the purposes of ADR without further testing. If the ~~in vitro~~ test results indicate that the substance or mixture is corrosive and not assigned to packing group I, but the test method does not allow discrimination between packing groups II and III, it shall be considered to be packing group II. If the test results indicate that the substance or mixture is corrosive, but the test method does not allow discrimination between packing groups, it shall be assigned to packing group I if no other test results indicate a different packing group.

2.2.8.1.5.3 Packing groups are assigned to corrosive substances in accordance with the following criteria (see table 2.2.8.1.5.3):

¹ OECD Guideline for the testing of chemicals No. 404 "Acute Dermal Irritation/Corrosion" 2015.

² OECD Guideline for the testing of chemicals No. 435 "In Vitro Membrane Barrier Test Method for Skin Corrosion" 2015.

³ OECD Guideline for the testing of chemicals No. 431 "In Vitro Skin Corrosion: reconstructed human epidermis (RHE) test method" 2016.

⁹ OECD Guideline for the testing of chemicals No. 430 "In Vitro Skin Corrosion: Transcutaneous Electrical Resistance Test Method (TER)" 2015.

⁴ [OECD Guideline for the testing of chemicals No. 439 "In Vitro Skin Irritation: Reconstructed Human Epidermis Test Method" 2015.](#)

- (a) Packing group I is assigned to substances that cause irreversible damage of intact skin tissue within an observation period up to 60 minutes starting after the exposure time of three minutes or less;
- (b) Packing group II is assigned to substances that cause irreversible damage of intact skin tissue within an observation period up to 14 days starting after the exposure time of more than three minutes but not more than 60 minutes;
- (c) Packing group III is assigned to substances that:
- (i) Cause irreversible damage of intact skin tissue within an observation period up to 14 days starting after the exposure time of more than 60 minutes but not more than 4 hours; or
 - (ii) Are judged not to cause irreversible damage of intact skin tissue but which exhibit a corrosion rate on either steel or aluminium surfaces exceeding 6.25 mm a year at a test temperature of 55 °C when tested on both materials. For the purposes of testing steel, type S235JR+CR (1.0037 resp. St 37-2), S275J2G3+CR (1.0144 resp. St 44-3), ISO 3574, ~~or~~ Unified Numbering System (UNS) G10200 ~~or a similar type~~ or SAE 1020, and for testing aluminium, non-clad, types 7075-T6 or AZ5GU-T6 shall be used. An acceptable test is prescribed in the Manual of Tests and Criteria, Part III, Section 37.

NOTE: Where an initial test on either steel or aluminium indicates the substance being tested is corrosive the follow up test on the other metal is not required.

Table 2.2.8.1.5.3: Table summarizing the criteria in 2.2.8.1.5.3

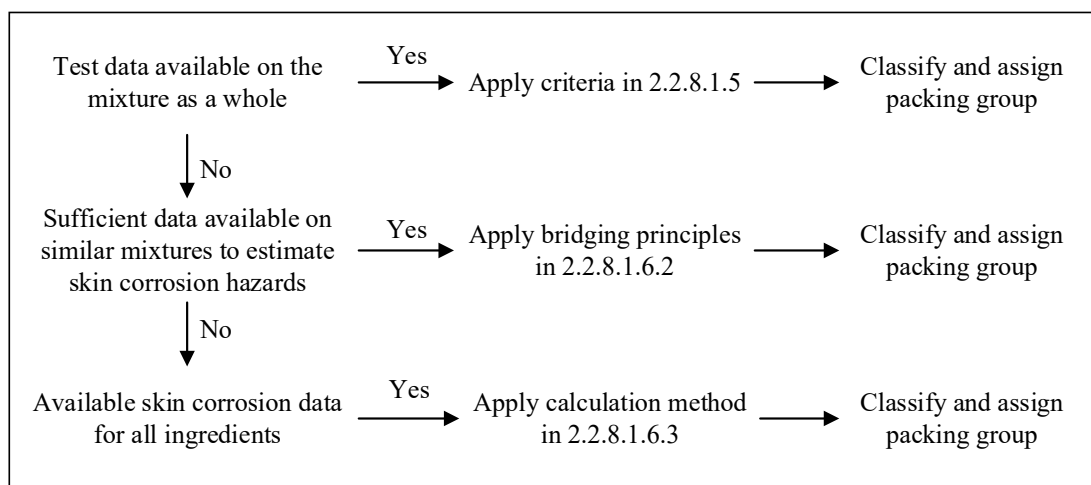
Packing Group	Exposure Time	Observation Period	Effect
I	≤ 3 min	≤ 60 min	Irreversible damage of intact skin
II	> 3 min ≤ 1 h	≤ 14 d	Irreversible damage of intact skin
III	> 1 h ≤ 4 h	≤ 14 d	Irreversible damage of intact skin
III	-	-	Corrosion rate on either steel or aluminium surfaces exceeding 6.25 mm a year at a test temperature of 55 °C when tested on both materials

2.2.8.1.6 *Alternative packing group assignment methods for mixtures: Step-wise approach*

2.2.8.1.6.1 General provisions

For mixtures it is necessary to obtain or derive information that allows the criteria to be applied to the mixture for the purpose of classification and assignment of packing groups. The approach to classification and assignment of packing groups is tiered, and is dependent upon the amount of information available for the mixture itself, for similar mixtures and/or for its ingredients. The flow chart of Figure 2.2.8.1.6.1 below outlines the process to be followed:

Figure 2.2.8.1.6.1: Step-wise approach to classify and assign packing group of corrosive mixtures



2.2.8.1.6.2 Bridging principles

Where a mixture has not been tested to determine its skin corrosion potential, but there are sufficient data on both the individual ingredients and similar tested mixtures to adequately classify and assign a packing group for the mixture, these data will be used in accordance with the following bridging principles. This ensures that the classification process uses the available data to the greatest extent possible in characterizing the hazards of the mixture.

- (a) **Dilution:** If a tested mixture is diluted with a diluent which does not meet the criteria for Class 8 and does not affect the packing group of other ingredients, then the new diluted mixture may be assigned to the same packing group as the original tested mixture.

***NOTE:** In certain cases, diluting a mixture or substance may lead to an increase in the corrosive properties. If this is the case, this bridging principle cannot be used.*

- (b) **Batching:** The skin corrosion potential of a tested production batch of a mixture can be assumed to be substantially equivalent to that of another untested production batch of the same commercial product when produced by or under the control of the same manufacturer, unless there is reason to believe there is significant variation such that the skin corrosion potential of the untested batch has changed. If the latter occurs, a new classification is necessary.
- (c) **Concentration of mixtures of packing group I:** If a tested mixture meeting the criteria for inclusion in packing group I is concentrated, the more concentrated untested mixture may be assigned to packing group I without additional testing.
- (d) **Interpolation within one packing group:** For three mixtures (A, B and C) with identical ingredients, where mixtures A and B have been tested and are in the same skin corrosion packing group, and where untested mixture C has the same Class 8 ingredients as mixtures A and B but has concentrations of Class 8 ingredients intermediate to the concentrations in mixtures A and B, then mixture C is assumed to be in the same skin corrosion packing group as A and B.
- (e) **Substantially similar mixtures:** Given the following:

- (i) Two mixtures: (A+B) and (C+B);
- (ii) The concentration of ingredient B is the same in both mixtures;
- (iii) The concentration of ingredient A in mixture (A+B) equals the concentration of ingredient C in mixture (C+B);
- (iv) Data on skin corrosion for ingredients A and C are available and substantially equivalent, i.e. they are the same skin corrosion packing group and do not affect the skin corrosion potential of B.

If mixture (A+B) or (C+B) is already classified based on test data, then the other mixture may be assigned to the same packing group.

2.2.8.1.6.3 Calculation method based on the classification of the substances

2.2.8.1.6.3.1 Where a mixture has not been tested to determine its skin corrosion potential, nor is sufficient data available on similar mixtures, the corrosive properties of the substances in the mixture shall be considered to classify and assign a packing group.

Applying the calculation method is only allowed if there are no synergistic effects that make the mixture more corrosive than the sum of its substances. This restriction applies only if packing group II or III would be assigned to the mixture.

2.2.8.1.6.3.2 When using the calculation method, all Class 8 ingredients present at a concentration of $\geq 1\%$ shall be taken into account, or $< 1\%$ if these ingredients are still relevant for classifying the mixture to be corrosive to skin.

2.2.8.1.6.3.3 To determine whether a mixture containing corrosive substances shall be considered a corrosive mixture and to assign a packing group, the calculation method in the flow chart in Figure 2.2.8.1.6.3 shall be applied. For this calculation method, generic concentration limits apply where 1% is used in the first step for the assessment of the packing group I substances, and where 5% is used for the other steps respectively.

2.2.8.1.6.3.4 When a specific concentration limit (SCL) is assigned to a substance following its entry in Table A of Chapter 3.2 or in a special provision, this limit shall be used instead of the generic concentration limits (GCL).

2.2.8.1.6.3.5 For this purpose, the summation formula for each step of the calculation method shall be adapted. This means that, where applicable, the generic concentration limit shall be substituted by the specific concentration limit assigned to the substance(s) (SCL_i), and the adapted formula is a weighted average of the different concentration limits assigned to the different substances in the mixture:

$$\frac{PGx_1}{GCL} + \frac{PGx_2}{SCL_2} + \dots + \frac{PGx_i}{SCL_i} \geq 1$$

Where:

PG x_i = concentration of substance 1, 2 ... i in the mixture, assigned to packing group x (I, II or III)

GCL = generic concentration limit

SCL_i = specific concentration limit assigned to substance i

The criterion for a packing group is fulfilled when the result of the calculation is ≥ 1 . The generic concentration limits to be used for the evaluation in each step of the calculation method are those found in Figure 2.2.8.1.6.3.

Examples for the application of the above formula can be found in the note below.

NOTE: *Examples for the application of the above formula*

Example 1: A mixture contains one corrosive substance in a concentration of 5 % assigned to packing group I without a specific concentration limit:

Calculation for packing group I: $\frac{5}{5 (GCL)} = 1 \rightarrow$ assign to Class 8, packing group I.

Example 2: A mixture contains three substances corrosive to skin; two of them (A and B) have specific concentration limits; for the third one (C) the generic concentration limit applies. The rest of the mixture needs not to be taken into consideration:

Substance X in the mixture and its packing group assignment within Class 8	Concentration (conc) in the mixture in %	Specific concentration limit (SCL) for packing group I	Specific concentration limit (SCL) for packing group II	Specific concentration limit (SCL) for packing group III
A, assigned to packing group I	3	30 %	none	none
B, assigned to packing group I	2	20 %	10 %	none
C, assigned to packing group III	10	none	none	none

Calculation for packing group I: $\frac{3 (conc A)}{30 (SCL PG I)} + \frac{2 (conc B)}{20 (SCL PG I)} = 0.2 < 1$

The criterion for packing group I is not fulfilled.

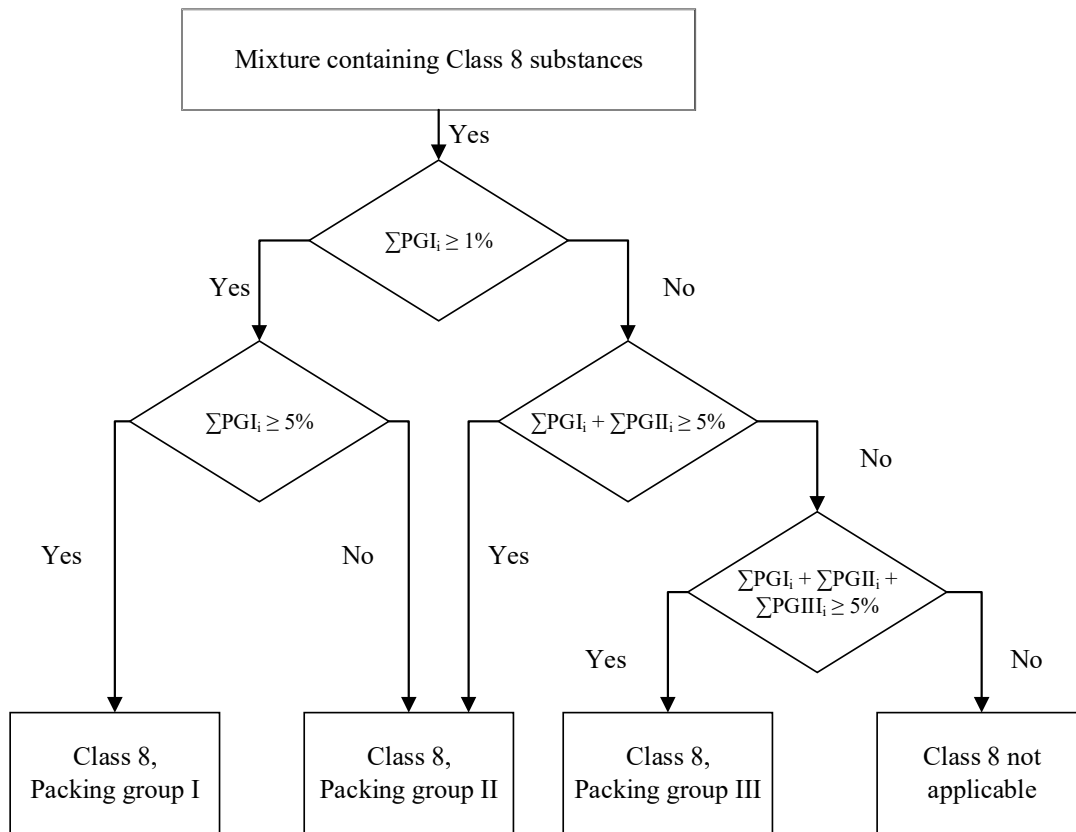
Calculation for packing group II: $\frac{3 (conc A)}{5 (GCL PG II)} + \frac{2 (conc B)}{10 (SCL PG II)} = 0.8 < 1$

The criterion for packing group II is not fulfilled.

Calculation for packing group III: $\frac{3 (conc A)}{5 (GCL PG III)} + \frac{2 (conc B)}{5 (GCL PG III)} + \frac{10 (conc C)}{5 GCL PG III} = 3 \geq 1$

The criterion for packing group III is fulfilled, the mixture shall be assigned to Class 8, packing group III.

Figure 2.2.8.1.6.3: Calculation method



2.2.8.1.7 If substances of Class 8, as a result of admixtures, come into categories of risk different from those to which the substances mentioned by name in Table A of Chapter 3.2 belong, these mixtures or solutions shall be assigned to the entries to which they belong, on the basis of their actual degree of danger.

NOTE: For the classification of solutions and mixtures (such as preparations and wastes), see also 2.1.3.

2.2.8.1.8 On the basis of the criteria set out in paragraph 2.2.8.1.6, it may also be determined whether the nature of a solution or mixture mentioned by name or containing a substance mentioned by name is such that the solution or mixture is not subject to the provisions for this class.

NOTE: UN No. 1910 calcium oxide and UN No. 2812 sodium aluminate, listed in the UN Model Regulations, are not subject to the provisions of ADR.

2.2.8.2 Substances not accepted for carriage

2.2.8.2.1 Chemically unstable substances of Class 8 shall not be accepted for carriage unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of carriage. For the precautions necessary to prevent polymerization, see special provision 386 of Chapter 3.3. To this end particular care shall be taken to ensure that receptacles and tanks do not contain any substances liable to promote these reactions.

2.2.8.2.2 The following substances shall not be accepted for carriage:

- UN No. 1798 NITROHYDROCHLORIC ACID;
- chemically unstable mixtures of spent sulphuric acid;
- chemically unstable mixtures of nitrating acid or mixtures of residual sulphuric and nitric acids, not denitrated;
- perchloric acid aqueous solution with more than 72 % pure acid, by mass, or mixtures of perchloric acid with any liquid other than water.

2.2.8.3

List of collective entries

Corrosive substances without subsidiary risk and articles containing such substances

Acid	inorganic	liquid C1	2584 ALKYL SULPHONIC ACIDS, LIQUID with more than 5 % free sulphuric acid or 2584 ARYL SULPHONIC ACIDS, LIQUID with more than 5 % free sulphuric acid 2693 BISULPHITES, AQUEOUS SOLUTION, N.O.S. 2837 BISULPHATES, AQUEOUS SOLUTION 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
		solid C2	1740 HYDROGEN DIFLUORIDES, SOLID, N.O.S. 2583 ARYL SULPHONIC ACIDS, SOLID with more than 5 % free sulphuric acid or 2583 ARYL SULPHONIC ACIDS, SOLID with more than 5 % free sulphuric acid 3260 CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.
C1-C4	organic	liquid C3	2586 ALKYL SULPHONIC ACIDS, LIQUID with not more than 5 % free sulphuric acid or 2586 ARYL SULPHONIC ACIDS, LIQUID with not more than 5 % free sulphuric acid 2987 CHLOROSILANES, CORROSIVE, N.O.S. 3145 ALKYL PHENOLS, LIQUID, N.O.S. (including C ₂ -C ₁₂ homologues) 3265 CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
		solid C4	2430 ALKYL PHENOLS, SOLID, N.O.S. (including C ₂ -C ₁₂ homologues) 2585 ALKYL SULPHONIC ACIDS, SOLID with not more than 5 % free sulphuric acid or 2585 ARYL SULPHONIC ACIDS, SOLID with not more than 5 % free sulphuric acid 3261 CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.
Basic	inorganic	liquid C5	1719 CAUSTIC ALKALI LIQUID, N.O.S. 2797 BATTERY FLUID, ALKALI 3266 CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.
		solid C6	3262 CORROSIVE SOLID, BASIC, INORGANIC, N.O.S.
C5-C8	organic	liquid C7	2735 AMINES, LIQUID, CORROSIVE, N.O.S. or 2735 POLYAMINES, LIQUID, CORROSIVE, N.O.S. 3267 CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.
		solid C8	3259 AMINES, SOLID, CORROSIVE, N.O.S., or 3259 POLYAMINES, SOLID, CORROSIVE, N.O.S. 3263 CORROSIVE SOLID, BASIC, ORGANIC, N.O.S.
Other corrosive substances		liquid C9	1903 DISINFECTANT, LIQUID, CORROSIVE, N.O.S. 2801 DYE, LIQUID, CORROSIVE, N.O.S. or 2801 DYE INTERMEDIATE, LIQUID, CORROSIVE, N.O.S. 3066 PAINT (including paint, enamel, stain, shellac, varnish, polish, liquid filler and lacquer base) or 3066 PAINT RELATED MATERIAL (including paint thinning or reducing compound) 1760 CORROSIVE LIQUID, N.O.S.
C9-C10		solid ^a C10	3147 DYE, SOLID, CORROSIVE, N.O.S. or 3147 DYE INTERMEDIATE, SOLID, CORROSIVE, N.O.S. 3244 SOLIDS CONTAINING CORROSIVE LIQUID, N.O.S. 1759 CORROSIVE SOLID, N.O.S.
Articles		C11	2794 BATTERIES, WET, FILLED WITH ACID, electric storage 2795 BATTERIES, WET, FILLED WITH ALKALI, electric storage 2800 BATTERIES, WET, NON-SPILLABLE, electric storage 3028 BATTERIES, DRY, CONTAINING POTASSIUM HYDROXIDE SOLID, electric storage 1774 FIRE EXTINGUISHER CHARGES, corrosive liquid 2028 BOMBS, SMOKE, NON-EXPLOSIVE with corrosive liquid, without initiating device 3477 FUEL CELL CARTRIDGES containing corrosive substances, or 3477 FUEL CELL CARTRIDGES CONTAINED IN EQUIPMENT, containing corrosive substances, or 3477 FUEL CELL CARTRIDGES PACKED WITH EQUIPMENT, containing corrosive substances 3547 ARTICLES CONTAINING CORROSIVE SUBSTANCE, N.O.S.

(cont'd on next page)

^a Mixtures of solids which are not subject to the provisions of ADR and of corrosive liquids may be carried under UN No. 3244 without being subject to the classification criteria of Class 8, provided there is no free liquid visible at the time the substance is loaded or at the time the packaging, container or transport unit is closed. Each packaging shall correspond to a design type which has passed the leakproofness test for Packing group II level.

Corrosive substances with subsidiary risk(s) and articles containing such substances

<i>(cont'd)</i>	liquid	CF1	3470 PAINT, CORROSIVE, FLAMMABLE (including paint, enamel, stain, shellac, varnish, polish, liquid filler and lacquer base) or
			3470 PAINT RELATED MATERIAL, CORROSIVE, FLAMMABLE (including paint thinning or reducing compound)
			2734 AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S. or
			2734 POLYAMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.
			2986 CHLOROSILANES, CORROSIVE, FLAMMABLE, N.O.S. 2920 CORROSIVE LIQUID, FLAMMABLE, N.O.S.
Flammable^b	solid	CF2	2921 CORROSIVE SOLID, FLAMMABLE, N.O.S.
CF			
Self-heating	liquid	CS1	3301 CORROSIVE LIQUID, SELF-HEATING, N.O.S.
	CS	solid	CS2
	3095 CORROSIVE SOLID, SELF-HEATING, N.O.S.		
Water-reactive	liquid^b	CW1	3094 CORROSIVE LIQUID, WATER-REACTIVE, N.O.S.
	CW	solid	CW2
	3096 CORROSIVE SOLID, WATER-REACTIVE, N.O.S.		
Oxidizing	liquid	CO1	3093 CORROSIVE LIQUID, OXIDIZING, N.O.S.
	CO	solid	CO2
	3084 CORROSIVE SOLID, OXIDIZING, N.O.S.		
Toxic^d	liquid^c	CT1	3471 HYDROGENDIFLUORIDES SOLUTION, N.O.S. 2922 CORROSIVE LIQUID, TOXIC, N.O.S.
			CT
		2923 CORROSIVE SOLID, TOXIC, N.O.S.	
	articles	CT3	3506 MERCURY CONTAINED IN MANUFACTURED ARTICLES
Flammable, liquid, toxic^d		CFT	No collective entry with this classification code available; if need be, classification under a collective entry with a classification code to be determined according to table of precedence of hazard in 2.1.3.10.
Oxidizing, toxic^{d,e}		COT	No collective entry with this classification code available; if need be, classification under a collective entry with a classification code to be determined according to table of precedence of hazard in 2.1.3.10.

^b Chlorosilanes which, in contact with water or moist air, emit flammable gases, are substances of Class 4.3.

^c Chloroformates having predominantly toxic properties are substances of Class 6.1.

^d Corrosive substances which are highly toxic by inhalation, as defined in 2.2.61.1.4 to 2.2.61.1.9 are substances of Class 6.1.

^e UN No. 2505 AMMONIUM FLUORIDE, UN No. 1812 POTASSIUM FLUORIDE, SOLID, UN No. 1690 SODIUM FLUORIDE, SOLID, UN No. 2674 SODIUM FLUOROSILICATE, UN No. 2856 FLUOROSILICATES, N.O.S., UN No. 3415 SODIUM FLUORIDE SOLUTION and UN No. 3422 POTASSIUM FLUORIDE SOLUTION are substances of Class 6.1.

2.2.9 Class 9 Miscellaneous dangerous substances and articles**2.2.9.1 Criteria**

2.2.9.1.1 The heading of Class 9 covers substances and articles which, during carriage, present a danger not covered by the heading of other classes.

2.2.9.1.2 The substances and articles of Class 9 are subdivided as follows:

- | | |
|--------|--|
| M1 | Substances which, on inhalation as fine dust, may endanger health; |
| M2 | Substances and articles which, in the event of fire, may form dioxins; |
| M3 | Substances evolving flammable vapour; |
| M4 | Lithium batteries; |
| M5 | Life-saving appliances; |
| M6-M8 | Environmentally hazardous substances: |
| | M6 Pollutant to the aquatic environment, liquid; |
| | M7 Pollutant to the aquatic environment, solid; |
| | M8 Genetically modified microorganisms and organisms; |
| M9-M10 | Elevated temperature substances: |
| | M9 Liquid; |
| | M10 Solid; |
| M11 | Other substances and articles presenting a danger during carriage, but not meeting the definitions of another class. |

Definitions and classification

2.2.9.1.3 Substances and articles classified in Class 9 are listed in Table A of Chapter 3.2. The assignment of substances and articles not mentioned by name in Table A of Chapter 3.2 to the relevant entry of that Table or of sub-section 2.2.9.3 shall be done in accordance with 2.2.9.1.4 to 2.2.9.1.8, 2.2.9.1.10, 2.2.9.1.11, 2.2.9.1.13 and 2.2.9.1.14 below.

Substances which, on inhalation as fine dust, may endanger health

2.2.9.1.4 Substances which, on inhalation as fine dust, may endanger health include asbestos and mixtures containing asbestos.

Substances and articles which, in the event of fire, may form dioxins

2.2.9.1.5 Substances and articles which, in the event of fire, may form dioxins include polychlorinated biphenyls (PCBs) and terphenyls (PCTs) and polyhalogenated biphenyls and terphenyls and mixtures containing these substances, as well as articles such as transformers, condensers and articles containing those substances or mixtures.

NOTE: Mixtures with a PCB or PCT content of not more than 50 mg/kg are not subject to the provisions of ADR.

Substances evolving flammable vapour

2.2.9.1.6 Substances evolving flammable vapour include polymers containing flammable liquids with a flash-point not exceeding 55 °C.

Lithium batteries

2.2.9.1.7 Lithium batteries shall meet the following requirements, except when otherwise provided for in ADR (e.g. for prototype batteries and small production runs under special provision 310 or damaged batteries under special provision 376).

NOTE: For UN 3536 LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT, see special provision 389 in Chapter 3.3.

Cells and batteries, cells and batteries contained in equipment, or cells and batteries packed with equipment, containing lithium in any form shall be assigned to UN Nos. 3090, 3091, 3480 or 3481 as appropriate. They may be carried under these entries if they meet the following provisions:

- (a) Each cell or battery is of the type proved to meet the requirements of each test of the Manual of Tests and Criteria, Part III, sub-section 38.3;

NOTE: Batteries shall be of a type proved to meet the testing requirements of the Manual of Tests and Criteria, part III, sub-section 38.3, irrespective of whether the cells of which they are composed are of a tested type.

- (b) Each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under normal conditions of carriage;

- (c) Each cell and battery is equipped with an effective means of preventing external short circuits;

- (d) Each battery containing cells or series of cells connected in parallel is equipped with effective means as necessary to prevent dangerous reverse current flow (e.g., diodes, fuses, etc.);

- (e) Cells and batteries shall be manufactured under a quality management programme that includes:

- (i) A description of the organizational structure and responsibilities of personnel with regard to design and product quality;

- (ii) The relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;

- (iii) Process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;

- (iv) Quality records, such as inspection reports, test data, calibration data and certificates. Test data shall be kept and made available to the competent authority upon request;

- (v) Management reviews to ensure the effective operation of the quality management programme;

- (vi) A process for control of documents and their revision;

- (vii) A means for control of cells or batteries that are not conforming to the type tested as mentioned in (a) above;

- (viii) Training programmes and qualification procedures for relevant personnel; and

- (ix) Procedures to ensure that there is no damage to the final product.

NOTE: In house quality management programmes may be accepted. Third party certification is not required, but the procedures listed in (i) to (ix) above shall be properly recorded and traceable. A copy of the quality management programme shall be made available to the competent authority upon request.

- (f) Lithium batteries, containing both primary lithium metal cells and rechargeable lithium ion cells, that are not designed to be externally charged (see special provision 387 of Chapter 3.3) shall meet the following conditions:

- (i) The rechargeable lithium ion cells can only be charged from the primary lithium metal cells;

- (ii) Overcharge of the rechargeable lithium ion cells is precluded by design;

- (iii) The battery has been tested as a lithium primary battery;

- (iv) Component cells of the battery shall be of a type proved to meet the respective testing requirements of the Manual of Tests and Criteria, part III, sub-section 38.3;

- (g) Except for button cells installed in equipment (including circuit boards), manufacturers and subsequent distributors of cells or batteries manufactured after 30 June 2003 shall make available the test summary as specified in the Manual of Tests and Criteria, Part III, sub-section 38.3, paragraph 38.3.5.

Lithium batteries are not subject to the provisions of ADR if they meet the requirements of special provision 188 of Chapter 3.3.

Life-saving appliances

- 2.2.9.1.8 Life-saving appliances include life-saving appliances and motor vehicle components which meet the descriptions of special provisions 235 or 296 of Chapter 3.3.

Environmentally hazardous substances

- 2.2.9.1.9 (Deleted)

Pollutants to the aquatic environment

- 2.2.9.1.10 *Environmentally hazardous substances (aquatic environment)*

- 2.2.9.1.10.1 General definitions

- 2.2.9.1.10.1.1 Environmentally hazardous substances include, inter alia, liquid or solid substances pollutant to the aquatic environment and solutions and mixtures of such substances (such as preparations and wastes).

For the purposes of 2.2.9.1.10, "substance" means chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.

- 2.2.9.1.10.1.2 The aquatic environment may be considered in terms of the aquatic organisms that live in the water, and the aquatic ecosystem of which they are part¹⁰. The basis, therefore, of the identification of hazard is the aquatic toxicity of the substance or mixture, although this may be modified by further information on the degradation and bioaccumulation behaviour.

- 2.2.9.1.10.1.3 While the following classification procedure is intended to apply to all substances and mixtures, it is recognised that in some cases, e.g. metals or poorly soluble inorganic compounds, special guidance will be necessary¹¹.

- 2.2.9.1.10.1.4 The following definitions apply for acronyms or terms used in this section:

- BCF: Bioconcentration Factor;
- BOD: Biochemical Oxygen Demand;
- COD: Chemical Oxygen Demand;
- GLP: Good Laboratory Practices;
- EC_x: the concentration associated with x % response;
- EC₅₀: the effective concentration of substance that causes 50 % of the maximum response;
- ErC₅₀: EC₅₀ in terms of reduction of growth;
- K_{ow}: octanol/water partition coefficient;
- LC₅₀ (50 % lethal concentration): the concentration of a substance in water which causes the death of 50 % (one half) in a group of test animals;

¹⁰ This does not address aquatic pollutants for which there may be a need to consider effects beyond the aquatic environment such as the impacts on human health etc.

¹¹ This can be found in Annex 10 of the GHS.

- L(E)C₅₀: LC₅₀ or EC₅₀;
- NOEC (No Observed Effect Concentration): the test concentration immediately below the lowest tested concentration with statistically significant adverse effect. The NOEC has no statistically significant adverse effect compared to the control;
- OECD Test Guidelines: Test guidelines published by the Organization for Economic Cooperation and Development (OECD).

2.2.9.1.10.2 Definitions and data requirements

2.2.9.1.10.2.1 The basic elements for classification of environmentally hazardous substances (aquatic environment) are:

- (a) Acute aquatic toxicity;
- (b) Chronic aquatic toxicity;
- (c) Potential for or actual bioaccumulation; and
- (d) Degradation (biotic or abiotic) for organic chemicals.

2.2.9.1.10.2.2 While data from internationally harmonised test methods are preferred, in practice, data from national methods may also be used where they are considered as equivalent. In general, it has been agreed that freshwater and marine species toxicity data can be considered as equivalent data and are preferably to be derived using OECD Test Guidelines or equivalent according to the principles of Good Laboratory Practices (GLP). Where such data are not available, classification shall be based on the best available data.

2.2.9.1.10.2.3 *Acute aquatic toxicity* means the intrinsic property of a substance to be injurious to an organism in a short-term aquatic exposure to that substance.

Acute (short-term) hazard, for classification purposes, means the hazard of a chemical caused by its acute toxicity to an organism during short-term aquatic exposure to that chemical.

Acute aquatic toxicity shall normally be determined using a fish 96 hour LC₅₀ (OECD Test Guideline 203 or equivalent), a crustacea species 48 hour EC₅₀ (OECD Test Guideline 202 or equivalent) and/or an algal species 72 or 96 hour EC₅₀ (OECD Test Guideline 201 or equivalent). These species are considered as surrogate for all aquatic organisms and data on other species such as Lemna may also be considered if the test methodology is suitable.

2.2.9.1.10.2.4 *Chronic aquatic toxicity* means the intrinsic property of a substance to cause adverse effects to aquatic organisms during aquatic exposures which are determined in relation to the life-cycle of the organism.

Long-term hazard, for classification purposes, means the hazard of a chemical caused by its chronic toxicity following long-term exposure in the aquatic environment.

Chronic toxicity data are less available than acute data and the range of testing procedures less standardised. Data generated according to the OECD Test Guidelines 210 (Fish Early Life Stage) or 211 (Daphnia Reproduction) and 201 (Algal Growth Inhibition) may be accepted. Other validated and internationally accepted tests may also be used. The NOECs or other equivalent EC_x shall be used.

2.2.9.1.10.2.5 *Bioaccumulation* means net result of uptake, transformation and elimination of a substance in an organism due to all routes of exposure (i.e. air, water, sediment/soil and food).

The potential for bioaccumulation shall normally be determined by using the octanol/water partition coefficient, usually reported as a log K_{ow} determined according to OECD Test Guideline 107 or 117. While this represents a potential to bioaccumulate, an experimentally determined Bioconcentration Factor (BCF) provides a better measure and shall be used in preference when available. A BCF shall be determined according to OECD Test Guideline 107, 117 or 123.

2.2.9.1.10.2.6 *Degradation* means the decomposition of organic molecules to smaller molecules and eventually to carbon dioxide, water and salts.

Environmental degradation may be biotic or abiotic (e.g. hydrolysis) and the criteria used reflect this fact. Ready biodegradation is most easily defined using the biodegradability tests (A-F) of OECD Test Guideline 301. A pass level in these tests may be considered as indicative of rapid degradation in most environments. These are freshwater tests and thus the use of the results from OECD Test Guideline 306, which is more suitable for marine environments, has also been included. Where such data are not available, a $BOD_5(5 \text{ days})/COD$ ratio ≥ 0.5 is considered as indicative of rapid degradation.

Abiotic degradation such as hydrolysis, primary degradation, both abiotic and biotic, degradation in non-aquatic media and proven rapid degradation in the environment may all be considered in defining rapid degradability¹².

Substances are considered rapidly degradable in the environment if the following criteria are met:

- (a) In 28-day ready biodegradation studies, the following levels of degradation are achieved:
 - (i) Tests based on dissolved organic carbon: 70 %;
 - (ii) Tests based on oxygen depletion or carbon dioxide generation: 60 % of theoretical maxima;

These levels of biodegradation shall be achieved within 10 days of the start of degradation which point is taken as the time when 10 % of the substance has been degraded", unless the substance is identified as a complex, multi-component substance with structurally similar constituents. In this case, and where there is sufficient justification, the 10-day window condition may be waived and the pass level applied at 28 days¹³; or

- (b) In those cases where only BOD and COD data are available, when the ratio of BOD_5/COD is ≥ 0.5 ; or
- (c) If other convincing scientific evidence is available to demonstrate that the substance can be degraded (biotically and/or abiotically) in the aquatic environment to a level above 70 % within a 28 day period.

2.2.9.1.10.3 Substance classification categories and criteria

2.2.9.1.10.3.1 Substances shall be classified as "environmentally hazardous substances (aquatic environment)", if they satisfy the criteria for Acute 1, Chronic 1 or Chronic 2, according to Table 2.2.9.1.10.3.1. These criteria describe in detail the classification categories. They are diagrammatically summarized in Table 2.2.9.1.10.3.2.

¹² Special guidance on data interpretation is provided in Chapter 4.1 and Annex 9 of the GHS.

¹³ See Chapter 4.1 and Annex 9, paragraph A9.4.2.2.3 of the GHS.

Table 2.2.9.1.10.3.1: Categories for substances hazardous to the aquatic environment (see Note 1)**(a) Acute (short-term) aquatic hazard****Category Acute 1:** (see Note 2)

96 h _F LC ₅₀ (for fish)	≤ 1 mg/l and/or
48 h _F EC ₅₀ (for crustacea)	≤ 1 mg/l and/or
72 or 96 h _F ErC ₅₀ (for algae or other aquatic plants)	≤ 1 mg/l (see Note 3)

(b) Long-term aquatic hazard (see also Figure 2.2.9.1.10.3.1)**(i) Non-rapidly degradable substances (see Note 4) for which there are adequate chronic toxicity data available****Category Chronic 1:** (see Note 2)

Chronic NOEC or EC _x (for fish)	≤ 0.1 mg/l and/or
Chronic NOEC or EC _x (for crustacea)	≤ 0.1 mg/l and/or
Chronic NOEC or EC _x (for algae or other aquatic plants)	≤ 0.1 mg/l

Category Chronic 2:

Chronic NOEC or EC _x (for fish)	≤ 1 mg/l and/or
Chronic NOEC or EC _x (for crustacea)	≤ 1 mg/l and/or
Chronic NOEC or EC _x (for algae or other aquatic plants)	≤ 1 mg/l

(ii) Rapidly degradable substances for which there are adequate chronic toxicity data available**Category Chronic 1:** (see Note 2)

Chronic NOEC or EC _x (for fish)	≤ 0.01 mg/l and/or
Chronic NOEC or EC _x (for crustacea)	≤ 0.01 mg/l and/or
Chronic NOEC or EC _x (for algae or other aquatic plants)	≤ 0.01 mg/l

Category Chronic 2:

Chronic NOEC or EC _x (for fish)	≤ 0.1 mg/l and/or
Chronic NOEC or EC _x (for crustacea)	≤ 0.1 mg/l and/or
Chronic NOEC or EC _x (for algae or other aquatic plants)	≤ 0.1 mg/l

(iii) Substances for which adequate chronic toxicity data are not available**Category Chronic 1:** (see Note 2)

96 h _F LC ₅₀ (for fish)	≤ 1 mg/l and/or
48 h _F EC ₅₀ (for crustacea)	≤ 1 mg/l and/or
72 or 96 h _F ErC ₅₀ (for algae or other aquatic plants)	≤ 1 mg/l (see Note 3)

and the substance is not rapidly degradable and/or the experimentally determined BCF is ≥ 500 (or, if absent the log K_{ow} ≥ 4) (see Notes 4 and 5).

Category Chronic 2:

96 h _F LC ₅₀ (for fish)	>1 but ≤ 10 mg/l and/or
48 h _F EC ₅₀ (for crustacea)	>1 but ≤ 10 mg/l and/or
72 or 96 h _F ErC ₅₀ (for algae or other aquatic plants)	>1 but ≤ 10 mg/l (see Note 3)

and the substance is not rapidly degradable and/or the experimentally determined BCF is ≥ 500 (or, if absent the log K_{ow} ≥ 4) (see Notes 4 and 5).

NOTE 1: The organisms fish, crustacea and algae are tested as surrogate species covering a range of trophic levels and taxa, and the test methods are highly standardized. Data on other organisms may also be considered, however, provided they represent equivalent species and test endpoints.

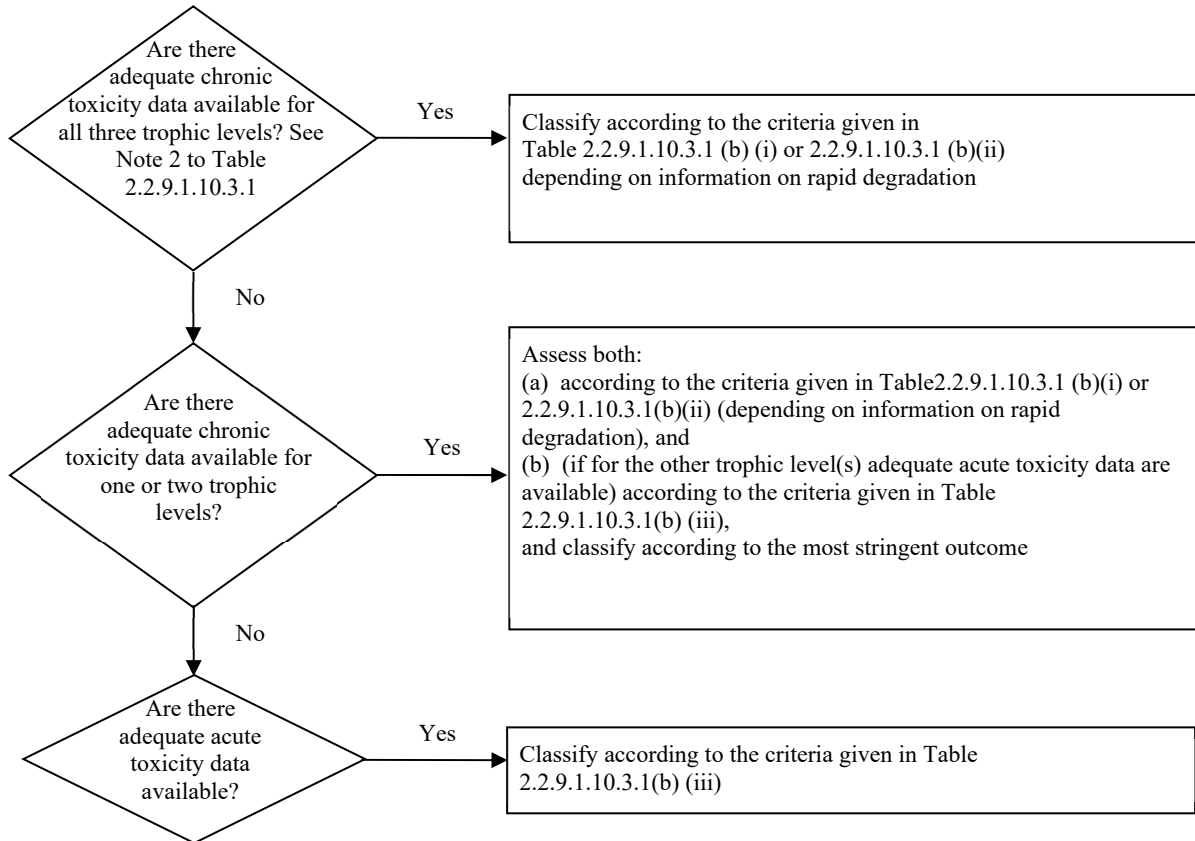
NOTE 2: When classifying substances as Acute 1 and/or Chronic 1 it is necessary at the same time to indicate an appropriate M factor (see 2.2.9.1.10.4.6.4) to apply the summation method.

NOTE 3: Where the algal toxicity ErC₅₀ (= EC₅₀ (growth rate)) falls more than 100 times below the next most sensitive species and results in a classification based solely on this effect, consideration shall be given to whether this toxicity is representative of the toxicity to aquatic plants. Where it can be shown that this is not the case, professional judgment shall be used in deciding if classification shall be applied. Classification shall be based on the ErC₅₀. In circumstances where the basis of the EC₅₀ is not specified and no ErC₅₀ is recorded, classification shall be based on the lowest EC₅₀ available.

NOTE 4: Lack of rapid degradability is based on either a lack of ready biodegradability or other evidence of lack of rapid degradation. When no useful data on degradability are available, either experimentally determined or estimated data, the substance shall be regarded as not rapidly degradable.

NOTE 5: Potential to bioaccumulate, based on an experimentally derived BCF ≥ 500 or, if absent, a $\log K_{ow} \geq 4$ provided $\log K_{ow}$ is an appropriate descriptor for the bioaccumulation potential of the substance. Measured $\log K_{ow}$ values take precedence over estimated values and measured BCF values take precedence over $\log K_{ow}$ values.

Figure 2.2.9.1.10.3.1: Categories for substances long-term hazardous to the aquatic environment



2.2.9.1.10.3.2 The classification scheme in Table 2.2.9.1.10.3.2 below summarizes the classification criteria for substances.

Table 2.2.9.1.10.3.2: Classification scheme for substances hazardous to the aquatic environment

Classification categories			
Acute hazard (see Note 1)	Long-term hazard (see Note 2)		
	Adequate chronic toxicity data available		Adequate chronic toxicity data not available (see Note 1)
	Non-rapidly degradable substances (see Note 3)	Rapidly degradable substances (see Note 3)	
Category: Acute 1	Category: Chronic 1	Category: Chronic 1	Category: Chronic 1
L(E)C ₅₀ ≤ 1.00	NOEC or EC _x ≤ 0.1	NOEC or EC _x ≤ 0.01	L(E)C ₅₀ ≤ 1.00 and lack of rapid degradability and/or BCF ≥ 500 or, if absent log K _{ow} ≥ 4
	Category: Chronic 2	Category: Chronic 2	Category: Chronic 2
	0.1 < NOEC or EC _x ≤ 1	0.01 < NOEC or EC _x ≤ 0.1	1.00 < L(E)C ₅₀ ≤ 10.0 and lack of rapid degradability and/or BCF ≥ 500 or, if absent log K _{ow} ≥ 4

NOTE 1: Acute toxicity band based on L(E)C₅₀ values in mg/l for fish, crustacea and/or algae or other aquatic plants (or Quantitative Structure Activity Relationships (QSAR) estimation if no experimental data¹⁴).

NOTE 2: Substances are classified in the various chronic categories unless there are adequate chronic toxicity data available for all three trophic levels above the water solubility or above 1 mg/l. ("Adequate" means that the data sufficiently cover the endpoint of concern. Generally this would mean measured test data, but in order to avoid unnecessary testing it can on a case by case basis also be estimated data, e.g. (Q)SAR, or for obvious cases expert judgment).

NOTE 3: Chronic toxicity band based on NOEC or equivalent EC_x values in mg/l for fish or crustacea or other recognized measures for chronic toxicity.

2.2.9.1.10.4 Mixtures classification categories and criteria

2.2.9.1.10.4.1 The classification system for mixtures covers the classification categories which are used for substances, meaning categories Acute 1 and Chronic 1 and 2. In order to make use of all available data for purposes of classifying the aquatic environmental hazards of the mixture, the following assumption is made and is applied where appropriate:

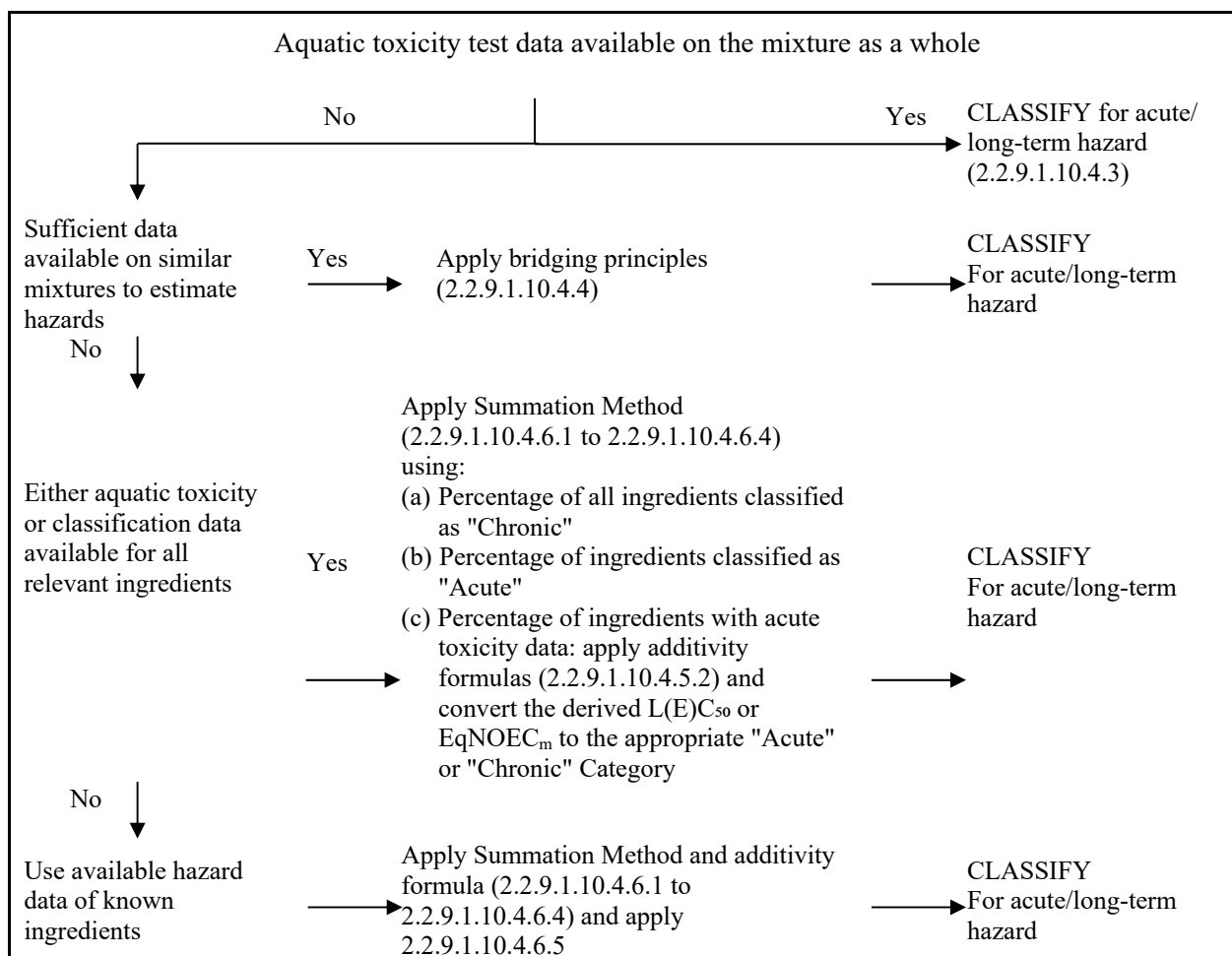
The "relevant ingredients" of a mixture are those which are present in a concentration equal to or greater than 0.1 % (by mass) for ingredients classified as Acute and/or Chronic 1 and equal to or greater than 1 % for other ingredients, unless there is a presumption (e.g. in the case of highly toxic ingredients) that an ingredient present at less than 0.1 % can still be relevant for classifying the mixture for aquatic environmental hazards.

2.2.9.1.10.4.2 The approach for classification of aquatic environmental hazards is tiered, and is dependent upon the type of information available for the mixture itself and for its ingredients. Elements of the tiered approach include:

- Classification based on tested mixtures;
- Classification based on bridging principles;
- The use of "summation of classified ingredients" and/or an "additivity formula".

Figure 2.2.9.1.10.4.2 below outlines the process to be followed.

¹⁴ Special guidance is provided in Chapter 4.1, paragraph 4.1.2.13 and Annex 9, Section A9.6 of the GHS.

Figure 2.2.9.1.10.4.2: Tiered approach to classification of mixtures for acute and long-term aquatic environmental hazards

- 2.2.9.1.10.4.3 Classification of mixtures when toxicity data are available for the complete mixture
- 2.2.9.1.10.4.3.1 When the mixture as a whole has been tested to determine its aquatic toxicity, this information shall be used for classifying the mixture according to the criteria that have been agreed for substances. The classification is normally based on the data for fish, crustacea and algae/plants (see 2.2.9.1.10.2.3 and 2.2.9.1.10.2.4). When adequate acute or chronic data for the mixture as a whole are lacking, "bridging principles" or "summation method" shall be applied (see 2.2.9.1.10.4.4 to 2.2.9.1.10.4.6).
- 2.2.9.1.10.4.3.2 The long-term hazard classification of mixtures requires additional information on degradability and in certain cases bioaccumulation. There are no degradability and bioaccumulation data for mixtures as a whole. Degradability and bioaccumulation tests for mixtures are not used as they are usually difficult to interpret, and such tests may be meaningful only for single substances.
- 2.2.9.1.10.4.3.3 Classification for category Acute 1
- (a) When there are adequate acute toxicity test data (LC₅₀ or EC₅₀) available for the mixture as a whole showing L(E)C₅₀ ≤ 1 mg/l:
- Classify the mixture as Acute 1 in accordance with Table 2.2.9.1.10.3.1 (a);
- (b) When there are acute toxicity test data (LC₅₀(s) or EC₅₀(s)) available for the mixture as a whole showing L(E)C₅₀(s) > 1 mg/l, or above the water solubility:
- No need to classify for acute hazard under ADR.

- 2.2.9.1.10.4.3.4 Classification for categories Chronic 1 and 2
- (a) When there are adequate chronic toxicity data (EC_x or NOEC) available for the mixture as a whole showing EC_x or NOEC of the tested mixture $\leq 1\text{mg/l}$:
- (i) classify the mixture as Chronic 1 or 2 in accordance with Table 2.2.9.1.10.3.1 (b) (ii) (rapidly degradable) if the available information allows the conclusion that all relevant ingredients of the mixture are rapidly degradable;
- NOTE: In this situation, when EC_x or NOEC of the tested mixture $> 0.1\text{ mg/l}$, there is no need to classify for long-term hazard under ADR.*
- (ii) classify the mixture as Chronic 1 or 2 in all other cases in accordance with Table 2.2.9.1.10.3.1 (b) (i) (non-rapidly degradable);
- (b) When there are adequate chronic toxicity data (EC_x or NOEC) available for the mixture as a whole showing $EC_x(s)$ or NOEC(s) of the tested mixture $> 1\text{mg/l}$ or above the water solubility:
- No need to classify for long-term hazard under ADR.
- 2.2.9.1.10.4.4 Classification of mixtures when toxicity data are not available for the complete mixture: bridging principles
- 2.2.9.1.10.4.4.1 Where the mixture itself has not been tested to determine its aquatic environmental hazard, but there are sufficient data on the individual ingredients and similar tested mixtures to adequately characterise the hazards of the mixture, these data shall be used in accordance with the following agreed bridging rules. This ensures that the classification process uses the available data to the greatest extent possible in characterising the hazards of the mixture without the necessity for additional testing in animals.
- 2.2.9.1.10.4.4.2 Dilution
- Where a new mixture is formed by diluting a tested mixture or a substance with a diluent which has an equivalent or lower aquatic hazard classification than the least toxic original ingredient and which is not expected to affect the aquatic hazards of other ingredients, then the resulting mixture shall be classified as equivalent to the original tested mixture or substance. Alternatively, the method explained in 2.2.9.1.10.4.5 may be applied.
- 2.2.9.1.10.4.4.3 Batching
- The aquatic hazard classification of a tested production batch of a mixture shall be assumed to be substantially equivalent to that of another untested production batch of the same commercial product when produced by or under the control of the same manufacturer, unless there is reason to believe there is significant variation such that the aquatic hazard classification of the untested batch has changed. If the latter occurs, new classification is necessary.
- 2.2.9.1.10.4.4.4 Concentration of mixtures which are classified with the most severe classification categories (Chronic 1 and Acute 1)
- If a tested mixture is classified as Chronic 1 and/or Acute 1, and the ingredients of the mixture which are classified as Chronic 1 and/or Acute 1 are further concentrated, the more concentrated untested mixture shall be classified with the same classification category as the original tested mixture without additional testing.
- 2.2.9.1.10.4.4.5 Interpolation within one toxicity category
- For three mixtures (A, B and C) with identical ingredients, where mixtures A and B have been tested and are in the same toxicity category, and where untested mixture C has the same toxicologically active ingredients as mixtures A and B but has concentrations of toxicologically active ingredients intermediate to the concentrations in mixtures A and B, then mixture C is assumed to be in the same category as A and B.

2.2.9.1.10.4.4.6 Substantially similar mixtures

Given the following:

- (a) Two mixtures:
 - (i) A + B;
 - (ii) C + B;
- (b) The concentration of ingredient B is essentially the same in both mixtures;
- (c) The concentration of ingredient A in mixture (i) equals that of ingredient C in mixture (ii);
- (d) Data on aquatic hazards for A and C are available and are substantially equivalent, i.e. they are in the same hazard category and are not expected to affect the aquatic toxicity of B.

If mixture (i) or (ii) is already classified based on test data, then the other mixture can be assigned the same hazard category.

2.2.9.1.10.4.5 Classification of mixtures when toxicity data are available for all ingredients or only for some ingredients of the mixture

2.2.9.1.10.4.5.1 The classification of a mixture shall be based on summation of the concentrations of its classified ingredients. The percentage of ingredients classified as "Acute" or "Chronic" will feed straight into the summation method. Details of the summation method are described in 2.2.9.1.10.4.6.1 to 2.2.9.1.10.4.6.4.

2.2.9.1.10.4.5.2 Mixtures may be made of a combination of both ingredients that are classified (as Acute 1 and/or Chronic 1, 2) and those for which adequate toxicity test data are available. When adequate toxicity data are available for more than one ingredient in the mixture, the combined toxicity of those ingredients shall be calculated using the following additivity formulas (a) or (b), depending on the nature of the toxicity data:

- (a) Based on acute aquatic toxicity:

$$\frac{\sum C_i}{L(E)C_{50m}} = \sum_n \frac{C_i}{L(E)C_{50i}}$$

where:

- C_i = concentration of ingredient i (mass percentage);
- $L(E)C_{50i}$ = LC_{50} or EC_{50} for ingredient i (mg/l);
- n = number of ingredients, and i is running from 1 to n;
- $L(E)C_{50m}$ = $L(E)C_{50}$ of the part of the mixture with test data;

The calculated toxicity shall be used to assign that portion of the mixture an acute hazard category which is then subsequently used in applying the summation method;

- (b) Based on chronic aquatic toxicity:

$$\frac{\sum C_i + \sum C_j}{EqNOEC_m} = \sum_n \frac{C_i}{NOEC_i} + \sum_n \frac{C_j}{0.1 \cdot NOEC_j}$$

where:

- C_i = concentration of ingredient i (mass percentage) covering the rapidly degradable ingredients;
- C_j = concentration of ingredient j (mass percentage) covering the non rapidly degradable ingredients;
- $NOEC_i$ = $NOEC$ (or other recognized measures for chronic toxicity) for ingredient i covering the rapidly degradable ingredients, in mg/l;
- $NOEC_j$ = $NOEC$ (or other recognized measures for chronic toxicity) for ingredient j covering the non-rapidly degradable ingredients, in mg/l;
- n = number of ingredients, and i and j are running from 1 to n;

$EqNOEC_m$ = equivalent NOEC of the part of the mixture with test data;

The equivalent toxicity thus reflects the fact that non-rapidly degrading substances are classified one hazard category level more "severe" than rapidly degrading substances.

The calculated equivalent toxicity shall be used to assign that portion of the mixture a long-term hazard category, in accordance with the criteria for rapidly degradable substances (Table 2.2.9.1.10.3.1 (b) (ii)), which is then subsequently used in applying the summation method.

2.2.9.1.10.4.5.3 When applying the additivity formula for part of the mixture, it is preferable to calculate the toxicity of this part of the mixture using for each ingredient toxicity values that relate to the same taxonomic group (i.e. fish, crustacea or algae) and then to use the highest toxicity (lowest value) obtained (i.e. use the most sensitive of the three groups). However, when toxicity data for each ingredient are not available in the same taxonomic group, the toxicity value of each ingredient shall be selected in the same manner that toxicity values are selected for the classification of substances, i.e. the higher toxicity (from the most sensitive test organism) is used. The calculated acute and chronic toxicity shall then be used to classify this part of the mixture as Acute 1 and/or Chronic 1 or 2 using the same criteria described for substances.

2.2.9.1.10.4.5.4 If a mixture is classified in more than one way, the method yielding the more conservative result shall be used.

2.2.9.1.10.4.6 Summation method

2.2.9.1.10.4.6.1 Classification procedure

In general a more severe classification for mixtures overrides a less severe classification, e.g. a classification with Chronic 1 overrides a classification with Chronic 2. As a consequence the classification procedure is already completed if the results of the classification is Chronic 1. A more severe classification than Chronic 1 is not possible; therefore, it is not necessary to pursue the classification procedure further.

2.2.9.1.10.4.6.2 Classification for category Acute 1

2.2.9.1.10.4.6.2.1 First, all ingredients classified as Acute 1 are considered. If the sum of the concentrations (in %) of these ingredients is greater than or equal to 25 % the whole mixture shall be classified as Acute 1. If the result of the calculation is a classification of the mixture as Acute 1, the classification process is completed.

2.2.9.1.10.4.6.2.2 The classification of mixtures for acute hazards based on this summation of the concentrations of classified ingredients is summarized in Table 2.2.9.1.10.4.6.2.2 below.

Table 2.2.9.1.10.4.6.2.2: Classification of a mixture for acute hazards based on summation of the concentrations of classified ingredients

Sum of the concentrations (in %) of ingredients classified as:	Mixture classified as:
Acute 1 $\times M^a \geq 25\%$	Acute 1

^a For explanation of the M factor, see 2.2.9.1.10.4.6.4.

2.2.9.1.10.4.6.3 Classification for categories Chronic 1 and 2

2.2.9.1.10.4.6.3.1 First, all ingredients classified as Chronic 1 are considered. If the sum of the concentrations (in %) of these ingredients is greater than or equal to 25 % the mixture shall be classified as Chronic 1. If the result of the calculation is a classification of the mixture as Chronic 1 the classification procedure is completed.

2.2.9.1.10.4.6.3.2 In cases where the mixture is not classified as Chronic 1, classification of the mixture as Chronic 2 is considered. A mixture shall be classified as Chronic 2 if 10 times the sum of the concentrations (in %) of all ingredients classified as Chronic 1 plus the sum of the concentrations (in %) of all ingredients classified as Chronic 2 is greater than or equal to 25 %. If the result of the calculation is classification of the mixture as Chronic 2, the classification process is completed.

2.2.9.1.10.4.6.3.3 The classification of mixtures for long-term hazards based on this summation of the concentrations of classified ingredients is summarized in Table 2.2.9.1.10.4.6.3.3 below.

Table 2.2.9.1.10.4.6.3.3: Classification of a mixture for long-term hazards based on summation of the concentrations of classified ingredients

Sum of the concentrations (in %) of ingredients classified as:	Mixture classified as:
Chronic 1 × M ^a ≥ 25 %	Chronic 1
(M × 10 × Chronic 1) + Chronic 2 ≥ 25 %	Chronic 2

^a For explanation of the M factor, see 2.2.9.1.10.4.6.4.

2.2.9.1.10.4.6.4 Mixtures with highly toxic ingredients

Acute 1 or Chronic 1 ingredients with acute toxicities well below 1 mg/l and/or chronic toxicities well below 0.1 mg/l (if non-rapidly degradable) and 0.01 mg/l (if rapidly degradable) may influence the toxicity of the mixture and are given increased weight in applying the summation method. When a mixture contains ingredients classified as acute or Chronic 1, the tiered approach described in 2.2.9.1.10.4.6.2 and 2.2.9.1.10.4.6.3 shall be applied using a weighted sum by multiplying the concentrations of Acute 1 and Chronic 1 ingredients by a factor, instead of merely adding up the percentages. This means that the concentration of "Acute 1" in the left column of Table 2.2.9.1.10.4.6.2.2 and the concentration of "Chronic 1" in the left column of Table 2.2.9.1.10.4.6.3.3 are multiplied by the appropriate multiplying factor. The multiplying factors to be applied to these ingredients are defined using the toxicity value, as summarised in Table 2.2.9.1.10.4.6.4 below. Therefore, in order to classify a mixture containing Acute 1 and/or Chronic 1 ingredients, the classifier needs to be informed of the value of the M factor in order to apply the summation method. Alternatively, the additivity formula (see 2.2.9.1.10.4.5.2) may be used when toxicity data are available for all highly toxic ingredients in the mixture and there is convincing evidence that all other ingredients, including those for which specific acute and/or chronic toxicity data are not available, are of low or no toxicity and do not significantly contribute to the environmental hazard of the mixture.

Table 2.2.9.1.10.4.6.4: Multiplying factors for highly toxic ingredients of mixtures

Acute toxicity L(E)C ₅₀ value	M factor	Chronic toxicity NOEC value	M factor	
			NRD ^a ingredients	RD ^b ingredients
0.1 < L(E)C ₅₀ ≤ 1	1	0.01 < NOEC ≤ 0.1	1	–
0.01 < L(E)C ₅₀ ≤ 0.1	10	0.001 < NOEC ≤ 0.01	10	1
0.001 < L(E)C ₅₀ ≤ 0.01	100	0.0001 < NOEC ≤ 0.001	100	10
0.0001 < L(E)C ₅₀ ≤ 0.001	1 000	0.00001 < NOEC ≤ 0.0001	1 000	100
0.00001 < L(E)C ₅₀ ≤ 0.0001	10 000	0.000001 < NOEC ≤ 0.00001	10 000	1 000
(continue in factor 10 intervals)		(continue in factor 10 intervals)		

^a Non-rapidly degradable.

^b Rapidly degradable.

2.2.9.1.10.4.6.5 Classification of mixtures with ingredients without any useable information

In the event that no useable information on acute and/or chronic aquatic toxicity is available for one or more relevant ingredients, it is concluded that the mixture cannot be attributed (a) definitive hazard category(ies). In this situation the mixture shall be classified based on the known ingredients only.

2.2.9.1.10.5 Substances or mixtures classified as environmentally hazardous substances (aquatic environment) on the basis of Regulation 1272/2008/EC³

If data for classification according to the criteria of 2.2.9.1.10.3 and 2.2.9.1.10.4 are not available, a substance or mixture:

- (a) Shall be classified as an environmentally hazardous substance (aquatic environment) if it has to be assigned category(ies) Aquatic Acute 1, Aquatic Chronic 1 or Aquatic Chronic 2 according to Regulation 1272/2008/EC³;
- (b) May be regarded as not being an environmentally hazardous substance (aquatic environment) if it does not have to be assigned such a category according to the said Regulation.

2.2.9.1.10.6 Assignment of substances or mixtures classified as environmentally hazardous substances (aquatic environment) according to the provisions in 2.2.9.1.10.3, 2.2.9.1.10.4 or 2.2.9.1.10.5

Substances or mixtures classified as environmentally hazardous substances (aquatic environment) that do not meet the classification criteria of any other class or another substance within Class 9 shall be designated:

UN No. 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.; or

UN No. 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

They shall be assigned to packing group III.

Genetically modified microorganisms or organisms

2.2.9.1.11 Genetically modified microorganisms (GMMOs) and genetically modified organisms (GMOs) are microorganisms and organisms in which genetic material has been purposely altered through genetic engineering in a way that does not occur naturally. They are assigned to Class 9 (UN No. 3245) if they do not meet the definition of toxic substances or of infectious substances, but are capable of altering animals, plants or microbiological substances in a way not normally the result of natural reproduction.

NOTE 1: *GMMOs and GMOs which are infectious are substances of Class 6.2, UN Nos. 2814, 2900 or 3373.*

NOTE 2: *GMMOs or GMOs are not subject to the provisions of ADR when authorized for use by the competent authorities of the countries of origin, transit and destination¹⁵.*

NOTE 3: *Genetically modified live animals which, in accordance with the current state of scientific knowledge, have no known pathogenic effect on humans, animals and plants and are carried in receptacles that are suitable for safely preventing both the escape of the animals and unauthorized access to them, are not subject to the provisions of ADR. The provisions specified by the International Air Transport Association (IATA) for air transport "Live Animals Regulations, LAR" can be drawn on as guidelines for suitable receptacles for the transport of live animals.*

NOTE 4: *Live animals shall not be used to carry genetically modified microorganisms classified in Class 9 unless the substance can be carried no other way. Genetically modified live animals shall be carried under terms and conditions of the competent authorities of the countries of origin and destination.*

2.2.9.1.12 (Deleted)

³ Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directive 67/548/EEC and 1999/45/EC; and amending Regulation (EC) No 1907/2006, published in the Official Journal of the European Union, L 353, 31 December 2008, p 1-1355.

¹⁵ See Part C of Directive 2001/18/EC of the European Parliament and of the Council on the deliberate release into the environment of genetically modified organisms and repealing Council Directive 90/220/EEC (Official Journal of the European Communities, No. L 106, of 17 April 2001, pp 8-14) and Regulation (EC) No. 1829/2003 of the European Parliament and of the Council on genetically modified food and feed (Official Journal of the European Union, No. L 268, of 18 October 2003, pp 1-23), which set out the authorization procedures for the European Union.

Elevated temperature substances

- 2.2.9.1.13 Elevated temperature substances include substances which are carried or handed over for carriage in the liquid state at or above 100 °C and, in the case of those with a flash-point, below their flash-point. They also include solids which are carried or handed over for carriage at or above 240 °C.

NOTE: *Elevated temperature substances may be assigned to Class 9 only if they do not meet the criteria of any other class.*

Other substances and articles presenting a danger during carriage but not meeting the definitions of another class

- 2.2.9.1.14 The following other miscellaneous substances not meeting the definitions of another class are assigned to Class 9:

Solid ammonia compounds having a flash-point below 60 °C;

Low hazard dithionites;

Highly volatile liquids;

Substances emitting noxious fumes;

Substances containing allergens;

Chemical kits and first aid kits;

Electric double layer capacitors (with an energy storage capacity greater than 0.3 Wh);

Vehicles, engines and machinery, internal combustion;

Articles containing miscellaneous dangerous goods.

NOTE: *UN No. 1845 carbon dioxide, solid (dry ice)¹⁶, UN No. 2216 fish meal (fish scrap), stabilized, UN No. 2807 magnetized material, UN No. 3334 aviation regulated liquid, n.o.s. and UN No. 3335 aviation regulated solid, n.o.s. listed in the UN Model Regulations, are not subject to the provisions of ADR.*

Assignment of the packing groups

- 2.2.9.1.15 When indicated in column (4) of Table A of Chapter 3.2, substances and articles of Class 9 are assigned to one of the following packing groups according to their degree of danger:

Packing group II: substances presenting medium danger;

Packing group III: substances presenting low danger.

2.2.9.2 ***Substances and articles not accepted for carriage***

The following substances and articles shall not be accepted for carriage:

- Lithium batteries which do not meet the relevant conditions of special provisions 188, 230, 310, 636 or 670 of Chapter 3.3;
- Uncleaned empty containment vessels for apparatus such as transformers, condensers and hydraulic apparatus containing substances assigned to UN Nos. 2315, 3151, 3152 or 3432.

¹⁶ For UN No. 1845 carbon dioxide, solid (dry ice), see 5.5.3.

2.2.9.3 *List of entries*

Substances which, on inhalation as fine dust, may endanger health		M1	2212 ASBESTOS, AMPHIBOLE (amosite, tremolite, actinolite, anthophyllite, crocidolite) 2590 ASBESTOS, CHRYSOTILE
Substances and articles which, in the event of fire, may form dioxins		M2	2315 POLYCHLORINATED BIPHENYLS, LIQUID 3432 POLYCHLORINATED BIPHENYLS, SOLID 3151 POLYHALOGENATED BIPHENYLS, LIQUID or 3151 HALOGENATED MONOMETHYLDIPHENYLMETHANES, LIQUID or 3151 POLYHALOGENATED TERPHENYLS, LIQUID 3152 POLYHALOGENATED BIPHENYLS, SOLID or 3152 HALOGENATED MONOMETHYLDIPHENYLMETHANES, SOLID or 3152 POLYHALOGENATED TERPHENYLS, SOLID
Substances evolving flammable vapour		M3	2211 POLYMERIC BEADS, EXPANDABLE, evolving flammable vapour 3314 PLASTICS MOULDING COMPOUND in dough, sheet or extruded rope form evolving flammable vapour
Lithium batteries		M4	3090 LITHIUM METAL BATTERIES (including lithium alloy batteries) 3091 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT (including lithium alloy batteries) or 3091 LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT (including lithium alloy batteries) 3480 LITHIUM ION BATTERIES (including lithium ion polymer batteries) 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT (including lithium ion polymer batteries) or 3481 LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries) 3536 LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT lithium ion batteries or lithium metal batteries
Live-saving appliances		M5	2990 LIFE-SAVING APPLIANCES, SELF-INFLATING 3072 LIFE-SAVING APPLIANCES NOT SELF-INFLATING containing dangerous goods as equipment 3268 SAFETY DEVICES, electrically initiated
Environmentally hazardous substances	pollutant to the aquatic environment, liquid	M6	3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
	pollutant to the aquatic environment, solid	M7	3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Elevated temperature substances	genetically modified micro-organisms and organisms	M8	3245 GENETICALLY MODIFIED MICROORGANISMS or 3245 GENETICALLY MODIFIED ORGANISMS
	liquid	M9	3257 ELEVATED TEMPERATURE LIQUID, N.O.S., at or above 100 °C and below its flash-point (including molten metal, molten salts, etc.)
	solid	M10	3258 ELEVATED TEMPERATURE SOLID, N.O.S., at or above 240 °C

(cont'd on next page)

2.2.9.3

List of entries (cont'd)

Other substances and articles presenting a danger during carriage, but not meeting the definitions of another class

M11

Only substances and articles listed in Table A of Chapter 3.2 are subject to the provisions for Class 9 under this classification code, as follows:

1841 ACETALDEHYDE AMMONIA
 1931 ZINC DITHIONITE (ZINC HYDROSULPHITE)
 1941 DIBROMODIFLUOROMETHANE
 1990 BENZALDEHYDE
 2071 AMMONIUM NITRATE BASED FERTILIZER
 2969 CASTOR BEANS, or
 2969 CASTOR MEAL, or
 2969 CASTOR POMACE, or
 2969 CASTOR FLAKE
 3166 VEHICLE, FLAMMABLE GAS POWERED or
 3166 VEHICLE, FLAMMABLE LIQUID POWERED or
 3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or
 3166 VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED
 3171 BATTERY POWERED VEHICLE or
 3171 BATTERY POWERED EQUIPMENT
 3316 CHEMICAL KIT, or
 3316 FIRST AID KIT
 3359 FUMIGATED CARGO TRANSPORT UNIT
 3363 DANGEROUS GOODS IN ARTICLES or
 3363 DANGEROUS GOODS IN MACHINERY or
 3363 DANGEROUS GOODS IN APPARATUS
 3499 CAPACITOR, ELECTRIC DOUBLE LAYER (with an energy storage capacity greater than 0.3Wh)
 3508 CAPACITOR, ASYMMETRIC (with an energy storage capacity greater than 0.3Wh)
 3509 PACKAGINGS, DISCARDED, EMPTY, UNCLEARED
 3530 ENGINE, INTERNAL COMBUSTION or
 3530 MACHINERY, INTERNAL COMBUSTION
 3548 ARTICLES CONTAINING MISCELLANEOUS DANGEROUS GOODS
 N.O.S.

CHAPTER 2.3

TEST METHODS

2.3.0 General

Unless otherwise provided for in Chapter 2.2 or in this Chapter, the test methods to be used for the classification of dangerous goods are those described in the Manual of Tests and Criteria.

2.3.1 Exudation test for blasting explosives of Type A

2.3.1.1 Blasting explosives of type A (UN No. 0081) shall, if they contain more than 40 % liquid nitric ester, in addition to the testing specified in the Manual of Tests and Criteria, satisfy the following exudation test.

2.3.1.2 The apparatus for testing blasting explosive for exudation (figs. 1 to 3) consists of a hollow bronze cylinder. This cylinder, which is closed at one end by a plate of the same metal, has an internal diameter of 15.7 mm and a depth of 40 mm. It is pierced by 20 holes 0.5 mm in diameter (four sets of five holes) on the circumference. A bronze piston, cylindrically fashioned over a length of 48 mm and having a total length of 52 mm, slides into the vertically placed cylinder. The piston, whose diameter is 15.6 mm, is loaded with a mass of 2 220 g so that a pressure of 120 kPa (1.20 bar) is exerted on the base of the cylinder.

2.3.1.3 A small plug of blasting explosive weighing 5 to 8 g, 30 mm long and 15 mm in diameter, is wrapped in very fine gauze and placed in the cylinder; the piston and its loading mass are then placed on it so that the blasting explosive is subjected to a pressure of 120 kPa (1.20 bar). The time taken for the appearance of the first signs of oily droplets (nitroglycerine) at the outer orifices of the cylinder holes is noted.

2.3.1.4 The blasting explosive is considered satisfactory if the time elapsing before the appearance of the liquid exudations is more than five minutes, the test having been carried out at a temperature of 15 °C to 25 °C.

Test of blasting explosive for exudation

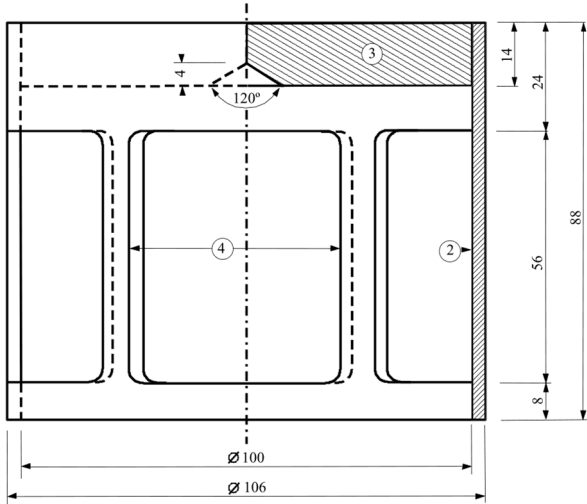


Fig.1: Bell-form charge, mass 2220 g, capable of being suspended from a bronze piston

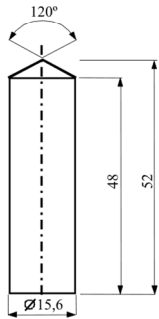


Fig.2: Cylindrical bronze piston, dimensions in mm

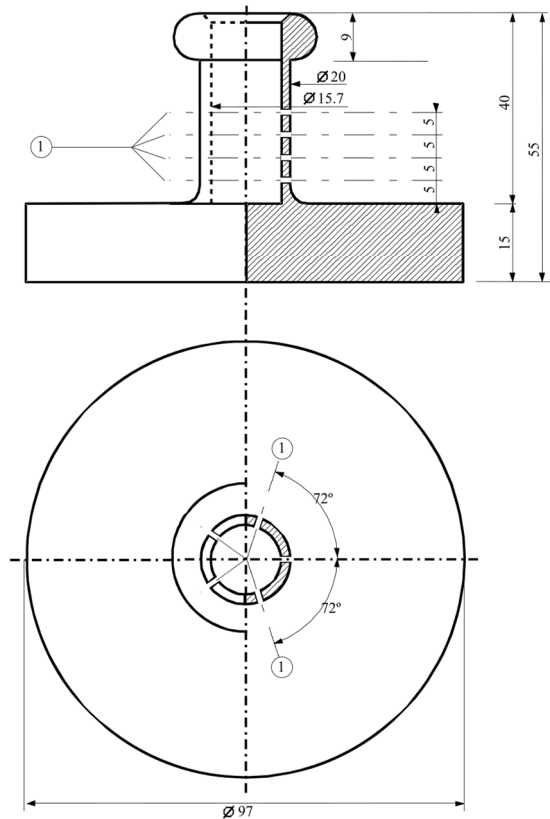


Fig.3: Hollow bronze cylinder, closed at one end; Plan and cut, dimensions in mm

Figs. 1 to 3

- (1) 4 series of 5 holes at $\varnothing 0.5$
- (2) copper
- (3) lead plate with centre cone at the inferior face
- (4) 4 openings, approximately 46×56 , set at even intervals on the periphery

2.3.2 Tests relating to nitrated cellulose mixtures of Class 1 and Class 4.1

2.3.2.1 In order to determine the criteria of the nitrocellulose, the Bergmann-Junk test or the methyl violet paper test in the Manual of Tests and Criteria Appendix 10 shall be performed (see Chapter 3.3, special provisions 393 and 394). If there is doubt that the ignition temperature of the nitrocellulose is considerably higher than 132 °C in the case of the Bergmann-Junk test or higher than 134.5 °C in the case of the methyl violet paper test, the ignition temperature test described in 2.3.2.5 should be carried out before these tests are performed. If the ignition temperature of nitrocellulose mixtures is higher than 180 °C or the ignition temperature of plasticized nitrocellulose is higher than 170 °C, the Bergmann-Junk test or the methyl violet paper test can be carried out safely.

2.3.2.2 Before undergoing the tests in 2.3.2.5, the samples shall be dried for not less than 15 hours at the ambient temperature in a vacuum desiccator containing fused and granulated calcium chloride, the sample substance being spread in a thin layer; for this purpose, substances which are neither in powder form nor fibrous shall be ground, or grated, or cut into small pieces. The pressure in the desiccator shall be brought below 6.5 kPa (0.065 bar).

2.3.2.3 Before being dried as prescribed in 2.3.2.2 above, plasticized nitrocellulose shall undergo preliminary drying in a well-ventilated oven, with its temperature set at 70 °C, until the loss of mass per quarter-hour is less than 0.3 % of the original mass.

2.3.2.4 Weakly nitrated nitrocellulose shall first undergo preliminary drying as prescribed in 2.3.2.3 above; drying shall then be completed by keeping the nitrocellulose for at least 15 hours over concentrated sulphuric acid in a desiccator.

2.3.2.5 Ignition temperature (see 2.3.2.1)

(a) The ignition temperature is determined by heating 0.2 g of substance enclosed in a glass test tube immersed in a Wood's alloy bath. The test tube is placed in the bath when the latter has reached 100 °C. The temperature of the bath is then progressively increased by 5 °C per minute;

(b) The test tubes must have the following dimensions:

length	125 mm
internal diameter	15 mm
thickness of wall	0.5 mm

and shall be immersed to a depth of 20 mm;

(c) The test shall be repeated three times, the temperature at which ignition of the substance occurs, i.e., slow or rapid combustion, deflagration or detonation, being noted each time;

(d) The lowest temperature recorded in the three tests is the ignition temperature.

2.3.3 Tests relating to flammable liquids of Classes 3, 6.1 and 8**2.3.3.1 Determination of flash-point**

2.3.3.1.1 The following methods for determining the flash-point of flammable liquids may be used:

International standards:

ISO 1516 (Determination of flash/no flash – Closed cup equilibrium method)

ISO 1523 (Determination of flash point – Closed cup equilibrium method)

ISO 2719 (Determination of flash point – Pensky-Martens closed cup method)

ISO 13736 (Determination of flash point – Abel closed-cup method)

ISO 3679 (Determination of flash point – Rapid equilibrium closed cup method)

ISO 3680 (Determination of flash/no flash – Rapid equilibrium closed cup method)

National standards:

American Society for Testing Materials International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, USA 19428-2959:

ASTM D3828-07a, Standard Test Methods for Flash Point by Small Scale Closed-Cup Tester

ASTM D56-05, Standard Test Method for Flash Point by Tag Closed-Cup Tester

ASTM D3278-96(2004)e1, Standard Test Methods for Flash Point of Liquids by Small Scale Closed-Cup Apparatus

ASTM D93-08, Standard Test Methods for Flash Point by Pensky-Martens Closed-Cup Tester

Association française de normalisation, AFNOR, 11, rue de Pressensé, F-93571 La Plaine Saint-Denis Cedex:

French standard NF M 07 - 019

French standards NF M 07 - 011 / NF T 30 - 050 / NF T 66 - 009

French standard NF M 07 - 036

Deutsches Institut für Normung, Burggrafenstr. 6, D-10787 Berlin:

Standard DIN 51755 (flash-points below 65 °C)

State Committee of the Council of Ministers for Standardization, RUS-113813, GSP, Moscow, M-49 Leninsky Prospect, 9:

GOST 12.1.044-84

2.3.3.1.2 To determine the flash-point of paints, gums and similar viscous products containing solvents, only apparatus and test methods suitable for determining the flash-point for viscous liquids shall be used, in accordance with the following standards:

- (a) International Standard ISO 3679: 1983;
- (b) International Standard ISO 3680: 1983;
- (c) International Standard ISO 1523: 1983;
- (d) International standards EN ISO 13736 and EN ISO 2719, Method B.

2.3.3.1.3 The standards listed in 2.3.3.1.1 shall only be used for flash-point ranges which are specified therein. The possibility of chemical reactions between the substance and the sample holder shall be considered when selecting the standard to be used. The apparatus shall, as far as is consistent with safety, be placed in a draught-free position. For safety, a method utilizing a small sample size, around 2 ml, shall be used for organic peroxides and self-reactive substances (also known as "energetic" substances), or for toxic substances.

2.3.3.1.4 When the flash-point, determined by a non-equilibrium method is found to be 23 ± 2 °C or 60 ± 2 °C, it shall be confirmed for each temperature range by an equilibrium method.

2.3.3.1.5 In the event of a dispute as to the classification of a flammable liquid, the classification proposed by the consignor shall be accepted if a check-test of the flash-point, yields a result not differing by more than 2 °C from the limits (23 °C and 60 °C respectively) stated in 2.2.3.1. If the difference is more than 2 °C, a second check-test shall be carried out, and the lowest figure of the flash-points obtained in either check-test shall be adopted.

2.3.3.2 ***Determination of initial boiling point***

The following methods for determining the initial boiling point of flammable liquids may be used:

International standards:

ISO 3924 (Petroleum products – Determination of boiling range distribution – Gas chromatography method)

ISO 4626 (Volatile organic liquids – Determination of boiling range of organic solvents used as raw materials)

ISO 3405 (Petroleum products – Determination of distillation characteristics at atmospheric pressure)

National standards:

American Society for Testing Materials International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, USA 19428-2959:

ASTM D86-07a, Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure

ASTM D1078-05, Standard Test Method for Distillation Range of Volatile Organic Liquids

Further acceptable methods:

Method A.2 as described in Part A of the Annex to Commission Regulation (EC) No 440/2008¹.

¹ *Commission Regulation (EC) No 440/2008 of 30 May 2008 laying down test methods pursuant to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (Official Journal of the European Union, No. L 142 of 31.05.2008, p.1-739).*

2.3.3.3 *Test for determining peroxide content*

To determine the peroxide content of a liquid, the procedure is as follows:

A quantity p (about 5 g, weighed to the nearest 0.01 g) of the liquid to be titrated is placed in an Erlenmeyer flask; 20 cm³ of acetic anhydride and about 1 g of powdered solid potassium iodide are added; the flask is shaken and, after 10 minutes, heated for 3 minutes to about 60 °C. When it has been left to cool for 5 minutes, 25 cm³ of water are added. After this, it is left standing for half an hour, then the liberated iodine is titrated with a decinormal solution of sodium thiosulphate, no indicator being added; complete discoloration indicates the end of the reaction. If n is the number of cm³ of thiosulphate solution required, the percentage of peroxide (calculated as H₂O₂) present in the sample is obtained by the formula:

$$\frac{17 n}{100 p}$$

2.3.4 *Test for determining fluidity*

To determine the fluidity of liquid, viscous or pasty substances and mixtures, the following test method shall be used.

2.3.4.1 *Test apparatus*

Commercial penetrometer conforming to ISO 2137:1985, with a guide rod of 47.5 g ± 0.05 g; sieve disc of duralumin with conical bores and a mass of 102.5 g ± 0.05 g (see Figure 1); penetration vessel with an inside diameter of 72 mm to 80 mm for reception of the sample.

2.3.4.2 *Test procedure*

The sample is poured into the penetration vessel not less than half an hour before the measurement. The vessel is then hermetically closed and left standing until the measurement. The sample in the hermetically closed penetration vessel is heated to 35 °C ± 0.5 °C and is placed on the penetrometer table immediately prior to measurement (not more than two minutes). The point S of the sieve disc is then brought into contact with the surface of the liquid and the rate of penetration is measured.

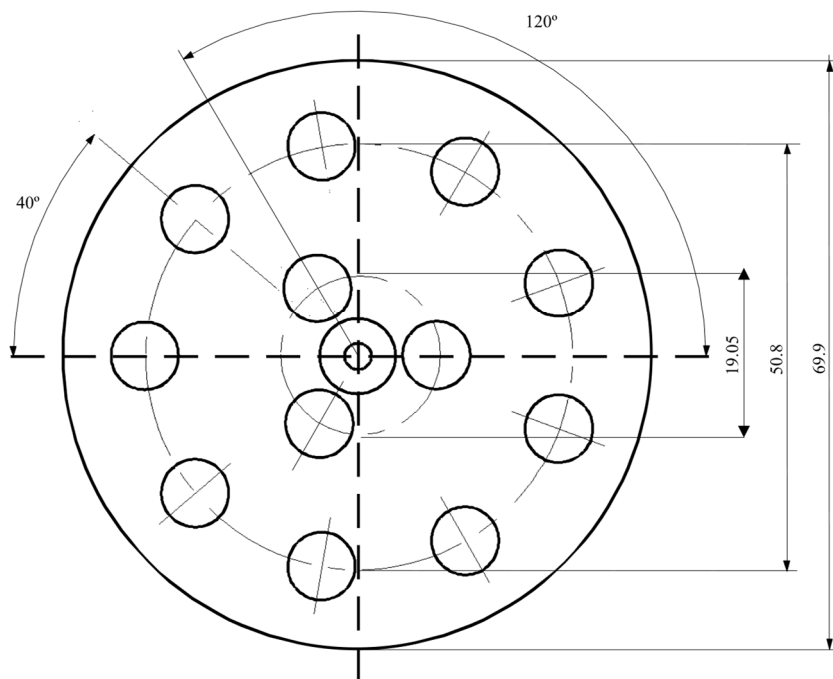
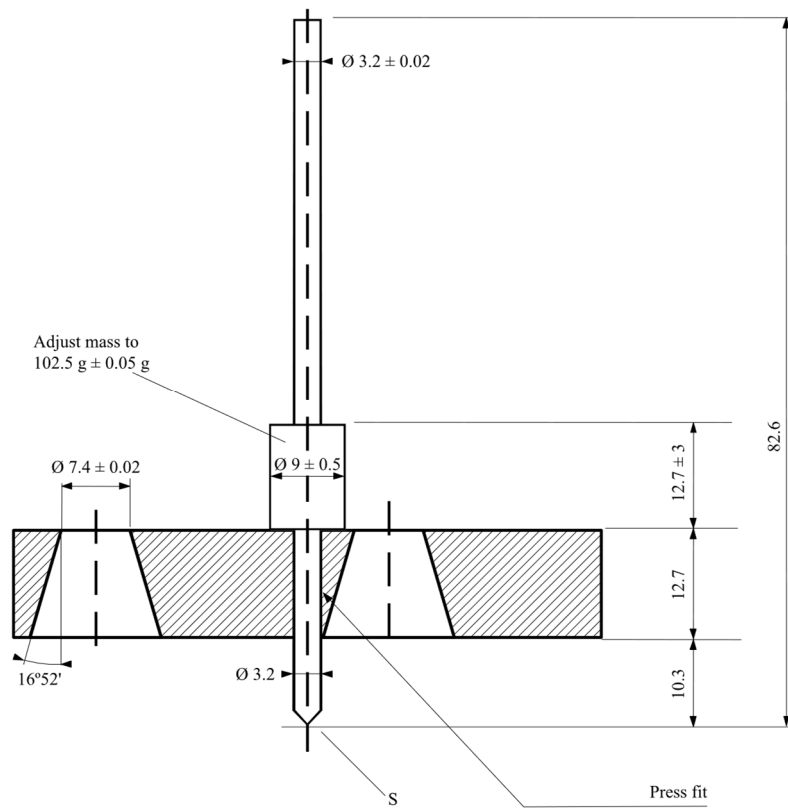
2.3.4.3 *Evaluation of test results*

A substance is pasty if, after the centre S has been brought into contact with the surface of the sample, the penetration indicated by the dial gauge:

- (a) after a loading time of 5 s ± 0.1 s, is less than 15.0 mm ± 0.3 mm; or
- (b) after a loading time of 5 s ± 0.1 s, is greater than 15.0 mm ± 0.3 mm, but the additional penetration after another 55 s ± 0.5 s is less than 5.0 mm ± 0.5 mm.

NOTE: *In the case of samples having a flow point, it is often impossible to produce a steady level surface in the penetration vessel and, hence, to establish satisfactory initial measuring conditions for the contact of the point S. Furthermore, with some samples, the impact of the sieve disc can cause an elastic deformation of the surface and, in the first few seconds, simulate a deeper penetration. In all these cases, it may be appropriate to make the evaluation in paragraph (b) above.*

Figure 1 – Penetrometer



Tolerances not specified are $\pm 0.1 \text{ mm}$.

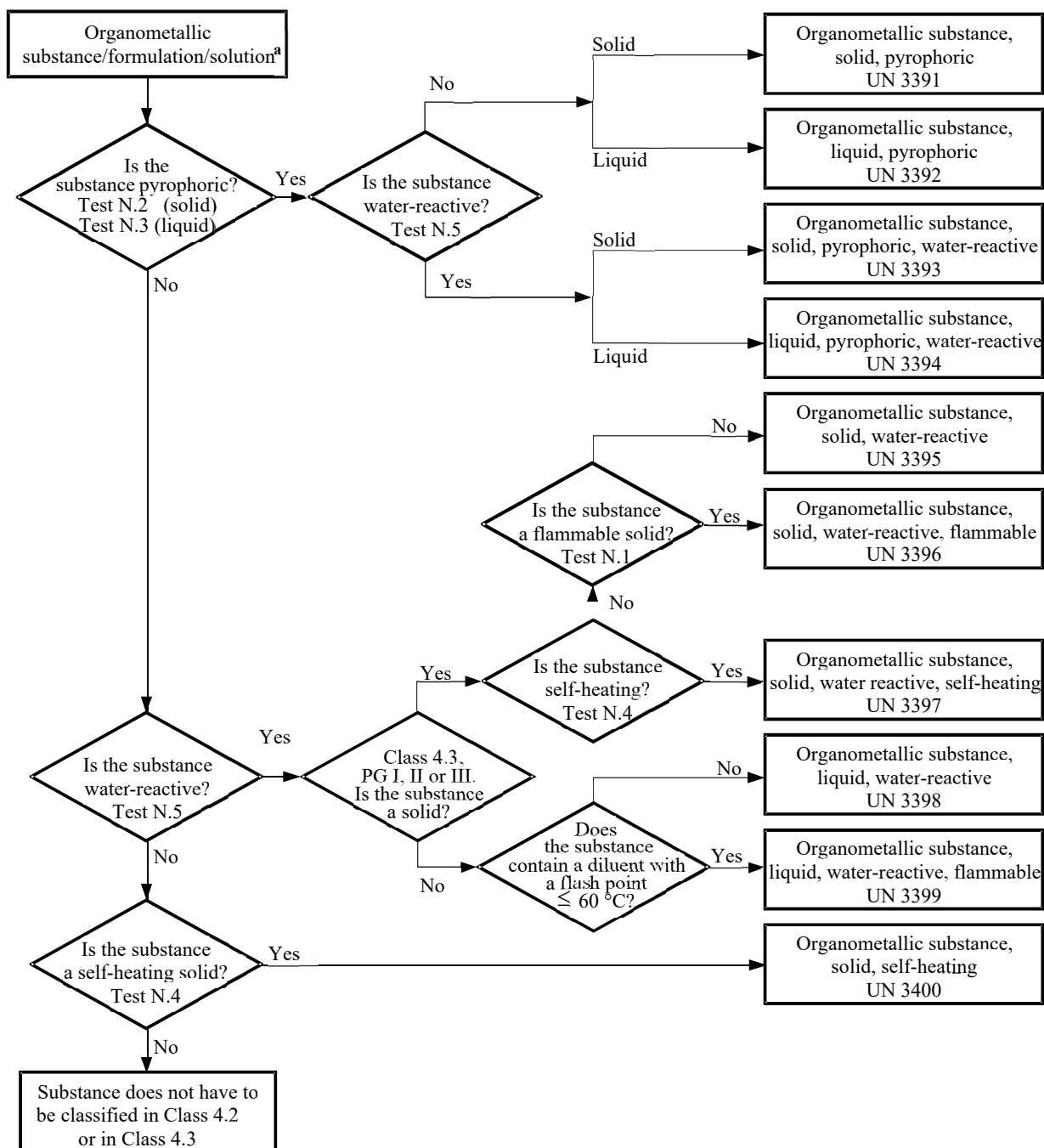
2.3.5 Classification of organometallic substances in Classes 4.2 and 4.3

Depending on their properties as determined in accordance with tests N.1 to N.5 of the Manual of Tests and Criteria, Part III, section 33, organometallic substances may be classified in Class 4.2 or 4.3, as appropriate, in accordance with the flowchart scheme given in Figure 2.3.5.

NOTE 1: *Depending on their other properties and on the precedence of hazard table (see 2.1.3.10), organometallic substances may have to be classified in other classes as appropriate.*

NOTE 2: *Flammable solutions with organometallic compounds in concentrations which are not liable to spontaneous combustion or, in contact with water, do not emit flammable gases in dangerous quantities, are substances of Class 3.*

Figure 2.3.5: Flowchart scheme for the classification of organometallic substances in Classes 4.2 and 4.3^b



^a If applicable and testing is relevant, taking into account reactivity properties, class 6.1 and 8 properties should be considered according to the precedence of hazard table of 2.1.3.10.

^b Test methods N.1 to N.5 can be found in the Manual of Tests and Criteria, Part III, Section 33.

PART 3

Dangerous goods list, special provisions and exemptions related to limited and excepted quantities

CHAPTER 3.1

GENERAL

3.1.1 Introduction

In addition to the provisions referred to or given in the tables of this Part, the general requirements of each Part, Chapter and/or Section are to be observed. These general requirements are not given in the tables. When a general requirement is contradictory to a special provision, the special provision prevails.

3.1.2 Proper shipping name

NOTE: For proper shipping names used for the carriage of samples, see 2.1.4.1.

3.1.2.1 The proper shipping name is that portion of the entry most accurately describing the goods in Table A in Chapter 3.2, which is shown in upper case characters (plus any numbers, Greek letters, "sec", "tert", and the letters "m", "n", "o", "p", which form an integral part of the name). An alternative proper shipping name may be shown in brackets following the main proper shipping name [e.g., ETHANOL (ETHYL ALCOHOL)]. Portions of an entry appearing in lower case need not be considered as part of the proper shipping name.

3.1.2.2 When a combination of several distinct proper shipping names are listed under a single UN number, and these are separated by "and" or "or" in lower case or are punctuated by commas, only the most appropriate shall be shown in the transport document and package marks. Examples illustrating the selection of the proper shipping name for such entries are:

- (a) UN 1057 LIGHTERS or LIGHTER REFILLS - The proper shipping name is the most appropriate of the following combinations:

LIGHTERS
LIGHTER REFILLS;

- (b) UN 2793 FERROUS METAL BORINGS, SHAVINGS, TURNINGS or CUTTINGS in a form liable to self-heating. The proper shipping name is the most appropriate of the following combinations:

FERROUS METAL BORINGS
FERROUS METAL SHAVINGS
FERROUS METAL TURNINGS
FERROUS METAL CUTTINGS.

3.1.2.3 Proper shipping names may be used in the singular or plural as appropriate. In addition, when qualifying words are used as part of the proper shipping name, their sequence on documentation or package marks is optional. For instance, "DIMETHYLAMINE AQUEOUS SOLUTION" may alternatively be shown "AQUEOUS SOLUTION OF DIMETHYLAMINE". Commercial or military names for goods of Class 1 which contain the proper shipping name supplemented by additional descriptive text may be used.

3.1.2.4 Many substances have an entry for both the liquid and solid state (see definitions for liquid and solid in 1.2.1), or for the solid and solution. These are allocated separate UN numbers which are not necessarily adjacent to each other¹.

3.1.2.5 Unless it is already included in capital letters in the name indicated in Table A in Chapter 3.2, the qualifying word "MOLTEN" shall be added as part of the proper shipping name when a substance, which is a solid in accordance with the definition in 1.2.1, is offered for carriage in the molten state (e.g. ALKYLPHENOL, SOLID, N.O.S., MOLTEN).

¹ Details are provided in the alphabetical index (Table B of Chapter 3.2), e.g.:

NITROXYLENES, LIQUID	6.1	1665;
NITROXYLENES, SOLID	6.1	3447.

3.1.2.6 Except for self-reactive substances and organic peroxides and unless it is already included in capital letters in the name indicated in Column (2) of Table A of Chapter 3.2, the word "STABILIZED" shall be added as part of the proper shipping name of a substance which without stabilization would be forbidden from carriage in accordance with paragraphs 2.2.X.2 due to it being liable to dangerously react under conditions normally encountered in carriage (e.g.: "TOXIC LIQUID, ORGANIC, N.O.S., STABILIZED").

When temperature control is used to stabilize such substances to prevent the development of any dangerous excess pressure, or the evolution of excessive heat, or when chemical stabilization is used in combination with temperature control, then:

- (a) For liquids and solids where the SAPT² (measured without or with inhibitor, when chemical stabilization is applied) is less than or equal to that prescribed in 2.2.41.1.21, the provisions of 2.2.41.1.17, special provision 386 of Chapter 3.3, 7.1.7, special provision V8 of Chapter 7.2, special provision S4 of Chapter 8.5 and the requirements of Chapter 9.6 apply except that the term "SADT" as used in these paragraphs is understood to include also "SAPT" when the substance concerned reacts by polymerization;
- (b) Unless it is already included in capital letters in the name indicated in Column (2) of Table A in Chapter 3.2, the words "TEMPERATURE CONTROLLED" shall be added as part of the proper shipping name;
- (c) For gases: the conditions of carriage shall be approved by the competent authority.

3.1.2.7 Hydrates may be carried under the proper shipping name for the anhydrous substance.

3.1.2.8 *Generic or "not otherwise specified" (N.O.S.) names*

3.1.2.8.1 Generic and "not otherwise specified" proper shipping names that are assigned to special provision 274 or 318 in Column (6) of Table A in Chapter 3.2 shall be supplemented with the technical name of the goods unless a national law or international convention prohibits its disclosure if it is a controlled substance. For explosives of Class 1, the dangerous goods description may be supplemented by additional descriptive text to indicate commercial or military names. Technical names shall be entered in brackets immediately following the proper shipping name. An appropriate modifier, such as "contains" or "containing" or other qualifying words such as "mixture", "solution", etc. and the percentage of the technical constituent may also be used. For example: "UN 1993 FLAMMABLE LIQUID, N.O.S. (CONTAINS XYLENE AND BENZENE), 3, II".

3.1.2.8.1.1 The technical name shall be a recognized chemical name or biological name, or other name currently used in scientific and technical handbooks, journals and texts. Trade names shall not be used for this purpose. In the case of pesticides, only ISO common name(s), other name(s) in the World Health Organization (WHO) Recommended Classification of Pesticides by Hazard and Guidelines to Classification, or the name(s) of the active substance(s) may be used.

3.1.2.8.1.2 When a mixture of dangerous goods or articles containing dangerous goods are described by one of the "N.O.S." or "generic" entries to which special provision 274 has been allocated in Column (6) of Table A in Chapter 3.2, not more than the two constituents which most predominantly contribute to the hazard or hazards of the mixture or of the articles need to be shown, excluding controlled substances when their disclosure is prohibited by national law or international convention. If a package containing a mixture is labelled with any subsidiary hazard label, one of the two technical names shown in parentheses shall be the name of the constituent which compels the use of the subsidiary hazard label.

NOTE: See 5.4.1.2.2.

3.1.2.8.1.3 Examples illustrating the selection of the proper shipping name supplemented with the technical name of goods for such N.O.S. entries are:

UN 2902	PESTICIDE, LIQUID, TOXIC, N.O.S. (drazoxolon);
UN 3394	ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER-REACTIVE (trimethylgallium).
UN 3540	ARTICLES CONTAINING FLAMMABLE LIQUID, N.O.S. (pyrrolidine)

² For the definition of self-accelerating polymerization temperature (SAPT), see 1.2.1.

3.1.2.8.1.4 For UN Nos. 3077 and 3082 only, the technical name may be a name shown in capital letters in column 2 of Table A of Chapter 3.2, provided that this name does not include “N.O.S.” and that special provision 274 is not assigned. The name which most appropriately describes the substance or mixture shall be used, e.g.:

UN 3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PAINT)
UN 3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PERFUMERY PRODUCTS)

3.1.3 Solutions or mixtures

NOTE: *Where a substance is specifically mentioned by name in Table A of Chapter 3.2, it shall be identified in carriage by the proper shipping name in Column (2) of Table A of Chapter 3.2. Such substances may contain technical impurities (for example those deriving from the production process) or additives for stability or other purposes that do not affect its classification. However, a substance mentioned by name containing technical impurities or additives for stability or other purposes affecting its classification shall be considered a solution or mixture (see 2.1.3.3).*

3.1.3.1 A solution or mixture is not subject to ADR if the characteristics, properties, form or physical state of the solution or mixture are such that it does not meet the criteria, including human experience criteria, for inclusion in any class.

3.1.3.2 A solution or mixture meeting the classification criteria of ADR composed of a single predominant substance mentioned by name in Table A of Chapter 3.2 and one or more substances not subject to ADR or traces of one or more substances mentioned by name in Table A of Chapter 3.2, shall be assigned the UN number and proper shipping name of the predominant substance mentioned by name in Table A of Chapter 3.2 unless:

- (a) The solution or mixture is mentioned by name in Table A of Chapter 3.2;
- (b) The name and description of the substance mentioned by name in Table A of Chapter 3.2 specifically indicate that they apply only to the pure substance;
- (c) The class, classification code, packing group, or physical state of the solution or mixture is different from that of the substance mentioned by name in Table A of Chapter 3.2; or
- (d) The hazard characteristics and properties of the solution or mixture necessitate emergency response measures that are different from those required for the substance mentioned by name in Table A of Chapter 3.2.

Qualifying words such as "SOLUTION" or "MIXTURE", as appropriate, shall be added as part of the proper shipping name, for example, "ACETONE SOLUTION". In addition, the concentration of the mixture or solution may also be indicated after the basic description of the mixture or solution, for example, "ACETONE 75 % SOLUTION".

3.1.3.3 A solution or mixture meeting the classification criteria of ADR that is not mentioned by name in Table A of Chapter 3.2 and that is composed of two or more dangerous goods shall be assigned to an entry that has the proper shipping name, description, class, classification code and packing group that most precisely describe the solution or mixture.

CHAPTER 3.2

DANGEROUS GOODS LIST

3.2.1 Table A: Dangerous Goods List

Explanations

As a rule, each row of Table A of this Chapter deals with the substance(s) or article(s) covered by a specific UN number. However, when substances or articles belonging to the same UN number have different chemical properties, physical properties and/or carriage conditions, several consecutive rows may be used for that UN number.

Each column of Table A is dedicated to a specific subject as indicated in the explanatory notes below. The intersection of columns and rows (cell) contains information concerning the subject treated in that column, for the substance(s) or article(s) of that row:

- The first four cells identify the substance(s) or article(s) belonging to that row (additional information in that respect may be given by the special provisions referred to in Column (6));
- The following cells give the applicable special provisions, either in the form of complete information or in coded form. The codes cross-refer to detailed information that is to be found in the Part, Chapter, Section and/or Sub-section indicated in the explanatory notes below. An empty cell means either that there is no special provision and that only the general requirements apply, or that the carriage restriction indicated in the explanatory notes is in force. When used in this table, an alphanumeric code starting with the letters "SP" designates a special provision of Chapter 3.3.

The applicable general requirements are not referred to in the corresponding cells. The explanatory notes below indicate for every column the Part(s), Chapter(s), Section(s) and/or Sub-section(s) where these are to be found.

Explanatory notes for each column:

Column (1)	<p>"UN No."</p> <p>Contains the UN number:</p> <ul style="list-style-type: none"> - of the dangerous substance or article if the substance or article has been assigned its own specific UN number; or - of the generic or n.o.s. entry to which the dangerous substances or articles not mentioned by name shall be assigned in accordance with the criteria ("decision trees") of Part 2.
Column (2)	<p>"Name and description"</p> <p>Contains, in upper case characters, the name of the substance or article, if the substance or article has been assigned its own specific UN number, or of the generic or n.o.s. entry to which it has been assigned in accordance with the criteria ("decision trees") of Part 2. This name shall be used as the proper shipping name or, when applicable, as part of the proper shipping name (see 3.1.2 for further details on the proper shipping name).</p> <p>A descriptive text in lower case characters is added after the proper shipping name to clarify the scope of the entry if the classification and/or carriage conditions of the substance or article may be different under certain conditions.</p>
Column (3a)	<p>"Class"</p> <p>Contains the number of the class, whose heading covers the dangerous substance or article. This class number is assigned in accordance with the procedures and criteria of Part 2.</p>

Column (3b)	<p>"Classification code"</p> <p>Contains the classification code of the dangerous substance or article.</p> <ul style="list-style-type: none"> - For dangerous substances or articles of Class 1, the code consists of a division number and compatibility group letter, which are assigned in accordance with the procedures and criteria of 2.2.1.1.4; - For dangerous substances or articles of Class 2, the code consists of a number and hazardous property group, which are explained in 2.2.2.1.2 and 2.2.2.1.3; - For dangerous substances or articles of Classes 3, 4.1, 4.2, 4.3, 5.1, 5.2, 6.1, 6.2 and 9, the codes are explained in 2.2.x.1.2¹; - For dangerous substances or articles of Class 8, the codes are explained in 2.2.8.1.4.1; - Dangerous substances or articles of Class 7 do not have a classification code.
Column (4)	<p>"Packing group"</p> <p>Contains the packing group number(s) (I, II or III) assigned to the dangerous substance. These packing group numbers are assigned on the basis of the procedures and criteria of Part 2. Certain articles and substances are not assigned to packing groups.</p>
Column (5)	<p>"Labels"</p> <p>Contains the model number of the labels/placards (see 5.2.2.2 and 5.3.1.7) that have to be affixed to packages, containers, tank-containers, portable tanks, MEGCs and vehicles. However, for substances or articles of Class 7, 7X means label model No.7A, 7B or 7C as appropriate according to the category (see 5.1.5.3.4 and 5.2.2.1.11.1) or placard No. 7D (see 5.3.1.1.3 and 5.3.1.7.2).</p> <p>The general provisions on labelling/placarding (e.g. number of labels, their location) are to be found in 5.2.2.1 for packages, and in 5.3.1, for containers, tank-containers, MEGCs, portable tanks and vehicles.</p> <p><i>NOTE: Special provisions, indicated in Column (6), may change the above labelling provisions.</i></p>
Column (6)	<p>"Special provisions"</p> <p>Contains the numeric codes of special provisions that have to be met. These provisions concern a wide array of subjects, mainly connected with the contents of Columns (1) to (5) (e.g. carriage prohibitions, exemptions from requirements, explanations concerning the classification of certain forms of the dangerous goods concerned and additional labelling or marking provisions), and are listed in Chapter 3.3 in numerical order. If Column (6) is empty, no special provisions apply to the contents of Columns (1) to (5) for the dangerous goods concerned.</p>
Column (7a)	<p>"Limited Quantities"</p> <p>Provides the maximum quantity per inner packaging or article for carrying dangerous goods as limited quantities in accordance with Chapter 3.4.</p>
Column (7b)	<p>"Excepted Quantities"</p> <p>Contains an alphanumeric code with the following meaning:</p> <ul style="list-style-type: none"> - "E0" signifies that no exemption from the provisions of ADR exists for the dangerous goods packed in excepted quantities;

¹ *x = the class number of the dangerous substance or article, without dividing point if applicable.*

- All the other alphanumerical codes starting with the letter "E" signify that the provisions of ADR are not applicable if the conditions indicated in Chapter 3.5 are fulfilled.

Column (8) "Packing instructions"

Contains the alphanumeric codes of the applicable packing instructions:

- Alphanumeric codes starting with the letter "P", which refers to packing instructions for packagings and receptacles (except IBCs and large packagings), or "R", which refers to packing instructions for light gauge metal packagings. These are listed in 4.1.4.1 in numerical order, and specify the packagings and receptacles that are authorized. They also indicate which of the general packing provisions of 4.1.1, 4.1.2 and 4.1.3, and which of the special packing provisions of 4.1.5, 4.1.6, 4.1.7, 4.1.8 and 4.1.9 have to be met. If Column (8) does not contain a code starting with the letters "P" or "R", the dangerous goods concerned may not be carried in packagings;
- Alphanumeric codes starting with the letters "IBC" refer to packing instructions for IBCs. These are listed in 4.1.4.2 in numerical order, and specify the IBCs that are authorized. They also indicate which of the general packing provisions of 4.1.1, 4.1.2 and 4.1.3, and which of the special packing provisions of 4.1.5, 4.1.6, 4.1.7, 4.1.8 and 4.1.9 have to be met. If Column (8) does not contain a code starting with the letters "IBC", the dangerous goods concerned may not be carried in IBCs;
- Alphanumeric codes starting with the letters "LP" refer to packing instructions for large packagings. These are listed in 4.1.4.3 in numerical order, and specify the large packagings that are authorized. They also indicate which of the general packing provisions of 4.1.1, 4.1.2 and 4.1.3, and which of the special packing provisions of 4.1.5, 4.1.6, 4.1.7, 4.1.8 and 4.1.9 have to be met. If Column (8) does not contain a code starting with the letters "LP", the dangerous goods concerned cannot be carried in large packagings;

***NOTE:** Special packing provisions, indicated in Column (9a), may change the above packing instructions.*

Column (9a) "Special packing provisions"

Contains the alphanumeric codes of the applicable special packing provisions:

- Alphanumeric codes starting with the letters "PP" or "RR" refer to special packing provisions for packagings and receptacles (except IBCs and large packagings) that have additionally to be met. These are to be found in 4.1.4.1, at the end of the relevant packing instruction (with the letter "P" or "R") referred to in Column (8). If Column (9a) does not contain a code starting with the letters "PP" or "RR", none of the special packing provisions listed at the end of the relevant packing instruction apply;
- Alphanumeric codes starting with the letter "B" or the letters "BB" refer to special packing provisions for IBCs that have additionally to be met. These are to be found in 4.1.4.2, at the end of the relevant packing instruction (with the letters "IBC") referred to in Column (8). If Column (9a) does not contain a code starting with the letter "B" or the letters "BB", none of the special packing provisions listed at the end of the relevant packing instruction apply;
- Alphanumeric codes starting with the letter "L" or the letters "LL" refer to special packing provisions for large packagings that have additionally to be met. These are to be found in 4.1.4.3, at the end of the relevant packing instruction (with the letters "LP") referred to in Column (8). If Column (9a) does not contain a code starting with the letter "L" or the letters "LL", none of the special packing provisions listed at the end of the relevant packing instruction apply.

Column (9b)	<p>"Mixed packing provisions"</p> <p>Contains the alphanumeric codes starting with the letters "MP" of the applicable mixed packing provisions. These are listed in 4.1.10 in numerical order. If Column (9b) does not contain a code starting with the letters "MP", only the general requirements apply (see 4.1.1.5 and 4.1.1.6).</p>
Column (10)	<p>"Portable tank and bulk container instructions"</p> <p>Contains an alphanumeric code assigned to a portable tank instruction, in accordance with 4.2.5.2.1 to 4.2.5.2.4 and 4.2.5.2.6. This portable tank instruction corresponds to the least stringent provisions that are acceptable for the carriage of the substance in portable tanks. The codes identifying the other portable tank instructions that are also permitted for the carriage of the substance are to be found in 4.2.5.2.5. If no code is given, carriage in portable tanks is not permitted unless a competent authority approval is granted as detailed in 6.7.1.3.</p> <p>The general requirements for the design, construction, equipment, type approval, testing and marking of portable tanks are to be found in Chapter 6.7. The general requirements for the use (e.g. filling) are to be found in 4.2.1 to 4.2.4.</p> <p><u>For fibre-reinforced plastic portable tanks, see Chapter 6.9.</u></p> <p>The indication of a "(M)" means that the substance may be carried in UN MEGCs.</p> <p><i>NOTE: Special provisions, indicated in Column (11), may change the above requirements.</i></p> <p>May also contain alphanumeric codes starting with the letters "BK" referring to types of bulk containers described in Chapter 6.11 which may be used for the carriage of bulk goods in accordance with 7.3.1.1 (a) and 7.3.2.</p>
Column (11)	<p>"Portable tank and bulk container special provisions"</p> <p>Contains the alphanumeric codes of the portable tank special provisions that have additionally to be met. These codes, starting with the letters "TP" refer to special provisions for the construction or use of these portable tanks. They are to be found in 4.2.5.3.</p> <p><i>NOTE: If technically relevant, these special provisions are not only applicable to the portable tanks specified in column (10), but also to the portable tanks that may be used according to the table in 4.2.5.2.5.</i></p>
Column (12)	<p>"Tank codes for ADR tanks"</p> <p>Contains an alphanumeric code describing a tank type, in accordance with 4.3.3.1.1 (for gases of Class 2) or 4.3.4.1.1 (for substances of Classes 3 to 9). This tank type corresponds to the least stringent tank provisions that are acceptable for the carriage of the relevant substance in ADR tanks. The codes describing the other permitted tank types are to be found in 4.3.3.1.2 (for gases of Class 2) or 4.3.4.1.2 (for substances of Classes 3 to 9). If no code is given, carriage in ADR tanks is not permitted.</p> <p>If in this column a tank code for solids (S) and for liquids (L) is indicated, this means that this substance may be offered for carriage in tanks in the solid or the liquid (molten) state. In general this provision is applicable to substances having melting points from 20 °C to 180 °C.</p> <p>If for a solid, only a tank code for liquids (L) is indicated in this column, this means that this substance is only offered for carriage in tanks in the liquid (molten) state.</p> <p>The general requirements for the construction, equipment, type approval, testing and marking that are not indicated in the tank code are to be found in 6.8.1, 6.8.2,</p>

6.8.3 and 6.8.5. The general requirements for the use (e.g. maximum degree of filling, minimum test pressure) are to be found in 4.3.1 to 4.3.4.

The indication of a "(M)" after the tank code means that the substance can also be carried in battery-vehicles or MEGCs.

The indication of a (+) after the tank code means that the alternative use of the tanks is permitted only where this is specified in the certificate of type approval.

For fibre-reinforced plastic tanks, see 4.4.1 and Chapter 6.913; for vacuum operated waste tanks, see 4.5.1 and Chapter 6.10.

NOTE: *Special provisions, indicated in Column (13), may change the above requirements.*

Column (13)	<p>"Special provisions for ADR tanks"</p> <p>Contains the alphanumeric codes of the special provisions for ADR tanks that have additionally to be met:</p> <ul style="list-style-type: none"> - Alphanumeric codes starting with the letters "TU" refer to special provisions for the use of these tanks. These are to be found in 4.3.5; - Alphanumeric codes starting with the letters "TC" refer to special provisions for the construction of these tanks. These are to be found in 6.8.4 (a); - Alphanumeric codes starting with the letters "TE" refer to special provisions concerning the items of equipment of these tanks. These are to be found in 6.8.4 (b); - Alphanumeric codes starting with the letters "TA" refer to special provisions for the type approval of these tanks. These are to be found in 6.8.4 (c); - Alphanumeric codes starting with the letters "TT" refer to special provisions for the testing of these tanks. These are to be found in 6.8.4 (d); - Alphanumeric codes starting with the letters "TM" refer to special provisions for the marking of these tanks. These are to be found in 6.8.4 (e). <p>NOTE: <i>If technically relevant, these special provisions are not only applicable to the tanks specified in column (12), but also to the tanks that may be used according to the hierarchies in 4.3.3.1.2 and 4.3.4.1.2.</i></p>
Column (14)	<p>"Vehicle for tank carriage"</p> <p>Contains a code designating the vehicle (including the drawing vehicle of trailers or semi-trailers) (see 9.1.1) to be used for the carriage of the substance in tank in accordance with 7.4.2. The requirements concerning the construction and approval of vehicles are to be found in Chapters 9.1, 9.2 and 9.7.</p>
Column (15)	<p>"Transport category / (Tunnel restriction code)"</p> <p>Contains at the top of the cell a figure indicating the transport category to which the substance or article is assigned for the purposes of exemption related to quantities carried per transport unit (see 1.1.3.6). When no transport category has been assigned, this is indicated by the mention "-".</p> <p>Contains at the bottom of the cell, between brackets, the tunnel restriction code that refers to the applicable restriction for the passage of vehicles carrying the substance or article through road tunnels. These are to be found in Chapter 8.6. When no tunnel restriction code has been assigned, this is indicated by the mention "(-)".</p>
Column (16)	<p>"Special provisions for carriage - Packages"</p>

Contains the alphanumeric code(s), starting with letter "V", of the applicable special provisions (if any) for carriage in packages. These are listed in 7.2.4. General provisions concerning the carriage in packages are to be found in Chapters 7.1 and 7.2.

***NOTE:** In addition, special provisions indicated in Column (18), concerning loading, unloading and handling, shall be observed.*

Column (17) "Special provisions for carriage - Bulk"

Contains the alphanumeric code(s), starting with letters "VC", as well as the alphanumeric code(s) starting with letters "AP", of the applicable provisions for carriage in bulk. These are listed in 7.3.3. If no special provision, identified by the code "VC" or a reference to a specific paragraph, explicitly authorizing this mode of carriage is indicated in this column, and no special provision, identified by the code "BK" or a reference to a specific paragraph, explicitly authorizing this mode of carriage is indicated in column (10), carriage in bulk is not permitted. General and additional provisions concerning carriage in bulk are to be found in Chapters 7.1 and 7.3.

***NOTE:** In addition, special provisions indicated in Column (18), concerning loading, unloading and handling, shall be observed.*

Column (18) "Special provisions for carriage – Loading, unloading and handling"

Contains the alphanumeric code(s), starting with letters "CV", of the applicable special provisions for loading, unloading and handling. These are listed in 7.5.11. If no code is given, only the general provisions apply (see 7.5.1 to 7.5.10).

Column (19) "Special provisions for carriage - Operation"

Contains the alphanumeric code(s), starting with letter "S", of the applicable special provisions for operation which are listed in Chapter 8.5. These provisions shall be applied in addition to the requirements of Chapters 8.1 to 8.4 but in the event of conflict with the requirements of Chapters 8.1 to 8.4, the special provisions shall take precedence.

Column (20) "Hazard identification number"

Contains a two or three figure number (preceded in certain cases by the letter "X") for substances and articles of classes 2 to 9, and for substances and articles of Class 1, the classification code (see column (3b)). In the cases described in 5.3.2.1, this number shall appear in the upper half of the orange-coloured plates. The meaning of the hazard identification numbers is explained in 5.3.2.3.

TABLE A
DANGEROUS GOODS LIST

[INSERT DANGEROUS GOODS LIST]

3.2.2

Table B: Alphabetic index of substances and articles of ADR

This index is an alphabetical list of the substances and articles which are listed in the UN numerical order in Table A of 3.2.1. It does not form an integral part of ADR. It has been submitted neither to the Working Party on the Transport of Dangerous Goods of the Inland Transport Committee for checking and approval nor to the Contracting Parties to ADR for formal acceptance. It has been prepared, with all necessary care by the Secretariat of the United Nations Economic Commission for Europe, in order to facilitate the consultation of Annexes A and B, but it cannot be relied upon as a substitute for the careful study and observance of the actual provisions of those annexes which, in case of conflict, are deemed to be authoritative.

NOTE 1: For the purpose of determining the alphabetical order the following information has been ignored, even when it forms part of the proper shipping name: numbers; Greek letters; the abbreviations "sec" and "tert"; the prefixes "cis" and "trans"; and the letters "N" (nitrogen), "n" (normal), "o" (ortho), "m" (meta), "p" (para) and "N.O.S." (not otherwise specified).

NOTE 2: The name of a substance or article in block capital letters indicates a proper shipping name (see 3.1.2).

NOTE 3: The name of a substance or article in block capital letters followed by the word "see" indicates an alternative proper shipping name or part of a proper shipping name (except for PCBs) (see 3.1.2.1).

NOTE 4: An entry in lower case letters followed by the word "see" indicates that the entry is not a proper shipping name; it is a synonym.

NOTE 5: Where an entry is partly in block capital letters and partly in lower case letters, the latter part is considered not to be part of the proper shipping name (see 3.1.2.1).

NOTE 6: A proper shipping name may be used in the singular or plural, as appropriate, for the purposes of documentation and package marking (see 3.1.2.3).

NOTE 7: For the exact determination of a proper shipping name, see 3.1.2.

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
Accumulators, electric, see	2794	8		Activated charcoal, see	1362	4.2	
	2795	8		ADHESIVES containing flammable liquid	1133	3	
	2800	8		ADIPONITRILE	2205	6.1	
	3028	8		ADSORBED GAS, FLAMMABLE, N.O.S.	3510	2	
	3292	4.3		ADSORBED GAS, N.O.S.	3511	2	
ACETAL	1088	3		ADSORBED GAS, OXIDIZING, N.O.S.	3513	2	
ACETALDEHYDE	1089	3		ADSORBED GAS, TOXIC, CORROSIVE, N.O.S.	3516	2	
ACETALDEHYDE AMMONIA	1841	9		ADSORBED GAS, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.	3517	2	
ACETALDEHYDE OXIME	2332	3		ADSORBED GAS, TOXIC, FLAMMABLE, N.O.S.	3514	2	
ACETIC ACID, GLACIAL	2789	8		ADSORBED GAS, TOXIC, N.O.S.	3512	2	
ACETIC ACID SOLUTION, more than 10 % but not more than 80 % acid, by mass	2790	8		ADSORBED GAS, TOXIC, OXIDIZING, CORROSIVE, N.O.S.	3518	2	
ACETIC ACID SOLUTION, more than 80 % acid, by mass	2789	8		ADSORBED GAS, TOXIC, OXIDIZING, N.O.S.	3515	2	
ACETIC ANHYDRIDE	1715	8		Aeroplane flares, see	0093	1	
Acetoin, see	2621	3			0403	1	
ACETONE	1090	3			0404	1	
ACETONE CYANOHYDRIN, STABILIZED	1541	6.1		AEROSOLS	1950	2	
ACETONE OILS	1091	3		AGENT, BLASTING, TYPE B	0331	1	
ACETONITRILE	1648	3		AGENT, BLASTING, TYPE E	0332	1	
ACETYL BROMIDE	1716	8		Air bag inflators, see	0503	1	
ACETYL CHLORIDE	1717	3			3268	9	
ACETYLENE, DISSOLVED	1001	2		Air bag modules, see	0503	1	
ACETYLENE, SOLVENT FREE	3374	2			3268	9	
Acetylene tetrabromide, see	2504	6.1		AIR, COMPRESSED	1002	2	
Acetylene tetrachloride, see	1702	6.1		Aircraft evacuation slides, see	2990	9	
ACETYL IODIDE	1898	8		AIRCRAFT HYDRAULIC POWER UNIT FUEL TANK (containing a mixture of anhydrous hydrazine and methylhydrazine) (M86 fuel)	3165	3	
ACETYL METHYL CARBINOL	2621	3		Aircraft survival kits, see	2990	9	
Acid butyl phosphate, see	1718	8		AIR, REFRIGERATED LIQUID	1003	2	
Acid mixture, hydrofluoric and sulphuric, see	1786	8		ALCOHOLATES SOLUTION, N.O.S., in alcohol	3274	3	
Acid mixture, nitrating acid, see	1796	8		Alcohol, denaturated, see	1986	3	
Acid mixture, spent, nitrating acid, see	1826	8			1987	3	
Acraldehyde, inhibited, see	1092	6.1		Alcohol, industrial, see	1986	3	
ACRIDINE	2713	6.1			1987	3	
ACROLEIN DIMER, STABILIZED	2607	3		ALCOHOLS, N.O.S.	1987	3	
ACROLEIN, STABILIZED	1092	6.1		ALCOHOLS, FLAMMABLE, TOXIC, N.O.S.	1986	3	
ACRYLAMIDE, SOLID	2074	6.1					
ACRYLAMIDE, SOLUTION	3426	6.1					
ACRYLIC ACID, STABILIZED	2218	8					
ACRYLONITRILE, STABILIZED	1093	3					
Actinolite, see	2212	9					
Activated carbon, see	1362	4.2					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
ALCOHOLIC BEVERAGES, with more than 24 % but not more than 70 % alcohol by volume	3065	3		ALKYLSULPHONIC ACIDS, LIQUID with not more than 5 % free sulphuric acid	2586	8	
ALCOHOLIC BEVERAGES, with more than 70 % alcohol by volume	3065	3		ALKYLSULPHONIC ACIDS, SOLID with more than 5 % free sulphuric acid	2583	8	
Aldehyde, see	1989	3		ALKYLSULPHONIC ACIDS, SOLID with not more than 5 % free sulphuric acid	2585	8	
ALDEHYDES, N.O.S.	1989	3		ALKYLSULPHURIC ACIDS	2571	8	
ALDEHYDES, FLAMMABLE, TOXIC, N.O.S.	1988	3		Allene, see	2200	2	
ALDOL	2839	6.1		ALLYL ACETATE	2333	3	
ALKALI METAL ALCOHOLATES, SELF-HEATING, CORROSIVE, N.O.S.	3206	4.2		ALLYL ALCOHOL	1098	6.1	
ALKALI METAL ALLOY, LIQUID, N.O.S.	1421	4.3		ALLYLAMINE	2334	6.1	
ALKALI METAL AMALGAM, LIQUID	1389	4.3		ALLYL BROMIDE	1099	3	
ALKALI METAL AMALGAM, SOLID	3401	4.3		ALLYL CHLORIDE	1100	3	
ALKALI METAL AMIDES	1390	4.3		Allyl chlorocarbonate, see	1722	6.1	
ALKALI METAL DISPERSION	1391	4.3		ALLYL CHLOROFORMATE	1722	6.1	
ALKALI METAL DISPERSION, FLAMMABLE	3482	4.3		ALLYL ETHYL ETHER	2335	3	
Alkaline corrosive battery fluid, see	2797	8		ALLYL FORMATE	2336	3	
ALKALINE EARTH METAL ALCOHOLATES, N.O.S.	3205	4.2		ALLYL GLYCIDYL ETHER	2219	3	
ALKALINE EARTH METAL ALLOY, N.O.S.	1393	4.3		ALLYL IODIDE	1723	3	
ALKALINE EARTH METAL AMALGAM, LIQUID	1392	4.3		ALLYL ISOTHIOCYANATE, STABILIZED	1545	6.1	
ALKALINE EARTH METAL AMALGAM, SOLID	3402	4.3		ALLYLTRICHLOROSILANE, STABILIZED	1724	8	
ALKALINE EARTH METAL DISPERSION	1391	4.3		Aluminium alkyls, see	3394	4.2	
ALKALINE EARTH METAL DISPERSION, FLAMMABLE	1391	4.3		Aluminium alkyl halides, liquid, see	3394	4.2	
ALKALOIDS, LIQUID, N.O.S.	3140	6.1		Aluminium alkyl halides, solid, see	3393	4.2	
ALKALOIDS, SOLID, N.O.S.	1544	6.1		Aluminium alkyl hydrides, see	3394	4.2	
ALKALOID SALTS, LIQUID, N.O.S.	3140	6.1		ALUMINIUM BOROXYDRIDE	2870	4.2	
ALKALOID SALTS, SOLID, N.O.S.	1544	6.1		ALUMINIUM BOROXYDRIDE IN DEVICES	2870	4.2	
Alkyl aluminium halides, see	3394	4.2		ALUMINIUM BROMIDE, ANHYDROUS	1725	8	
ALKYLPHENOLS, LIQUID, N.O.S. (including C ₂ -C ₁₂ homologues)	3145	8		ALUMINIUM BROMIDE SOLUTION	2580	8	
ALKYLPHENOLS, SOLID, N.O.S. (including C ₂ -C ₁₂ homologues)	2430	8		ALUMINIUM CARBIDE	1394	4.3	
ALKYLSULPHONIC ACIDS, LIQUID with more than 5 % free sulphuric acid	2584	8		ALUMINIUM CHLORIDE, ANHYDROUS	1726	8	
				ALUMINIUM CHLORIDE SOLUTION	2581	8	
				Aluminium dross, see	3170	4.3	
				ALUMINIUM FERROSILICON POWDER	1395	4.3	
				ALUMINIUM HYDRIDE	2463	4.3	
				ALUMINIUM NITRATE	1438	5.1	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
ALUMINIUM PHOSPHIDE	1397	4.3		AMMONIA SOLUTION, relative density less than 0.880 at 15 °C in water, with more than 35 % but not more than 50 % ammonia	2073	2	
ALUMINIUM PHOSPHIDE PESTICIDE	3048	6.1					
ALUMINIUM POWDER, COATED	1309	4.1		AMMONIA SOLUTION, relative density less than 0.880 at 15 °C in water, with more than 50 % ammonia	3318	2	
ALUMINIUM POWDER, UNCOATED	1396	4.3					
ALUMINIUM REMELTING BY-PRODUCTS	3170	4.3		AMMONIUM ARSENATE	1546	6.1	
ALUMINIUM RESINATE	2715	4.1		Ammonium bichromate, see	1439	5.1	
ALUMINIUM SILICON POWDER, UNCOATED	1398	4.3		Ammonium bifluoride solid, see	1727	8	
ALUMINIUM SMELTING BY-PRODUCTS	3170	4.3		Ammonium bifluoride solution, see	2817	8	
Amatols, see	0082	1		Ammonium bisulphate, see	2506	8	
AMINES, FLAMMABLE, CORROSIVE, N.O.S.	2733	3		Ammonium bisulphite solution, see	2693	8	
AMINES, LIQUID, CORROSIVE, N.O.S.	2735	8		AMMONIUM DICHROMATE	1439	5.1	
AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.	2734	8		AMMONIUM DINITRO-o-CRESOLATE, SOLID	1843	6.1	
AMINES, SOLID, CORROSIVE, N.O.S.	3259	8		AMMONIUM DINITRO-o-CRESOLATE, SOLUTION	3424	6.1	
Aminobenzene, see	1547	6.1		AMMONIUM FLUORIDE	2505	6.1	
2-Aminobenzotrifluoride, see	2942	6.1		AMMONIUM FLUORO-SILICATE	2854	6.1	
3-Aminobenzotrifluoride, see	2948	6.1		Ammonium hexafluorosilicate, see	2854	6.1	
Aminobutane, see	1125	3		AMMONIUM HYDROGENDIFLUORIDE, SOLID	1727	8	
2-AMINO-4-CHLOROPHENOL	2673	6.1		AMMONIUM HYDROGENDIFLUORIDE SOLUTION	2817	8	
2-AMINO-5-DIETHYL-AMINOPENTANE	2946	6.1		AMMONIUM HYDROGEN SULPHATE	2506	8	
2-AMINO-4,6-DINITROPHENOL, WETTED with not less than 20 % water, by mass	3317	4.1		Ammonium hydrosulphide solution (treat as ammonium sulphide solution), see	2683	8	
2-(2-AMINOETHOXY) ETHANOL	3055	8		AMMONIUM METAVANADATE	2859	6.1	
N-AMINOETHYLPIPERAZINE	2815	8		AMMONIUM NITRATE	0222	1	
1-Amino-2-nitrobenzene, see	1661	6.1		AMMONIUM NITRATE with not more than 0.2 % combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance	1942	5.1	
1-Amino-3-nitrobenzene, see	1661	6.1					
1-Amino-4-nitrobenzene, see	1661	6.1		AMMONIUM NITRATE EMULSION, intermediate for blasting explosives, liquid	3375	5.1	
AMINOPHENOLS (o-, m-, p-)	2512	6.1		AMMONIUM NITRATE EMULSION, intermediate for blasting explosives, solid	3375	5.1	
AMINOPYRIDINES (o-, m-, p-)	2671	6.1		Ammonium nitrate explosive, see	0082	1	
AMMONIA, ANHYDROUS	1005	2			0331	1	
AMMONIA SOLUTION relative density between 0.880 and 0.957 at 15 °C in water, with more than 10 % but not more than 35 % ammonia	2672	8		AMMONIUM NITRATE BASED FERTILIZER	2067	5.1	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
AMMONIUM NITRATE BASED FERTILIZER	2071	9		Ammunition, incendiary (water-activated contrivances) with burster, expelling charge or propelling charge, see	0248 0249	1 1	
AMMONIUM NITRATE GEL, intermediate for blasting explosives, liquid	3375	5.1		AMMUNITION, INCENDIARY, WHITE PHOSPHORUS with burster, expelling charge or propelling charge	0243 0244	1 1	
AMMONIUM NITRATE GEL, intermediate for blasting explosives, solid	3375	5.1		Ammunition, industrial, see	0275 0276 0277 0278 0323 0381	1 1 1 1 1 1	
AMMONIUM NITRATE, LIQUID (hot concentrated solution), in a concentration of more than 80 % but not more than 93 %	2426	5.1		Ammunition, lachrymatory, see	0018 0019 0301 2017	1 1 1 1	
AMMONIUM NITRATE SUSPENSION, intermediate for blasting explosives, liquid	3375	5.1		AMMUNITION, PRACTICE	0362 0488	1 1	
AMMONIUM NITRATE SUSPENSION, intermediate for blasting explosives, solid	3375	5.1		AMMUNITION, PROOF	0363	1	
AMMONIUM PERCHLORATE	0402 1442	1 5.1		AMMUNITION, SMOKE with or without burster, expelling charge or propelling charge	0015 0016 0303	1 1 1	
Ammonium permanganate, see	1482	5.1		Ammunition, smoke (water-activated contrivances), white phosphorus with burster, expelling charge or propelling charge, see	0248	1	
AMMONIUM PERSULPHATE	1444	5.1		Ammunition, smoke (water-activated contrivances), without white phosphorus or phosphides with burster, expelling charge or propelling charge, see	0249	1	
AMMONIUM PICRATE dry or wetted with less than 10 % water, by mass	0004	1		AMMUNITION, SMOKE, WHITE PHOSPHORUS with burster, expelling charge or propelling charge	0245 0246	1 1	
AMMONIUM PICRATE, WETTED with not less than 10 % water, by mass	1310	4.1		Ammunition, sporting, see	0012 0328 0339 0417	1 1 1 1	
AMMONIUM POLYSULPHIDE SOLUTION	2818	8		AMMUNITION, TEAR-PRODUCING, NON-EXPLOSIVE without burster or expelling charge, non-fuzed	2017	6.1	
AMMONIUM POLYVANADATE	2861	6.1		AMMUNITION, TEAR-PRODUCING with burster, expelling charge or propelling charge	0018 0019 0301	1 1 1	
Ammonium silicofluoride, see	2854	6.1		AMMUNITION, TOXIC with burster, expelling charge or propelling charge	0020	1	Carriage prohibited
AMMONIUM SULPHIDE SOLUTION	2683	8					
Ammunition, blank, see	0014 0326 0327 0338 0413	1 1 1 1 1					
Ammunition, fixed	0005	1					
Ammunition, semi-fixed	0006	1					
Ammunition, separate loading, see	0007 0321 0348 0412	1 1 1 1					
AMMUNITION, ILLUMINATING with or without burster, expelling charge or propelling charge	0171 0254 0297	1 1 1					
AMMUNITION, INCENDIARY, liquid or gel, with burster, expelling charge or propelling charge	0247	1					
AMMUNITION, INCENDIARY with or without burster, expelling charge or propelling charge	0009 0010 0300	1 1 1					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
AMMUNITION, TOXIC with burster, expelling charge or propelling charge	0021	1	Carriage prohibited	ANTIMONY PENTACHLORIDE SOLUTION	1731	8	
Ammunition, toxic (water-activated contrivances) with burster, expelling charge or propelling charge, see	0248 0249	1 1		ANTIMONY PENTAFLUORIDE	1732	8	
AMMUNITION, TOXIC, NON-EXPLOSIVE without burster or expelling charge, non-fuzed	2016	6.1		Antimony perchloride, liquid, see	1730	8	
Amosite, see	2212	9		ANTIMONY POTASSIUM TARTRATE	1551	6.1	
Amphibole asbestos, see	2212	9		ANTIMONY POWDER	2871	6.1	
AMYL ACETATES	1104	3		ANTIMONY TRICHLORIDE	1733	8	
AMYL ACID PHOSPHATE	2819	8		A.n.t.u., see	1651	6.1	
Amyl aldehyde, see	2058	3		ARGON, COMPRESSED	1006	2	
AMYLAMINE	1106	3		ARGON, REFRIGERATED LIQUID	1951	2	
AMYL BUTYRATES	2620	3		Arsenates, n.o.s., see	1556 1557	6.1 6.1	
AMYL CHLORIDE	1107	3		ARSENIC	1558	6.1	
n-AMYLENE, see	1108	3		ARSENIC ACID, LIQUID	1553	6.1	
AMYL FORMATES	1109	3		ARSENIC ACID, SOLID	1554	6.1	
AMYL MERCAPTAN	1111	3		ARSENICAL DUST	1562	6.1	
n-AMYL METHYL KETONE	1110	3		Arsenical flue dust, see	1562	6.1	
AMYL NITRATE	1112	3		ARSENICAL PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	2760	3	
AMYL NITRITE	1113	3		ARSENICAL PESTICIDE, LIQUID, TOXIC	2994	6.1	
AMYLTRICHLOROSILANE	1728	8		ARSENICAL PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	2993	6.1	
Anaesthetic ether, see	1155	3		ARSENICAL PESTICIDE, SOLID, TOXIC	2759	6.1	
ANILINE	1547	6.1		ARSENIC BROMIDE	1555	6.1	
Aniline chloride, see	1548	6.1		Arsenic (III) bromide, see	1555	6.1	
ANILINE HYDROCHLORIDE	1548	6.1		Arsenic chloride, see	1560	6.1	
Aniline oil, see	1547	6.1		ARSENIC COMPOUND, LIQUID, N.O.S., inorganic, including: Arsenates, n.o.s., Arsenites, n.o.s.; and Arsenic sulphides, n.o.s.	1556	6.1	
Aniline salt, see	1548	6.1		ARSENIC COMPOUND, SOLID, N.O.S., inorganic, including: Arsenates, n.o.s.; Arsenites, n.o.s.; and Arsenic sulphides, n.o.s.	1557	6.1	
ANISIDINES	2431	6.1		Arsenic (III) oxide, see	1561	6.1	
ANISOLE	2222	3		Arsenic (V) oxide, see	1559	6.1	
ANISOYL CHLORIDE	1729	8		ARSENIC PENTOXIDE	1559	6.1	
Anthophyllite, see	2212	9		Arsenic sulphides, see	1556 1557	6.1 6.1	
Antimonous chloride, see	1733	8		ARSENIC TRICHLORIDE	1560	6.1	
ANTIMONY COMPOUND, INORGANIC, LIQUID, N.O.S.	3141	6.1		ARSENIC TRIOXIDE	1561	6.1	
ANTIMONY COMPOUND, INORGANIC, SOLID, N.O.S.	1549	6.1		Arsenious chloride, see	1560	6.1	
Antimony hydride, see	2676	2					
ANTIMONY LACTATE	1550	6.1					
Antimony (III) lactate, see	1550	6.1					
ANTIMONY PENTACHLORIDE, LIQUID	1730	8					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
Arsenites, n.o.s., see	1556	6.1		ARTICLES, EXPLOSIVE, N.O.S.	0349	1	
	1557	6.1			0350	1	
Arsenous chloride, see	1560	6.1			0351	1	
ARSINE	2188	2			0352	1	
ARSINE, ADSORBED	3522	2			0353	1	
ARTICLES CONTAINING A SUBSTANCE LIABLE TO SPONTANEOUS COMBUSTION, N.O.S.	3542	4.2			0354	1	
					0355	1	
ARTICLES CONTAINING A SUBSTANCE WHICH IN CONTACT WITH WATER EMITS FLAMMABLE GASES, N.O.S.	3543	4.3			0356	1	
					0462	1	
					0463	1	
					0464	1	
					0465	1	
					0466	1	
					0467	1	
					0468	1	
					0469	1	
ARTICLES CONTAINING CORROSIVE SUBSTANCE, N.O.S.	3547	8			0470	1	
					0471	1	
					0472	1	
ARTICLES CONTAINING FLAMMABLE GAS, N.O.S.	3537	2		ARTICLES, PRESSURIZED, HYDRAULIC (containing non-flammable gas)	3164	2	
ARTICLES CONTAINING FLAMMABLE LIQUID, N.O.S.	3540	3		ARTICLES, PRESSURIZED, PNEUMATIC (containing non-flammable gas)	3164	2	
ARTICLES CONTAINING FLAMMABLE SOLID, N.O.S.	3541	4.1		ARTICLES, PYROPHORIC	0380	1	
ARTICLES CONTAINING MISCELLANEOUS DANGEROUS GOODS, N.O.S.	3548	9		ARTICLES, PYROTECHNIC for technical purposes	0428	1	
					0429	1	
					0430	1	
ARTICLES CONTAINING NON-FLAMMABLE, NON TOXIC GAS, N.O.S.	3538	2			0431	1	
					0432	1	
ARTICLES CONTAINING ORGANIC PEROXIDE, N.O.S.	3545	5.2		ARYLSULPHONIC ACIDS, LIQUID with more than 5 % free sulphuric acid	2584	8	
ARTICLES CONTAINING OXIDIZING SUBSTANCE, N.O.S.	3544	5.1		ARYLSULPHONIC ACIDS, LIQUID with not more than 5 % free sulphuric acid	2586	8	
ARTICLES CONTAINING TOXIC GAS, N.O.S.	3539	2		ARYLSULPHONIC ACIDS, SOLID with more than 5 % free sulphuric acid	2583	8	
ARTICLES CONTAINING TOXIC SUBSTANCE, N.O.S.	3546	6.1		ARYLSULPHONIC ACIDS, SOLID with not more than 5 % free sulphuric acid	2585	8	
ARTICLES, EEI, see	0486	1		ASBESTOS, AMPHIBOLE	2212	9	
ARTICLES, EXPLOSIVE, EXTREMELY INSENSITIVE	0486	1		ASBESTOS, CHRYSOTILE	2590	9	
				Asphalt, with a flash-point above 60 °C, at or above its flash-point, see	3256	3	
				Asphalt, at or above 100 °C and below its flash-point, see	3257	9	
				Aviation regulated liquid, n.o.s.	3334	9	Not subject to ADR
				Aviation regulated solid, n.o.s.	3335	9	Not subject to ADR
				AZODICARBONAMIDE	3242	4.1	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
Bag charges, see	0242	1		BATTERY FLUID, ALKALI	2797	8	
	0279	1		BATTERY POWERED EQUIPMENT	3171	9	
	0414	1		BATTERY POWERED VEHICLE	3171	9	
Ballistite, see	0160	1		BENZALDEHYDE	1990	9	
	0161	1		BENZENE	1114	3	
Bangalore torpedoes, see	0136	1		BENZENESULPHONYL CHLORIDE	2225	8	
	0137	1		Benzenethiol, see	2337	6.1	
	0138	1		BENZIDINE	1885	6.1	
	0294	1		Benzol, see	1114	3	
BARIUM	1400	4.3		Benzolene, see	1268	3	
BARIUM ALLOYS, PYROPHORIC	1854	4.2		BENZONITRILE	2224	6.1	
BARIUM AZIDE, dry or wetted with less than 50 % water, by mass	0224	1		BENZOQUINONE	2587	6.1	
BARIUM AZIDE, WETTED with not less than 50 % water, by mass	1571	4.1		Benzosulphochloride, see	2225	8	
Barium binoxide, see	1449	5.1		BENZOTRICHLORIDE	2226	8	
BARIUM BROMATE	2719	5.1		BENZOTRIFLUORIDE	2338	3	
BARIUM CHLORATE, SOLID	1445	5.1		BENZOYL CHLORIDE	1736	8	
BARIUM CHLORATE, SOLUTION	3405	5.1		BENZYL BROMIDE	1737	6.1	
BARIUM COMPOUND, N.O.S.	1564	6.1		BENZYL CHLORIDE	1738	6.1	
BARIUM CYANIDE	1565	6.1		Benzyl chlorocarbonate, see	1739	8	
Barium dioxide, see	1449	5.1		BENZYL CHLOROFORMATE	1739	8	
BARIUM HYPOCHLORITE with more than 22 % available chlorine	2741	5.1		Benzyl cyanide, see	2470	6.1	
BARIUM NITRATE	1446	5.1		BENZYLDIMETHYLAMINE	2619	8	
BARIUM OXIDE	1884	6.1		BENZYLIDENE CHLORIDE	1886	6.1	
BARIUM PERCHLORATE, SOLID	1447	5.1		BENZYL IODIDE	2653	6.1	
BARIUM PERCHLORATE, SOLUTION	3406	5.1		BERYLLIUM COMPOUND, N.O.S.	1566	6.1	
BARIUM PERMANGANATE	1448	5.1		BERYLLIUM NITRATE	2464	5.1	
BARIUM PEROXIDE	1449	5.1		BERYLLIUM POWDER	1567	6.1	
Barium selenate, see	2630	6.1		Bhusa	1327	4.1	Not subject to ADR
Barium selenite, see	2630	6.1		BICYCLO[2.2.1]HEPTA-2,5-DIENE, STABILIZED	2251	3	
Barium superoxide, see	1449	5.1		Bifluorides, n.o.s., see	1740	8	
BATTERIES, CONTAINING SODIUM	3292	4.3		BIOLOGICAL SUBSTANCE, CATEGORY B	3373	6.2	
BATTERIES, DRY, CONTAINING POTASSIUM HYDROXIDE SOLID, electric storage	3028	8		(BIO) MEDICAL WASTE, N.O.S.	3291	6.2	
Batteries, nickel-metal hydride	3496	9	Not subject to ADR	BIPYRIDILIUM PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	2782	3	
BATTERIES, WET, FILLED WITH ACID, electric storage	2794	8		BIPYRIDILIUM PESTICIDE, LIQUID, TOXIC	3016	6.1	
BATTERIES, WET, FILLED WITH ALKALI, electric storage	2795	8		BIPYRIDILIUM PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	3015	6.1	
BATTERIES, WET, NON-SPILLABLE, electric storage	2800	8					
BATTERY FLUID, ACID	2796	8					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
BIPYRIDILIUM PESTICIDE, SOLID, TOXIC	2781	6.1		BORON TRIFLUORIDE ACETIC ACID COMPLEX, SOLID	3419	8	
BISULPHATES, AQUEOUS SOLUTION	2837	8		BORON TRIFLUORIDE	1008	2	
BISULPHITES, AQUEOUS SOLUTION, N.O.S.	2693	8		BORON TRIFLUORIDE, ADSORBED	3519	2	
Bitumen, with a flash-point above 60 °C, at or above its flash-point, see	3256	3		BORON TRIFLUORIDE DIETHYL ETHERATE	2604	8	
Bitumen, at or above 100 °C and below its flash-point, see	3257	9		BORON TRIFLUORIDE DIHYDRATE	2851	8	
BLACK POWDER, COMPRESSED	0028	1		BORON TRIFLUORIDE DIMETHYL ETHERATE	2965	4.3	
BLACK POWDER, granular or as a meal	0027	1		BORON TRIFLUORIDE PROPIONIC ACID COMPLEX, LIQUID	1743	8	
BLACK POWDER, IN PELLETS	0028	1		BORON TRIFLUORIDE PROPIONIC ACID COMPLEX, SOLID	3420	8	
Blasting cap assemblies, see	0360	1		BROMATES, INORGANIC, N.O.S.	1450	5.1	
	0361	1		BROMATES, INORGANIC, AQUEOUS SOLUTION, N.O.S	3213	5.1	
Blasting caps, electric, see	0030	1		BROMINE	1744	8	
	0255	1		BROMINE CHLORIDE	2901	2	
	0456	1		BROMINE PENTAFLUORIDE	1745	5.1	
Blasting caps, non electric, see	0029	1		BROMINE SOLUTION	1744	8	
	0267	1		BROMINE TRIFLUORIDE	1746	5.1	
	0455	1		BROMOACETIC ACID, SOLID	3425	8	
Bleaching powder, see	2208	5.1		BROMOACETIC ACID, SOLUTION	1938	8	
BOMBS with bursting charge	0033	1		BROMOACETONE	1569	6.1	
	0034	1		omega-Bromoacetone, see	2645	6.4	
	0035	1		BROMOACETYL BROMIDE	2513	8	
	0291	1		BROMOBENZENE	2514	3	
Bombs, illuminating, see	0254	1		BROMOBENZYL CYANIDES, LIQUID	1694	6.1	
BOMBS, PHOTO-FLASH	0037	1		BROMOBENZYL CYANIDES, SOLID	3449	6.1	
	0038	1		1-BROMOBUTANE	1126	3	
	0039	1		2-BROMOBUTANE	2339	3	
	0299	1		BROMOCHLOROMETHANE	1887	6.1	
BOMBS, SMOKE, NON-EXPLOSIVE with corrosive liquid, without initiating device	2028	8		1-BROMO-3-CHLOROPROPANE	2688	6.1	
Bombs, target identification, see	0171	1		1-Bromo-2,3-epoxypropane, see	2558	6.1	
	0254	1		Bromoethane, see	1891	6.1	
	0297	1		2-BROMOETHYL ETHYL ETHER	2340	3	
BOMBS WITH FLAMMABLE LIQUID with bursting charge	0399	1		BROMOFORM	2515	6.1	
	0400	1		Bromomethane, see	1062	2	
BOOSTERS WITH DETONATOR	0225	1		1-BROMO-3-METHYLBUTANE	2341	3	
	0268	1		BROMOMETHYLPROPANES	2342	3	
BOOSTERS without detonator	0042	1					
	0283	1					
Borate and chlorate mixture, see	1458	5.1					
BORNEOL	1312	4.1					
BORON TRIBROMIDE	2692	8					
BORON TRICHLORIDE	1741	2					
BORON TRIFLUORIDE ACETIC ACID COMPLEX, LIQUID	1742	8					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
2-BROMO-2-NITROPROPANE-1,3-DIOL	3241	4.1		tert-BUTYLCYCLOHEXYL CHLOROFORMATE	2747	6.1	
2-BROMOPENTANE	2343	3		BUTYLENES MIXTURE or 1-BUTYLENE or CIS-2-BUTYLENE or TRANS-2-BUTYLENE	1012	2	
BROMOPROPANES	2344	3		1-butylene, see	1012	2	
3-BROMOPROPYNE	2345	3		cis-2-butylene, see	1012	2	
BROMOTRIFLUOROETHYLENE	2419	2		trans-2-butylene, see	1012	2	
BROMOTRIFLUOROMETHANE	1009	2		Butylenes mixture, see	1012	2	
BRUCINE	1570	6.1		1,2-BUTYLENE OXIDE, STABILIZED	3022	3	
BURSTERS, explosive	0043	1		Butyl ethers, see	1149	3	
BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED, containing more than 40% butadienes	1010	2		Butyl ethyl ether, see	1179	3	
BUTADIENES, STABILIZED, (1,2-butadiene)	1010	2		n-BUTYL FORMATE	1128	3	
BUTADIENES, STABILIZED, (1,3-butadiene)	1010	2		tert-BUTYL HYPOCHLORITE	3255	4.2	Carriage prohibited
BUTANE	1011	2		N,n-BUTYLIMIDAZOLE	2690	6.1	
BUTANEDIONE	2346	3		N,n-Butyliminazole, see	2690	6.1	
Butane-1-thiol, see	2347	3		n-BUTYL ISOCYANATE	2485	6.1	
BUTANOLS	1120	3		tert-BUTYL ISOCYANATE	2484	6.1	
1-Butanol, see	1120	3		Butyl lithium, see	3394	4.2	
Butan-2-ol, see	1120	3		BUTYL MERCAPTAN	2347	3	
Butanol, secondary, see	1120	3		n-BUTYL METHACRYLATE, STABILIZED	2227	3	
Butanol, tertiary, see	1120	3		BUTYL METHYL ETHER	2350	3	
Butanone, see	1193	3		BUTYL NITRITES	2351	3	
2-Butenal, see	1143	6.1		Butylphenols, liquid, see	3145	8	
Butene, see	1012	2		Butylphenols, solid, see	2430	8	
Bute-1-ene-3-one, see	1251	3		BUTYL PROPIONATES	1914	3	
1,2-Buteneoxide, see	3022	3		p-tert-Butyltoluene, see	2667	6.1	
2-Buten-1-ol, see	2614	3		BUTYLTOLUENES	2667	6.1	
BUTYL ACETATES	1123	3		BUTYLTRICHLOROSILANE	1747	8	
Butyl acetate, secondary, see	1123	3		5-tert-BUTYL-2,4,6-TRINITRO-m-XYLENE	2956	4.1	
BUTYL ACID PHOSPHATE	1718	8		BUTYL VINYL ETHER, STABILIZED	2352	3	
BUTYL ACRYLATES, STABILIZED	2348	3		But-1-yne, see	2452	2	
Butyl alcohols, see	1120	3		1,4-BUTYNEDIOL	2716	6.1	
n-BUTYLAMINE	1125	3		2-Butyne-1,4-diol, see	2716	6.1	
N-BUTYLANILINE	2738	6.1		BUTYRALDEHYDE	1129	3	
sec-Butyl benzene, see	2709	3		BUTYRALDOXIME	2840	3	
BUTYLBENZENES	2709	3		BUTYRIC ACID	2820	8	
n-Butyl bromide, see	1126	3		BUTYRIC ANHYDRIDE	2739	8	
n-Butyl chloride, see	1127	3		Butyrone, see	2710	3	
n-BUTYL CHLOROFORMATE	2743	6.1		BUTYRONITRILE	2411	3	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
Butyryl chloride, see	2353	3		CALCIUM HYPOCHLORITE, HYDRATED MIXTURE, CORROSIVE with not less than 5.5 % but not more than 16 % water	3487	5.1	
BUTYRYL CHLORIDE	2353	3					
Cable cutters, explosive, see	0070	1					
CACODYLIC ACID	1572	6.1		CALCIUM HYPOCHLORITE MIXTURE, DRY with more than 10 % but not more than 39 % available chlorine	2208	5.1	
CADMIUM COMPOUND	2570	6.1					
CAESIUM	1407	4.3		CALCIUM HYPOCHLORITE MIXTURE, DRY with more than 39 % available chlorine (8.8 % available oxygen)	1748	5.1	
CAESIUM HYDROXIDE	2682	8					
CAESIUM HYDROXIDE SOLUTION	2681	8					
CAESIUM NITRATE	1451	5.1		CALCIUM HYPOCHLORITE MIXTURE, DRY, CORROSIVE with more than 10 % but not more than 39 % available chlorine	3486	5.1	
Caffeine, see	1544	6.1					
Cajeputene, see	2052	3					
CALCIUM	1401	4.3		CALCIUM HYPOCHLORITE MIXTURE, DRY, CORROSIVE with more than 39 % available chlorine (8.8 % available oxygen)	3485	5.1	
CALCIUM ALLOYS, PYROPHORIC	1855	4.2					
CALCIUM ARSENATE	1573	6.1		CALCIUM MANGANESE SILICON	2844	4.3	
CALCIUM ARSENATE AND CALCIUM ARSENITE MIXTURE, SOLID	1574	6.1					
Calcium bisulphite solution, see	2693	8		CALCIUM NITRATE	1454	5.1	
CALCIUM CARBIDE	1402	4.3		Calcium oxide	1910	8	Not subject to ADR
CALCIUM CHLORATE	1452	5.1					
CALCIUM CHLORATE, AQUEOUS SOLUTION	2429	5.1		CALCIUM PERCHLORATE	1455	5.1	
CALCIUM CHLORITE	1453	5.1		CALCIUM PERMANGANATE	1456	5.1	
CALCIUM CYANAMIDE with more than 0.1 % calcium carbide	1403	4.3		CALCIUM PEROXIDE	1457	5.1	
CALCIUM CYANIDE	1575	6.1		CALCIUM PHOSPHIDE	1360	4.3	
CALCIUM DITHIONITE	1923	4.2		CALCIUM, PYROPHORIC	1855	4.2	
CALCIUM HYDRIDE	1404	4.3		CALCIUM RESINATE	1313	4.1	
CALCIUM HYDROSULPHITE, see	1923	4.2		CALCIUM RESINATE, FUSED	1314	4.1	
CALCIUM HYPOCHLORITE, DRY with more than 39 % available chlorine (8.8 % available oxygen)	1748	5.1		Calcium selenate, see	2630	6.1	
CALCIUM HYPOCHLORITE, DRY, CORROSIVE with more than 39 % available chlorine (8.8 % available oxygen)	3485	5.1		CALCIUM SILICIDE	1405	4.3	
CALCIUM HYPOCHLORITE, HYDRATED with not less than 5.5 % but not more than 16 % water	2880	5.1		Calcium silicon, see	1405	4.3	
CALCIUM HYPOCHLORITE, HYDRATED MIXTURE with not less than 5.5 % but not more than 16 % water	2880	5.1		Calcium superoxide, see	1457	5.1	
CALCIUM HYPOCHLORITE, HYDRATED, CORROSIVE with not less than 5.5 % but not more than 16 % water	3487	5.1		CAPACITOR, ASYMMETRIC, (with an energy storage capacity greater than 0.3Wh)	3508	9	
				CAPACITOR, ELECTRIC DOUBLE LAYER (with an energy storage capacity greater than 0.3 Wh)	3499	9	
				Camphanone, see	2717	4.1	
				CAMPBOR OIL	1130	3	
				CAMPBOR, synthetic	2717	4.1	
				CAPROIC ACID	2829	8	
				CARBAMATE PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	2758	3	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
CARBAMATE PESTICIDE, LIQUID, TOXIC	2992	6.1		CARTRIDGES FOR WEAPONS with bursting charge	0005 0006 0007	1	
CARBAMATE PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	2991	6.1			0321 0348 0412	1	
CARBAMATE PESTICIDE, SOLID, TOXIC	2757	6.1		CARTRIDGES FOR WEAPONS, BLANK	0014 0326 0327	1	
Carbolic acid, see	1671 2312 2821	6.1 6.1 6.1			0338 0413	1	
CARBON, animal or vegetable origin	1361	4.2		CARTRIDGES FOR WEAPONS, INERT PROJECTILE	0012 0328 0339 0417	1	
CARBON, ACTIVATED	1362	4.2					
Carbon bisulphide, see	1131	3		Cartridges, illuminating, see	0171 0254 0297	1	
Carbon black (animal or vegetable origin), see	1361	4.2					
CARBON DIOXIDE	1013	2		CARTRIDGES, OIL WELL	0277 0278	1	
Carbon dioxide and ethylene oxide mixture, see	1041 1952 3300	2 2 2		CARTRIDGES, POWER DEVICE	0275 0276 0323 0381	1	
CARBON DIOXIDE, REFRIGERATED LIQUID	2187	2					
Carbon dioxide, solid	1845	9	Not subject to ADR except for when used as a coolant, see 5.5.3	CARTRIDGES, SIGNAL	0054 0312 0405	1	
				CARTRIDGES, SMALL ARMS	0012 0339 0417	1	
CARBON DISULPHIDE	1131	3		CARTRIDGES, SMALL ARMS, BLANK	0014 0327 0338	1	
Carbonic anhydride, see	1013 1845 2187	2 9 2		Cartridges, starter, jet engine, see	0275 0276 0323 0381	1	
CARBON MONOXIDE, COMPRESSED	1016	2					
Carbon oxysulphide, see	2204	2.3		CASES, CARTRIDGE, EMPTY, WITH PRIMER	0055 0379	1	
CARBON TETRABROMIDE	2516	6.1		CASES, COMBUSTIBLE, EMPTY, WITHOUT PRIMER	0446 0447	1	
CARBON TETRACHLORIDE	1846	6.1		Casinghead gasoline, see	1203	3	
Carbonyl chloride, see	1076	2		CASTOR BEANS	2969	9	
CARBONYL FLUORIDE	2417	2		CASTOR FLAKE	2969	9	
CARBONYL SULPHIDE	2204	2		CASTOR MEAL	2969	9	
Cartridge cases, empty, primed, see	0055 0379	1 1		CASTOR POMACE	2969	9	
Cartridges, actuating, for fire extinguisher or apparatus valve, see	0275 0276 0323 0381	1 1 1 1		CAUSTIC ALKALI LIQUID, N.O.S.	1719	8	
Cartridges, explosive, see	0048	1		Caustic potash, see	1814	8	
CARTRIDGES, FLASH	0049 0050	1 1		Caustic soda, see	1824	8	
CARTRIDGES FOR TOOLS, BLANK	0014	1		Caustic soda liquor, see	1824	8	
				CELLS, CONTAINING SODIUM	3292	4.3	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
CELLULOID in block, rods, rolls, sheets, tubes, etc., except scrap	2000	4.1		CHEMICAL UNDER PRESSURE, TOXIC, N.O.S.	3502	2	
CELLULOID, SCRAP	2002	4.2		Chile saltpetre, see	1498	5.1	
Cement, see	1133	3		CHLORAL, ANHYDROUS, STABILIZED	2075	6.1	
CERIUM, slabs, ingots or rods	1333	4.1		CHLORATE AND BORATE MIXTURE	1458	5.1	
CERIUM, turnings or gritty powder	3078	4.3		CHLORATE AND MAGNESIUM CHLORIDE MIXTURE, SOLID	1459	5.1	
Cer mishmetall, see	1323	4.1		CHLORATE AND MAGNESIUM CHLORIDE MIXTURE, SOLUTION	3407	5.1	
Charcoal, activated, see	1362	4.1		CHLORATES, INORGANIC, N.O.S.	1461	5.1	
Charcoal, non-activated, see	1361	4.2		CHLORATES, INORGANIC, AQUEOUS SOLUTION, N.O.S.	3210	5.1	
CHARGES, BURSTING, PLASTICS BONDED	0457 0458 0459 0460	1 1 1 1		CHLORIC ACID, AQUEOUS SOLUTION with not more than 10 % chloric acid	2626	5.1	
CHARGES, DEMOLITION	0048	1		CHLORINE	1017	2	
CHARGES, DEPTH	0056	1		CHLORINE, ADSORBED	3520	2	
Charges, expelling, explosive, for fire extinguishers, see	0275 0276 0323 0381	1 1 1 1		CHLORINE PENTAFLUORIDE	2548	2	
CHARGES, EXPLOSIVE, COMMERCIAL without detonator	0442 0443 0444 0445	1 1 1 1		CHLORINE TRIFLUORIDE	1749	2	
CHARGES, PROPELLING	0271 0272 0415 0491	1 1 1 1		CHLORITES, INORGANIC, N.O.S.	1462	5.1	
CHARGES, PROPELLING, FOR CANNON	0242 0279 0414	1 1 1		CHLORITE SOLUTION	1908	8	
CHARGES, SHAPED, FLEXIBLE, LINEAR	0237 0288	1 1		Chloroacetaldehyde, see	2232	6.1	
CHARGES, SHAPED, without detonator	0059 0439 0440 0441	1 1 1 1		CHLOROACETIC ACID, MOLTEN	3250	6.1	
CHARGES, SUPPLEMENTARY, EXPLOSIVE	0060	1		CHLOROACETIC ACID, SOLID	1751	6.1	
CHEMICAL KIT	3316	9		CHLOROACETIC ACID SOLUTION	1750	6.1	
CHEMICAL SAMPLE, TOXIC	3315	6.1		CHLOROACETONE, STABILIZED	1695	6.1	
CHEMICAL UNDER PRESSURE, N.O.S.	3500	2		CHLOROACETONITRILE	2668	6.1	
CHEMICAL UNDER PRESSURE, CORROSIVE, N.O.S.	3503	2		CHLOROACETOPHENONE, LIQUID	3416	6.1	
CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S.	3501	2		CHLOROACETOPHENONE, SOLID	1697	6.1	
CHEMICAL UNDER PRESSURE, FLAMMABLE, CORROSIVE, N.O.S.	3505	2		CHLOROACETYL CHLORIDE	1752	6.1	
CHEMICAL UNDER PRESSURE, FLAMMABLE, TOXIC, N.O.S.	3504	2		CHLOROANILINES, LIQUID	2019	6.1	
				CHLOROANILINES, SOLID	2018	6.1	
				CHLOROANISIDINES	2233	6.1	
				CHLOROBENZENE	1134	3	
				CHLOROBENZO-TRIFLUORIDES	2234	3	
				CHLOROBENZYL CHLORIDES, LIQUID	2235	6.1	
				CHLOROBENZYL CHLORIDES, SOLID	3427	6.1	
				1-Chloro-3-bromopropane, see	2688	6.1	
				1-Chlorobutane, see	1127	3	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
2-Chlorobutane, see	1127	3		CHLORONITROBENZENES SOLID	1578	6.1	
CHLOROBUTANES	1127	3		CHLORONITROTOLUENES, LIQUID	2433	6.1	
CHLOROCRESOLS, SOLUTION	2669	6.1		CHLORONITROTOLUENES, SOLID	3457	6.1	
CHLOROCRESOLS, SOLID	3437	6.1		CHLOROPENTAFLUORO- ETHANE	1020	2	
CHLORODIFLUORO- BROMOMETHANE	1974	2		CHLOROPHENOLATES, LIQUID	2904	8	
1-CHLORO-1,1-DIFLUORO- ETHANE	2517	2		CHLOROPHENOLATES, SOLID	2905	8	
CHLORODIFLUOROMETHANE	1018	2		CHLOROPHENOLS, LIQUID	2021	6.1	
CHLORODIFLUOROMETHANE AND CHLORO- PENTAFLUOROETHANE MIXTURE with fixed boiling point, with approximately 49 % chlorodifluoromethane	1973	2		CHLOROPHENOLS, SOLID	2020	6.1	
3-Chloro-1,2-dihydroxypropane, see	2689	6.1		CHLOROPHENYL- TRICHLOROSILANE	1753	8	
Chlorodimethyl ether, see	1239	6.1		CHLOROPICRIN	1580	6.1	
CHLORODINITROBENZENES, LIQUID	1577	6.1		CHLOROPICRIN AND METHYL BROMIDE MIXTURE, with more than 2 % chloropicrin	1581	2	
CHLORODINITROBENZENES, SOLID	3441	6.1		CHLOROPICRIN AND METHYL CHLORIDE MIXTURE	1582	2	
2-CHLOROETHANAL	2232	6.1		CHLOROPICRIN MIXTURE, N.O.S.	1583	6.1	
Chloroethane, see	1037	2		CHLOROPLATINIC ACID, SOLID	2507	8	
Chloroethane nitrile, see	2668	6.1		CHLOROPRENE, STABILIZED	1991	3	
2-Chloroethanol, see	1135	6.1		1-CHLOROPROPANE	1278	3	
CHLOROFORM	1888	6.1		2-CHLOROPROPANE	2356	3	
CHLOROFORMATES, TOXIC, CORROSIVE, N.O.S.	3277	6.1		3-Chloro-propanediol-1,2, see	2689	6.1	
CHLOROFORMATES, TOXIC, CORROSIVE, FLAMMABLE, N.O.S.	2742	6.1		3-CHLOROPROPANOL-1	2849	6.1	
Chloromethane, see	1063	2		2-CHLOROPROPENE	2456	3	
1-Chloro-3-methylbutane, see	1107	3		3-Chloropropene, see	1100	3	
2-Chloro-2-methylbutane, see	1107	3		3-Chloroprop-1-ene, see	1100	3	
CHLOROMETHYL CHLOROFORMATE	2745	6.1		2-CHLOROPROPIONIC ACID	2511	8	
Chloromethyl cyanide, see	2668	6.1		2-CHLOROPYRIDINE	2822	6.1	
CHLOROMETHYL ETHYL ETHER	2354	3		CHLOROSILANES, CORROSIVE, N.O.S.	2987	8	
Chloromethyl methyl ether, see	1239	6.1		CHLOROSILANES, CORROSIVE, FLAMMABLE, N.O.S.	2986	8	
3-CHLORO-4-METHYLPHENYL ISOCYANATE, LIQUID	2236	6.1		CHLOROSILANES, FLAMMABLE, CORROSIVE, N.O.S.	2985	3	
3-CHLORO-4-METHYLPHENYL ISOCYANATE, SOLID	3428	6.1		CHLOROSILANES, TOXIC, CORROSIVE, N.O.S.	3361	6.1	
3-Chloro-2-methylprop-1-ene, see	2554	3		CHLOROSILANES, TOXIC, CORROSIVE, FLAMMABLE, N.O.S.	3362	6.1	
CHLORONITROANILINES	2237	6.1					
CHLORONITROBENZENES LIQUID	3409	6.1					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
CHLOROSILANES, WATER-REACTIVE, FLAMMABLE, CORROSIVE, N.O.S.	2988	4.3		Coal tar oil, see	1136	3	
CHLOROSULPHONIC ACID (with or without sulphur trioxide)	1754	8		COATING SOLUTION (includes surface treatments or coatings used for industrial or other purposes such as vehicle under coating, drum or barrel lining)	1139	3	
1-CHLORO-1,2,2,2-TETRA-FLUOROETHANE	1021	2		COBALT DIHYDROXIDE POWDER, containing not less than 10 % respirable particles	3550	6.1	
CHLOROTOLUENES	2238	3		COBALT NAPHTHENATES, POWDER	2001	4.1	
4-CHLORO-o-TOLUIDINE HYDROCHLORIDE, SOLID	1579	6.1		COBALT RESINATE, PRECIPITATED	1318	4.1	
4-CHLORO-o-TOLUIDINE HYDROCHLORIDE, SOLUTION	3410	6.1		Cocculus, see	3172	6.1	
CHLOROTOLUIDINES LIQUID	3429	6.1			3462	6.1	
CHLOROTOLUIDINES SOLID	3429	6.1		Collodion cottons, see	0340	1	
1-CHLORO-2,2,2-TRIFLUORO-ETHANE	1983	2			0341	1	
Chlorotrifluoroethylene, see	1082	2			0342	1	
CHLOROTRIFLUOROMETHANE	1022	2			2059	3	
CHLOROTRIFLUOROMETHANE AND TRIFLUOROMETHANE AZEOTROPIC MIXTURE with approximately 60 % chlorotrifluoromethane	2599	2			2555	4.1	
Chromic acid, solid, see	1463	5.1			2556	4.1	
CHROMIC ACID SOLUTION	1755	8			2557	4.1	
Chromic anhydride, solid, see	1463	5.1		COMPONENTS, EXPLOSIVE TRAIN, N.O.S.	0382	1	
CHROMIC FLUORIDE, SOLID	1756	8			0383	1	
CHROMIC FLUORIDE SOLUTION	1757	8			0384	1	
Chromic nitrate, see	2720	5.1			0461	1	
Chromium (VI) dichloride dioxide, see	1758	8		Composition B, see	0118	1	
Chromium (III) fluoride, solid, see	1756	8		COMPRESSED GAS, N.O.S.	1956	2	
CHROMIUM NITRATE	2720	5.1		COMPRESSED GAS, FLAMMABLE, N.O.S.	1954	2	
Chromium (III) nitrate, see	2720	5.1		COMPRESSED GAS, OXIDIZING, N.O.S.	3156	2	
CHROMIUM OXYCHLORIDE	1758	8		COMPRESSED GAS, TOXIC, N.O.S.	1955	2	
CHROMIUM TRIOXIDE, ANHYDROUS	1463	5.1		COMPRESSED GAS, TOXIC, CORROSIVE, N.O.S.	3304	2	
CHROMOSULPHURIC ACID	2240	8		COMPRESSED GAS, TOXIC, FLAMMABLE, N.O.S.	1953	2	
Chrysotile, see	2590	9		COMPRESSED GAS, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.	3305	2	
Cinene, see	2052	3		COMPRESSED GAS, TOXIC, OXIDIZING, N.O.S.	3306	2	
Cinnamene, see	2055	3		CONTRIVANCES, WATER-ACTIVATED with burster, expelling charge or propelling charge	0248	1	
Cinnamol, see	2055	3			0249	1	
CLINICAL WASTE, UNSPECIFIED, N.O.S.	3291	6.2		COPPER ACETOARSENITE	1585	6.1	
COAL GAS, COMPRESSED	1023	2		COPPER ARSENITE	1586	6.1	
COAL TAR DISTILLATES, FLAMMABLE	1136	3		Copper (II) arsenite, see	1586	6.1	
Coal tar naphtha, see	1268	3					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
COPPER BASED PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	2776	3		CORROSIVE SOLID, BASIC, INORGANIC, N.O.S.	3262	8	
COPPER BASED PESTICIDE, LIQUID, TOXIC	3010	6.1		CORROSIVE SOLID, BASIC, ORGANIC, N.O.S.	3263	8	
COPPER BASED PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	3009	6.1		CORROSIVE SOLID, FLAMMABLE, N.O.S.	2921	8	
COPPER BASED PESTICIDE, SOLID, TOXIC	2775	6.1		CORROSIVE SOLID, OXIDIZING, N.O.S.	3084	8	
COPPER CHLORATE	2721	5.1		CORROSIVE SOLID, SELF-HEATING, N.O.S.	3095	8	
Copper (II) chlorate, see	2721	5.1		CORROSIVE SOLID, TOXIC, N.O.S.	2923	8	
COPPER CHLORIDE	2802	8		CORROSIVE SOLID, WATER-REACTIVE, N.O.S.	3096	8	
COPPER CYANIDE	1587	6.1		COTTON WASTE, OILY	1364	4.2	
Copper selenate, see	2630	6.1		COTTON, WET	1365	4.2	
Copper selenite, see	2630	6.1		COUMARIN DERIVATIVE PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	3024	3	
COPRA	1363	4.2		CORD, DETONATING, flexible	0065	1	
CORD, DETONATING, metal clad	0102	1			0289	1	
CORD, DETONATING, MILD EFFECT, metal clad	0104	1		CORD, DETONATING, metal clad	0102	1	
CORD, IGNITER	0066	1			0290	1	
Cordite, see	0160	1		CORD, DETONATING, MILD EFFECT, metal clad	0104	1	
	0161	1		CORD, IGNITER	0066	1	
CORROSIVE LIQUID, N.O.S.	1760	8		Cordite, see	0160	1	
CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	3264	8			0161	1	
CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	3265	8		CORROSIVE LIQUID, N.O.S.	1760	8	
CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	3266	8		CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	3264	8	
CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.	3267	8		CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	3265	8	
CORROSIVE LIQUID, FLAMMABLE, N.O.S.	2920	8		CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	3266	8	
CORROSIVE LIQUID, OXIDIZING, N.O.S.	3093	8		CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.	3267	8	
CORROSIVE LIQUID, SELF-HEATING, N.O.S.	3301	8		CORROSIVE LIQUID, FLAMMABLE, N.O.S.	2920	8	
CORROSIVE LIQUID, TOXIC, N.O.S.	2922	8		CORROSIVE LIQUID, OXIDIZING, N.O.S.	3093	8	
CORROSIVE LIQUID, WATER-REACTIVE, N.O.S.	3094	8		CORROSIVE LIQUID, SELF-HEATING, N.O.S.	3301	8	
CORROSIVE SOLID, N.O.S.	1759	8		CORROSIVE LIQUID, TOXIC, N.O.S.	2922	8	
CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.	3260	8		CORROSIVE LIQUID, WATER-REACTIVE, N.O.S.	3094	8	
CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.	3261	8		CORROSIVE SOLID, N.O.S.	1759	8	
				CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.	3260	8	
				CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.	3261	8	
				CORROSIVE SOLID, BASIC, INORGANIC, N.O.S.	3262	8	
				CORROSIVE SOLID, BASIC, ORGANIC, N.O.S.	3263	8	
				CORROSIVE SOLID, FLAMMABLE, N.O.S.	2921	8	
				CORROSIVE SOLID, OXIDIZING, N.O.S.	3084	8	
				CORROSIVE SOLID, SELF-HEATING, N.O.S.	3095	8	
				CORROSIVE SOLID, TOXIC, N.O.S.	2923	8	
				CORROSIVE SOLID, WATER-REACTIVE, N.O.S.	3096	8	
				COTTON WASTE, OILY	1364	4.2	
				COTTON, WET	1365	4.2	
				COUMARIN DERIVATIVE PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	3024	3	
				COUMARIN DERIVATIVE PESTICIDE, LIQUID, TOXIC	3026	6.1	
				COUMARIN DERIVATIVE PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	3025	6.1	
				COUMARIN DERIVATIVE PESTICIDE, SOLID, TOXIC	3027	6.1	
				Creosote, see	2810	6.1	
				Creosote salts, see	1334	4.1	
				CRESOLS, LIQUID	2076	6.1	
				CRESOLS, SOLID	3455	6.1	
				CRESYLIC ACID	2022	6.1	
				Crocidolite, see	2212	9	
				CROTONALDEHYDE or CROTONALDEHYDE, STABILIZED	1143	6.1	
				CROTONIC ACID, LIQUID	3472	8	
				CROTONIC ACID, SOLID	2823	8	
				Crotonic aldehyde / Crotonic aldehyde, stabilized, see	1143	6.1	
				CROTONYLENE	1144	3	
				Crude naphtha, see	1268	3	
				Cumene, see	1918	3	
				Cupric chlorate, see	2721	5.1	
				CUPRIETHYLENEDIAMINE SOLUTION	1761	8	
				Cutback bitumen, with a flash-point not greater than 60 °C, see	1999	3	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
Cutback bitumen, with a flash-point above 60 °C, at or above its flash-point, see	3256	3		CYCLONITE AND CYCLOTETRAMETHYLENE-TETRANITRAMINE MIXTURE, WETTED with not less than 15 % water, by mass or DESENSITIZED with not less than 10 % phlegmatizer by mass, see	0391	1	
Cutback bitumen, at or above 100 °C and below its flash-point, see	3257	9		CYCLONITE, DESENSITIZED, see	0483	1	
CUTTERS, CABLE, EXPLOSIVE	0070	1		CYCLONITE, WETTED with not less than 15 % water, by mass, see	0072	1	
CYANIDE SOLUTION, N.O.S.	1935	6.1		CYCLOOCTADIENES	2520	3	
CYANIDES, INORGANIC, SOLID, N.O.S.	1588	6.1		CYCLOOCTADIENE	2940	4.2	
Cyanides, organic, flammable, toxic, n.o.s., see	3273	3		PHOSPHINES, see			
Cyanides, organic, toxic, n.o.s., see	3276	6.1		CYCLOOCTATETRAENE	2358	3	
	3439			CYCLOPENTANE	1146	3	
Cyanides, organic, toxic, flammable, n.o.s., see	3275	6.1		CYCLOPENTANOL	2244	3	
Cyanoacetonitrile, see	2647	6.1		CYCLOPENTANONE	2245	3	
CYANOGEN	1026	2		CYCLOPENTENE	2246	3	
CYANOGEN BROMIDE	1889	6.1		CYCLOPROPANE	1027	2	
CYANOGEN CHLORIDE, STABILIZED	1589	2		CYCLOTETRAMETHYLENE-TETRANITRAMINE, DESENSITIZED	0484	1	
CYANURIC CHLORIDE	2670	8		CYCLOTETRAMETHYLENE-TETRANITRAMINE, WETTED with not less than 15 % water, by mass	0226	1	
CYCLOBUTANE	2601	2		CYCLOTRIMETHYLENE-TRINITRAMINE AND CYCLOTETRAMETHYLENE-TETRANITRAMINE MIXTURE, DESENSITIZED with not less than 10 % phlegmatizer by mass	0391	1	
CYCLOBUTYL CHLOROFORMATE	2744	6.1		CYCLOTRIMETHYLENE-TRINITRAMINE AND CYCLOTETRAMETHYLENE-TETRANITRAMINE MIXTURE, WETTED with not less than 15 % water, by mass	0483	1	
1,5,9-CYCLODODECATRIENE	2518	6.1		CYCLOTRIMETHYLENE-TRINITRAMINE, DESENSITIZED	0072	1	
CYCLOHEPTANE	2241	3		CYMENES	2046	3	
CYCLOHEPTATRIENE	2603	3		Cymol, see	2046	3	
1,3,5-Cycloheptatriene, see	2603	3		Deanol, see	2051	8	
CYCLOHEPTENE	2242	3		DANGEROUS GOODS IN APPARATUS	3363	9	
1,4-Cyclohexadienedione, see	2587	6.1		DANGEROUS GOODS IN ARTICLES	3363	9	
CYCLOHEXANE	1145	3		DANGEROUS GOODS IN MACHINERY	3363	9	
Cyclohexanethiol, see	3054	3					
CYCLOHEXANONE	1915	3					
CYCLOHEXENE	2256	3					
CYCLOHEXENYLTRI-CHLOROSILANE	1762	8					
CYCLOHEXYL ACETATE	2243	3					
CYCLOHEXYLAMINE	2357	8					
CYCLOHEXYL ISOCYANATE	2488	6.1					
CYCLOHEXYL MERCAPTAN	3054	3					
CYCLOHEXYLTRICHLORO-SILANE	1763	8					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
DECABORANE	1868	4.1		DIBENZYLDICHLORO-SILANE	2434	8	
DECAHYDRONAPHTHALENE	1147	3		DIBORANE	1911	2	
Decalin, see	1147	3		1,2-DIBROMOBUTAN-3-ONE	2648	6.1	
n-DECANE	2247	3		DIBROMOCHLOROPROPANES	2872	6.1	
DEFLAGRATING METAL SALTS OF AROMATIC NITRODERIVATIVES, N.O.S.	0132	1		1,2-Dibromo-3-chloropropane, see	2872	6.1	
Depth charge, see	0056	1		DIBROMODIFLUOROMETHANE	1941	9	
DESENSITIZED EXPLOSIVE, LIQUID, N.O.S.	3379	3		DIBROMOMETHANE	2664	6.1	
DESENSITIZED EXPLOSIVE, SOLID, N.O.S.	3380	4.1		DI-n-BUTYLAMINE	2248	8	
Detonating relays, see	0029	1		DIBUTYLAMINOETHANOL	2873	6.1	
	0267	1		2-Dibutylaminoethanol, see	2873	6.1	
	0360	1		N,N-Di-n-butylaminoethanol, see	2873	6.1	
	0361	1		DIBUTYL ETHERS	1149	3	
	0455	1		DICHLOROACETIC ACID	1764	8	
	0500	1		1,3-DICHLOROACETONE	2649	6.1	
DETONATOR ASSEMBLIES, NON-ELECTRIC for blasting	0360	1		DICHLOROACETYL CHLORIDE	1765	8	
	0361	1		DICHLOROANILINES, LIQUID	1590	6.1	
	0500	1		DICHLOROANILINES, SOLID	3442	6.1	
DETONATORS FOR AMMUNITION	0073	1		o-DICHLOROBENZENE	1591	6.1	
	0364	1		2,2'-DICHLORODIETHYL ETHER	1916	6.1	
	0365	1		DICHLORODIFLUORO-METHANE	1028	2	
	0366	1		DICHLORODIFLUORO-METHANE AND DIFLUOROETHANE AZEOTROPIC MIXTURE with approximately 74 % dichlorodifluoromethane	2602	2	
DETONATORS, ELECTRIC for blasting	0030	1		Dichlorodifluoromethane and ethylene oxide mixture, see	3070	2	
	0255	1		DICHLORODIMETHYL ETHER, SYMMETRICAL	2249	6.1	Carriage prohibited
	0456	1		1,1-DICHLOROETHANE	2362	3	
DETONATORS, ELECTRONIC programmable for blasting	0511	1		1,2-Dichloroethane, see	1184	3	
	0512	1		1,2-DICHLOROETHYLENE	1150	3	
	0513	1		Di(2-chloroethyl) ether, see	1916	6.1	
DETONATORS, NON-ELECTRIC for blasting	0029	1		DICHLOROFLUOROMETHANE	1029	2	
	0267	1		alpha-Dichlorohydrin, see	2750	6.1	
	0455	1		DICHLOROISOCYANURIC ACID, DRY	2465	5.1	
DEUTERIUM, COMPRESSED	1957	2		DICHLOROISOCYANURIC ACID SALTS	2465	5.1	
DEVICES, SMALL, HYDROCARBON GAS POWERED with release device	3150	2		DICHLOROISOPROPYL ETHER	2490	6.1	
DIACETONE ALCOHOL	1148	3		DICHLOROMETHANE	1593	6.1	
DIALLYLAMINE	2359	3		1,1-DICHLORO-1-NITROETHANE	2650	6.1	
DIALLYL ETHER	2360	3		DICHLOROPENTANES	1152	3	
4,4'-DIAMINODIPHENYL-METHANE	2651	6.1					
1,2-Diaminoethane, see	1604	8					
Diaminopropylamine, see	2269	8					
DI-n-AMYLAMINE	2841	3					
DIAZODINITROPHENOL, WETTED with not less than 40 % water, or mixture of alcohol and water, by mass	0074	1					
Dibenzopyridine, see	2713	6.1					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
Dichlorophenol, see	2020	6.1		DIETHYL ETHER	1155	3	
	2021	6.1		N,N-DIETHYLETHYLENE-DIAMINE	2685	8	
DICHLOROPHENYL ISOCYANATES	2250	6.1		Di-(2-ethylhexyl) phosphoric acid, see	1902	8	
DICHLOROPHENYLTRI-CHLOROSILANE	1766	8		DIETHYL KETONE	1156	3	
1,2-DICHLOROPROPANE	1279	3		DIETHYL SULPHATE	1594	6.1	
1,3-DICHLOROPROPANOL-2	2750	6.1		DIETHYL SULPHIDE	2375	3	
1,3-Dichloro-2-propanone, see	2649	6.1		DIETHYLTHIOPHOSPHORYL CHLORIDE	2751	8	
DICHLOROPROPENES	2047	3		Diethylzinc, see	3394	4.2	
DICHLOROSILANE	2189	2		2,4-Difluoroaniline, see	2941	6.1	
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	1958	2		Difluorochloroethane, see	2517	2	
Dichloro-s-triazine-2,4,6-trione, see	2465	5.1		1,1-DIFLUOROETHANE	1030	2	
1,4-Dicyanobutane, see	2205	6.1		1,1-DIFLUOROETHYLENE	1959	2	
Dicycloheptadiene, see	2251	3		DIFLUOROMETHANE	3252	2	
DICYCLOHEXYLAMINE	2565	8		Difluoromethane, pentafluoroethane, and 1,1,1,2-tetrafluoroethane zeotropic mixture with approximately 10 % difluoromethane and 70 % pentafluoroethane, see	3339	2	
Dicyclohexylamine nitrite, see	2687	4.1		Difluoromethane, pentafluoroethane, and 1,1,1,2-tetrafluoroethane zeotropic mixture with approximately 20 % difluoromethane and 40 % pentafluoroethane, see	3338	2	
DICYCLOHEXYL-AMMONIUM NITRITE	2687	4.1		Difluoromethane, pentafluoroethane, and 1,1,1,2-tetrafluoroethane zeotropic mixture with approximately 23 % difluoromethane and 25 % pentafluoroethane, see	3340	2	
DICYCLOPENTADIENE	2048	3		DIFLUOROPHOSPHORIC ACID, ANHYDROUS	1768	8	
1,2-DI-(DIMETHYLAMINO) ETHANE	2372	3		2,3-DIHYDROPYRAN	2376	3	
DIDYMIUM NITRATE	1465	5.1		DIISOBUTYLAMINE	2361	3	
DIESEL FUEL	1202	3		DIISOBUTYLENE, ISOMERIC COMPOUNDS	2050	3	
1,1-Diethoxyethane, see	1088	3		alpha-Diisobutylene, see	2050	3	
1,2-Diethoxyethane, see	1153	3		beta-Diisobutylene, see	2050	3	
DIETHOXYMETHANE	2373	3		DIISOBUTYL KETONE	1157	3	
3,3-DIETHOXYPROPENE	2374	3		DIISOCTYL ACID PHOSPHATE	1902	8	
DIETHYLAMINE	1154	3		DIISOPROPYLAMINE	1158	3	
2-DIETHYLAMINOETHANOL	2686	8		DIISOPROPYL ETHER	1159	3	
3-DIETHYLAMINO-PROPYLAMINE	2684	3		DIKETENE, STABILIZED	2521	6.1	
N,N-DIETHYLANILINE	2432	6.1		1,1-DIMETHOXYETHANE	2377	3	
DIETHYLBENZENE	2049	3		1,2-DIMETHOXYETHANE	2252	3	
Diethylcarbinol, see	1105	3					
DIETHYL CARBONATE	2366	3					
DIETHYLDICHLOROSILANE	1767	8					
Diethylenediamine, see	2579	8					
DIETHYLENEGLYCOL DINITRATE, DESENSITIZED with not less than 25 % non-volatile, water-insoluble phlegmatizer, by mass	0075	1					
DIETHYLENETRIAMINE	2079	8					
N,N-Diethylethanolamine, see	2686	3					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
Dimethoxystrychnine, see	1570	6.1		DINITROBENZENES, SOLID	3443	6.1	
DIMETHYLAMINE, ANHYDROUS	1032	2		Dinitrochlorobenzene, see	1577 3441	6.1 6.1	
DIMETHYLAMINE AQUEOUS SOLUTION	1160	3		DINITRO-o-CRESOL	1598	6.1	
2-DIMETHYLAMINO-ACETONITRILE	2378	3		DINITROGEN TETROXIDE	1067	2	
2-DIMETHYLAMINOETHANOL	2051	8		DINITROGLYCOLURIL	0489	1	
2-DIMETHYLAMINOETHYL ACRYLATE, STABILIZED	3302	6.1		DINITROPHENOL, dry or wetted with less than 15 % water, by mass	0076	1	
2-DIMETHYLAMINOETHYL METHACRYLATE, STABILIZED	2522	6.1		DINITROPHENOL SOLUTION	1599	6.1	
N,N-DIMETHYLANILINE	2253	6.1		DINITROPHENOL, WETTED with not less than 15 % water, by mass	1320	4.1	
Dimethylarsenic acid, see	1572	6.1		DINITROPHENOLATES, alkali metals, dry or wetted with less than 15 % water, by mass	0077	1	
N,N-Dimethylbenzylamine, see	2619	8		DINITROPHENOLATES, WETTED with not less than 15 % water, by mass	1321	4.1	
2,3-DIMETHYLBUTANE	2457	3		DINITRORESORCINOL, dry or wetted with less than 15 % water, by mass	0078	1	
1,3-DIMETHYLBUTYLAMINE	2379	3		DINITRORESORCINOL, WETTED with not less than 15 % water, by mass	1322	4.1	
DIMETHYLCARBAMOYL CHLORIDE	2262	8		DINITROSOBENZENE	0406	1	
DIMETHYL CARBONATE	1161	3		Dinitrotoluene mixed with sodium chlorate, see	0083	1	
DIMETHYLCYCLOHEXANES	2263	3		DINITROTOLUENES, LIQUID	2038	6.1	
N,N-DIMETHYLCYCLOHEXYLAMINE	2264	8		DINITROTOLUENES, MOLTEN	1600	6.1	
DIMETHYLDICHLOROSILANE	1162	3		DINITROTOLUENES, SOLID	3454	6.1	
DIMETHYLDIETHOXSILANE	2380	3		DIOXANE	1165	3	
DIMETHYLDIOXANES	2707	3		DIOXOLANE	1166	3	
DIMETHYL DISULPHIDE	2381	3		DIPENTENE	2052	3	
Dimethylethanolamine, see	2051	8		DIPHENYLAMINE CHLOROARSINE	1698	6.1	
DIMETHYL ETHER	1033	2		DIPHENYLCHLOROARSINE, LIQUID	1699	6.1	
N,N-DIMETHYLFORMAMIDE	2265	3		DIPHENYLCHLOROARSINE, SOLID	3450	6.1	
DIMETHYLHYDRAZINE, SYMMETRICAL	2382	6.1		DIPHENYLDICHLOROSILANE	1769	8	
DIMETHYLHYDRAZINE, UNSYMMETRICAL	1163	6.1		DIPHENYLMETHYL BROMIDE	1770	8	
1,1-Dimethylhydrazine, see	1163	6.1		DIPICRYLAMINE, see	0079	1	
N,N-Dimethyl-4-nitrosoaniline, see	1369	4.2		DIPICRYL SULPHIDE, dry or wetted with less than 10 % water, by mass	0401	1	
2,2-DIMETHYLPROPANE	2044	2		DIPICRYL SULPHIDE, WETTED with not less than 10 % water, by mass	2852	4.1	
DIMETHYL-N-PROPYLAMINE	2266	3		DIPROPYLAMINE	2383	3	
DIMETHYL SULPHATE	1595	6.1		Dipropylene triamine, see	2269	8	
DIMETHYL SULPHIDE	1164	3					
DIMETHYL THIOPHOSPHORYL CHLORIDE	2267	6.1					
Dimethylzinc, see	3394	4.2					
DINGU, see	0489	1					
DINITROANILINES	1596	6.1					
DINITROBENZENES, LIQUID	1597	6.1					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
DI-n-PROPYL ETHER	2384	3		Empty battery-vehicle, uncleaned			See 4.3.2.4, 5.1.3 and 5.4.1.1.6
DIPROPYL KETONE	2710	3					
DISINFECTANT, LIQUID, CORROSIVE, N.O.S.	1903	8		Empty IBC, uncleaned			See 4.1.1.11, 5.1.3 and 5.4.1.1.6
DISINFECTANT, LIQUID, TOXIC, N.O.S.	3142	6.1					
DISINFECTANT, SOLID, TOXIC, N.O.S.	1601	6.1		Empty large packaging, uncleaned			See 4.1.1.11, 5.1.3 and 5.4.1.1.6
DISODIUM TRIOXOSILICATE	3253	8					
DIVINYL ETHER, STABILIZED	1167	3		Empty MEGC, uncleaned			See 4.3.2.4, 5.1.3 and 5.4.1.1.6
DODECYLTRICHLOROSILANE	1771	8					
Dry ice, see	1845	9	Not subject to ADR except for 5.5.3	Empty packaging, uncleaned			See 4.1.1.11, 5.1.3 and 5.4.1.1.6
DYE INTERMEDIATE, LIQUID, CORROSIVE, N.O.S.	2801	8		Empty receptacle, uncleaned			See 5.1.3 and 5.4.1.1.6
DYE INTERMEDIATE, LIQUID, TOXIC, N.O.S.	1602	6.1		Empty tank, uncleaned			See 4.3.2.4, 5.1.3 and 5.4.1.1.6
DYE INTERMEDIATE, SOLID, CORROSIVE, N.O.S.	3147	8		Empty vehicle, uncleaned			See 5.1.3 and 5.4.1.1.6
DYE INTERMEDIATE, SOLID, TOXIC, N.O.S.	3143	6.1					
DYE, LIQUID, CORROSIVE, N.O.S.	2801	8		Enamel, see	1263	3	
DYE, LIQUID, TOXIC, N.O.S.	1602	6.1			3066	8	
DYE, SOLID, CORROSIVE, N.O.S.	3147	8		ENGINE, FUEL CELL, FLAMMABLE GAS POWERED	3469	3	
DYE, SOLID, TOXIC, N.O.S.	3143	6.1			3470	8	
Dynamite, see	0081	1		ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED	3529	2.1	
Electric storage batteries, see	2794	8					
	2795	8		ENGINE, INTERNAL COMBUSTION	3530	9	
	2800	8					
	3028	8		ENGINE, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED	3529	2	
Electrolyte (acid or alkaline) for batteries, see	2796	8					
	2797	8		ENGINE, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED	3528	3	
ELEVATED TEMPERATURE LIQUID, N.O.S., at or above 100 °C and below its flash-point (including molten metals, molten salts, etc.)	3257	9		Engines, rocket, see	0250	1	
					0322	1	
ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flashpoint above 60 °C, at or above its flashpoint and at or above 100 °C	3256	3		ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	3082	9	
				ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.	3077	9	
ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flashpoint above 60 °C, at or above its flashpoint and below 100 °C	3256	3		EPIBROMOHYDRIN	2558	6.1	
				EPICHLOROXYDRIN	2023	6.1	
ELEVATED TEMPERATURE SOLID, N.O.S., at or above 240 °C	3258	9		1,2-Epoxybutane, stabilized, see	3022	3	
				Epoxyethane, see	1040	2	
				1,2-EPOXY-3-ETHOXYPROPANE	2752	3	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
2,3-Epoxy-1-propanal, see	2622	3		ETHYL BUTYL ETHER	1179	3	
2,3-Epoxypropyl ethyl ether, see	2752	3		2-ETHYLBUTYRALDEHYDE	1178	3	
ESTERS, N.O.S.	3272	3		ETHYL BUTYRATE	1180	3	
ETHANE	1035	2		ETHYL CHLORIDE	1037	2	
ETHANE, REFRIGERATED LIQUID	1961	2		ETHYL CHLOROACETATE	1181	6.1	
Ethanethiol, see	2363	3		Ethyl chlorocarbonate, see	1182	6.1	
ETHANOL	1170	3		ETHYL CHLOROFORMATE	1182	6.1	
ETHANOL AND GASOLINE MIXTURE or ETHANOL AND MOTOR SPIRIT MIXTURE or ETHANOL AND PETROL MIXTURE, with more than 10 % ethanol	3475	3		ETHYL 2-CHLOROPROPIONATE	2935	3	
ETHANOL SOLUTION	1170	3		Ethyl-alpha-chloropropionate, see	2935	3	
ETHANOLAMINE	2491	8		ETHYL CHLOROTHIOFORMATE	2826	8	
ETHANOLAMINE SOLUTION	2491	8		ETHYL CROTONATE	1862	3	
Ether, see	1155	3		ETHYLDICHLOROARSINE	1892	6.1	
ETHERS, N.O.S.	3271	3		ETHYLDICHLOROSILANE	1183	4.3	
2-Ethoxyethanol, see	1171	3		ETHYLENE, ACETYLENE AND PROPYLENE MIXTURE, REFRIGERATED LIQUID containing at least 71.5 % ethylene with not more than 22.5 % acetylene and not more than 6 % propylene	3138	2	
2-Ethoxyethyl acetate, see	1172	3		ETHYLENE CHLOROHYDRIN	1135	6.1	
Ethoxy propane-1, see	2615	3		ETHYLENE	1962	2	
ETHYL ACETATE	1173	3		ETHYLENEDIAMINE	1604	8	
ETHYLACETYLENE, STABILIZED	2452	2		ETHYLENE DIBROMIDE	1605	6.1	
ETHYL ACRYLATE, STABILIZED	1917	3		Ethylene dibromide and methyl bromide, liquid mixture, see	1647	6.1	
ETHYL ALCOHOL, see	1170	3		ETHYLENE DICHLORIDE	1184	3	
ETHYL ALCOHOL SOLUTION, see	1170	3		ETHYLENE GLYCOL DIETHYL ETHER	1153	3	
ETHYLAMINE	1036	2		ETHYLENE GLYCOL MONOETHYL ETHER	1171	3	
ETHYLAMINE, AQUEOUS SOLUTION with not less than 50 % but not more than 70 % ethylamine	2270	3		ETHYLENE GLYCOL MONOETHYL ETHER ACETATE	1172	3	
ETHYL AMYL KETONE	2271	3		ETHYLENE GLYCOL MONOMETHYL ETHER	1188	3	
N-ETHYLANILINE	2272	6.1		ETHYLENE GLYCOL MONOMETHYL ETHER ACETATE	1189	3	
2-ETHYLANILINE	2273	6.1		ETHYLENEIMINE, STABILIZED	1185	6.1	
ETHYLBENZENE	1175	3		ETHYLENE OXIDE	1040	2	
N-ETHYL-N-BENZYLANILINE	2274	6.1		ETHYLENE OXIDE AND CARBON DIOXIDE MIXTURE with more than 87 % ethylene oxide	3300	2	
N-ETHYLBENZYL TOLUIDINES, LIQUID	2753	6.1		ETHYLENE OXIDE AND CARBON DIOXIDE MIXTURE with more than 9 % but not more than 87 % ethylene oxide	1041	2	
N-ETHYLBENZYL TOLUIDINES, SOLID	3460	6.1					
ETHYL BORATE	1176	3					
ETHYL BROMIDE	1891	6.1					
ETHYL BROMOACETATE	1603	6.1					
2-ETHYLBUTANOL	2275	3					
2-ETHYLBUTYL ACETATE	1177	3					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
ETHYLENE OXIDE AND CARBON DIOXIDE MIXTURE with not more than 9 % ethylene oxide	1952	2		ETHYL PROPYL ETHER	2615	3	
				Ethyl silicate, see	1292	3	
				Ethyl sulphate, see	1594	6.1	
ETHYLENE OXIDE AND CHLOROTETRAFLUOROETHANE MIXTURE with not more than 8.8 % ethylene oxide	3297	2		N-ETHYLTOLUIDINES	2754	6.1	
				ETHYLTRICHLOROSILANE	1196	3	
				EXPLOSIVE, BLASTING, TYPE A	0081	1	
ETHYLENE OXIDE AND DICHLORODIFLUOROMETHANE MIXTURE with not more than 12.5 % ethylene oxide	3070	2		EXPLOSIVE, BLASTING, TYPE B	0082	1	
					0331	1	
				EXPLOSIVE, BLASTING, TYPE C	0083	1	
				EXPLOSIVE, BLASTING, TYPE D	0084	1	
ETHYLENE OXIDE AND PENTAFLUOROETHANE MIXTURE with not more than 7.9 % ethylene oxide	3298	2		EXPLOSIVE, BLASTING, TYPE E	0241	1	
					0332	1	
				Explosives, emulsion, see	0241	1	
ETHYLENE OXIDE AND PROPYLENE OXIDE MIXTURE, not more than 30 % ethylene oxide	2983	3			0332	1	
				Explosive, seismic, see	0081	1	
					0082	1	
					0083	1	
ETHYLENE OXIDE AND TETRAFLUOROETHANE MIXTURE with not more than 5.6 % ethylene oxide	3299	2			0331	1	
				Explosive, slurry, see	0241	1	
					0332	1	
ETHYLENE OXIDE WITH NITROGEN up to a total pressure of 1 MPa (10 bar) at 50 °C	1040	2		Explosive, water gel, see	0241	1	
					0332	1	
ETHYLENE, REFRIGERATED LIQUID	1038	2		Extracts, aromatic, liquid EXTRACTS, AROMATIC, LIQUID, see	11691 197	3	
ETHYL ETHER, see	1155	3		Extracts, flavouring, liquid EXTRACTS, FLAVOURING, LIQUID, see	1197	3	
ETHYL FLUORIDE	2453	2		EXTRACTS, LIQUID, for flavour or aroma	1197	3	
ETHYL FORMATE	1190	3		FABRICS, ANIMAL, N.O.S. with oil	1373	4.2	
2-ETHYLHEXYLAMINE	2276	3		FABRICS IMPREGNATED WITH WEAKLY NITRATED NITROCELLULOSE, N.O.S.	1353	4.1	
2-ETHYLHEXYL CHLOROFORMATE	2748	6.1		FABRICS, SYNTHETIC, N.O.S. with oil	1373	4.2	
Ethylidene chloride, see	2362	3		FABRICS, VEGETABLE, N.O.S. with oil	1373	4.2	
ETHYL ISOBUTYRATE	2385	3		FERRIC ARSENATE	1606	6.1	
ETHYL ISOCYANATE	2481	6.1		FERRIC ARSENITE	1607	6.1	
ETHYL LACTATE	1192	3		FERRIC CHLORIDE, ANHYDROUS	1773	8	
ETHYL MERCAPTAN	2363	3		FERRIC CHLORIDE SOLUTION	2582	8	
ETHYL METHACRYLATE, STABILIZED	2277	3		FERRIC NITRATE	1466	5.1	
ETHYL METHYL ETHER	1039	2		FERROCERIUM	1323	4.1	
ETHYL METHYL KETONE	1193	3		FERROSILICON with 30 % or more but less than 90 % silicon	1408	4.3	
ETHYL NITRITE SOLUTION	1194	3		FERROUS ARSENATE	1608	6.1	
ETHYL ORTHOFORMATE	2524	3					
ETHYL OXALATE	2525	6.1					
ETHYLPHENYL-DICHLOROSILANE	2435	8					
1-ETHYLPYPERIDINE	2386	3					
ETHYL PROPIONATE	1195	3					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
FERROUS METAL BORINGS in a form liable to self-heating	2793	4.2		FISH MEAL, UNSTABILIZED	1374	4.2	
FERROUS METAL CUTTINGS in a form liable to self-heating	2793	4.2		Fish scrap, stabilized, see	2216	9	Not subject to ADR
FERROUS METAL SHAVINGS in a form liable to self-heating	2793	4.2		FISH SCRAP, UNSTABILIZED, see	1374	4.2	
FERROUS METAL TURNINGS in a form liable to self-heating	2793	4.2		Flammable gas in lighters, see	1057	2	
FERTILIZER AMMONIATING SOLUTION with free ammonia	1043	2		FLAMMABLE LIQUID, N.O.S.	1993	3	
Fertilizer with ammonium nitrate, n.o.s., see	2067 2071	5.1 9		FLAMMABLE LIQUID, CORROSIVE, N.O.S.	2924	3	
Fibres, animal, burnt wet or damp	1372	4.2	Not subject to ADR	FLAMMABLE LIQUID, TOXIC, N.O.S.	1992	3	
FIBRES, ANIMAL, N.O.S. with oil	1373	4.2		FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S.	3286	3	
FIBRES IMPREGNATED WITH WEAKLY NITRATED NITROCELLULOSE, N.O.S.	1353	4.1		FLAMMABLE SOLID, CORROSIVE, INORGANIC, N.O.S.	3180	4.1	
FIBRES, SYNTHETIC, N.O.S. with oil	1373	4.2		FLAMMABLE SOLID, CORROSIVE, ORGANIC, N.O.S.	2925	4.1	
Fibres, vegetable, burnt wet or damp	1372	4.2	Not subject to ADR	FLAMMABLE SOLID, INORGANIC, N.O.S.	3178	4.1	
Fibres, vegetable, dry	3360	4.1	Not subject to ADR	FLAMMABLE SOLID, ORGANIC, N.O.S.	1325	4.1	
FIBRES, VEGETABLE, N.O.S. with oil	1373	4.2		FLAMMABLE SOLID, ORGANIC, MOLTEN, N.O.S.	3176	4.1	
Films, nitrocellulose base, from which gelatine has been removed; film scrap, see	2002	4.2		FLAMMABLE SOLID, OXIDIZING, N.O.S.	3097	4.1	Carriage prohibited
FILMS, NITROCELLULOSE BASE, gelatin coated, except scrap	1324	4.1		FLAMMABLE SOLID, TOXIC, INORGANIC, N.O.S.	3179	4.1	
Filler, liquid, see	1263 3066 3469 3470	3 8 3 8		FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S.	2926	4.1	
FIRE EXTINGUISHER CHARGES, corrosive liquid	1774	8		FLARES, AERIAL	0093 0403 0404 0420 0421	1 1 1 1 1	
Fire extinguisher charges, expelling explosive, see	0275 0276 0323 0381	1 1 1 1		Flares, aeroplane, see	0093 0403 0404 0420 0421	1 1 1 1 1	
FIRE EXTINGUISHERS with compressed or liquefied gas	1044	2		Flares, highway, Flares, distress, small, Flares, railway or highway, see	0191 0373	1 1	
FIRELIGHTERS, SOLID with flammable liquid	2623	4.1		FLARES, SURFACE	0092 0418 0419	1 1 1	
FIREWORKS	0333 0334 0335 0336 0337	1 1 1 1 1	See 2.2.1.1.7	Flares, water-activated, see	0248 0249	1 1	
FIRST AID KIT	3316	9		FLASH POWDER	0094 0305	1 1	
Fish meal, stabilized	2216	9	Not subject to ADR	Flue dusts, toxic, see	1562	6.1	
				Fluoric acid, see	1790	8	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
FLUORINE, COMPRESSED	1045	2		FUEL CELL CARTRIDGES	3478	2	
FLUOROACETIC ACID	2642	6.1		PACKED WITH EQUIPMENT	3479	2	
FLUOROANILINES	2941	6.1			3473	3	
2-Fluoroaniline, see	2941	6.1			3476	4.3	
4-Fluoroaniline, see	2941	6.1			3477	8	
o-Fluoroaniline, see	2941	6.1		Fumaroyl dichloride, see	1780	3	
p-Fluoroaniline, see	2941	6.1		FUMARYL CHLORIDE	1780	8	
FLUOROBENZENE	2387	3		FUMIGATED CARGO	3359	9	
FLUOROBORIC ACID	1775	8		TRANSPORT UNIT			
Fluoroethane, see	2453	2		FURALDEHYDES	1199	6.1	
Fluoroform, see	1984	2		FURAN	2389	3	
Fluoromethane, see	2454	2		FURFURYL ALCOHOL	2874	6.1	
FLUOROPHOSPHORIC ACID, ANHYDROUS	1776	8		FURFURYLAMINE	2526	3	
FLUROSILICATES, N.O.S.	2856	6.1		Furyl carbinol, see	2874	6.1	
FLUROSILICIC ACID	1778	8		FUSE, DETONATING, metal clad	0102	1	
FLUROSULPHONIC ACID	1777	8			0290	1	
FLUOROTOLUENES	2388	3		FUSE, DETONATING, MILD EFFECT, metal clad	0104	1	
FORMALDEHYDE SOLUTION with not less than 25 % formaldehyde	2209	8		FUSE, IGNITER, tubular, metal clad	0103	1	
FORMALDEHYDE SOLUTION, FLAMMABLE	1198	3		FUSE, NON-DETONATING	0101	1	
Formalin, see	1198	3		FUSEL OIL	1201	3	
	2209	8		FUSE, SAFETY	0105	1	
Formamidine sulphinic acid, see	3341	4.2		Fuze, combination, percussion or time, see	0106	1	
FORMIC ACID with more than 85 % acid by mass	1779	8			0107	1	
FORMIC ACID with not more than 85 % acid by mass	3412	8			0257	1	
Formic aldehyde, see	1198	3			0316	1	
	2209	8			0317	1	
2-Formyl-3,4-dihydro-2H-pyran, see	2607	3			0367	1	
FRACTURING DEVICES, EXPLOSIVE without detonator, for oil wells	0099	1			0368	1	
FUEL, AVIATION, TURBINE ENGINE	1863	3		FUZES, DETONATING	0106	1	
FUEL CELL CARTRIDGES	3478	2			0107	1	
	3479	2			0257	1	
	3473	3			0367	1	
	3476	4.3		FUZES, DETONATING with protective features	0408	1	
	3477	8			0409	1	
FUEL CELL CARTRIDGES CONTAINED IN EQUIPMENT	3478	2			0410	1	
	3479	2		FUZES, IGNITING	0316	1	
	3473	3			0317	1	
	3476	4.3			0368	1	
	3477	8		GALLIUM	2803	8	
				GAS CARTRIDGES without a release device, non-refillable, see	2037	2	
				Gas drips, hydrocarbon, see	3295	3	
				GAS OIL	1202	3	
				GASOLINE	1203	3	
				Gasoline and ethanol mixture, with more than 10 % ethanol, see	3475	3	
				Gasoline, casinghead, see	1203	3	
				GAS, REFRIGERATED LIQUID, N.O.S.	3158	2	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
GAS, REFRIGERATED LIQUID, FLAMMABLE, N.O.S.	3312	2		GUANYLNITROSAMINO-GUANYLTETRAZENE, WETTED with not less than 30 % water, or mixture of alcohol and water, by mass	0114	1	
GAS, REFRIGERATED LIQUID, OXIDIZING, N.O.S.	3311	2		GUNPOWDER, COMPRESSED, see	0028	1	
GAS SAMPLE, NON-PRESSURIZED, FLAMMABLE, N.O.S., not refrigerated liquid	3167	2		GUNPOWDER, granular or as a meal, see	0027	1	
GAS SAMPLE, NON-PRESSURIZED, TOXIC, N.O.S., not refrigerated liquid	3169	2		GUNPOWDER, IN PELLETS, see	0028	1	
GAS SAMPLE, NON-PRESSURIZED, TOXIC, FLAMMABLE, N.O.S., not refrigerated liquid	3168	2		Gutta percha solution, see	1287	3	
Gelatin, blasting, see	0081	1		HAFNIUM POWDER, DRY	2545	4.2	
Gelatin, dynamites, see	0081	1		HAFNIUM POWDER, WETTED with not less than 25 % water	1326	4.1	
GENETICALLY MODIFIED MICROORGANISMS	3245	9		HALOGENATED MONOMETHYLDIPHENYLMETHANES, LIQUID	3151	9	
GENETICALLY MODIFIED ORGANISMS	3245	9		HALOGENATED MONOMETHYLDIPHENYLMETHANES, SOLID	3152	9	
GERMANE	2192	2		Hay	1327	4.1	Not subject to ADR
GERMANE, ADSORBED	3523	2		HEATING OIL, LIGHT	1202	3	
Germanium hydride, see	2192	2		Heavy hydrogen, see	1957	2	
Glycer-1,3-dichlorohydrin, see	2750	6.1		HELIUM, COMPRESSED	1046	2	
GLYCEROL alpha-MONOCHLOROHYDRIN	2689	6.1		HELIUM, REFRIGERATED LIQUID	1963	2	
Glyceryl trinitrate, see	0143	1		HEPTAFLUOROPROPANE	3296	2	
	0144	1		n-HEPTALDEHYDE	3056	3	
	1204	3		n-Heptanal, see	3056	3	
	3064	3		HEPTANES	1206	3	
GLYCIDALDEHYDE	2622	3		4-Heptanone, see	2710	3	
GRENADES, hand or rifle, with bursting charge	0284	1		n-HEPTENE	2278	3	
	0285	1		HEXACHLOROACETONE	2661	6.1	
	0292	1		HEXACHLOROBENZENE	2729	6.1	
	0293	1		HEXACHLOROBUTADIENE	2279	6.1	
Grenades, illuminating, see	0171	1		Hexachloro-1,3-butadiene, see	2279	6.1	
	0254	1		HEXACHLOROCYCLOPENTADIENE	2646	6.1	
	0297	1		HEXACHLOROPHENE	2875	6.1	
GRENADES, PRACTICE, hand or rifle	0110	1		Hexachloro-2-propanone, see	2661	6.1	
	0318	1		HEXADECYLTRICHLOROSILANE	1781	8	
	0372	1		HEXADIENES	2458	3	
	0452	1		HEXAETHYL TETRAPHOSPHATE	1611	6.1	
Grenades, smoke, see	0015	1		HEXAETHYL TETRAPHOSPHATE AND COMPRESSED GAS MIXTURE	1612	2	
	0016	1					
	0245	1					
	0246	1					
	0303	1					
GUANIDINE NITRATE	1467	5.1					
GUANYLNITROSAMINO-GUANYLIDENE HYDRAZINE, WETTED with not less than 30 % water, by mass	0113	1					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
HEXAFLUOROACETONE	2420	2		HMX, WETTED with not less than 15 % water, by mass, see	0226	1	
HEXAFLUOROACETONE HYDRATE, LIQUID	2552	6.1		HYDRAZINE, ANHYDROUS	2029	8	
HEXAFLUOROACETONE HYDRATE, SOLID	3436	6.1		HYDRAZINE AQUEOUS SOLUTION, with more than 37 % hydrazine by mass	2030	8	
HEXAFLUOROETHANE	2193	2		HYDRAZINE, AQUEOUS SOLUTION with not more than 37 % hydrazine, by mass	3293	6.1	
HEXAFLUOROPHOSPHORIC ACID	1782	8		HYDRAZINE AQUEOUS SOLUTION, FLAMMABLE with more than 37 % hydrazine, by mass	3484	8	
HEXAFLUOROPROPYLENE	1858	2		Hydrides, metal, water-reactive, n.o.s., see	1409	4.3	
Hexahydroresol, see	2617	3		Hydriodic acid, anhydrous, see	2197	2	
Hexahydromethyl phenol, see	2617	3		HYDRIODIC ACID	1787	8	
HEXALDEHYDE	1207	3		HYDROBROMIC ACID	1788	8	
HEXAMETHYLENEDIAMINE, SOLID	2280	8		HYDROCARBON GAS MIXTURE, COMPRESSED, N.O.S.	1964	2	
HEXAMETHYLENEDIAMINE SOLUTION	1783	8		HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. such as mixtures A, A01, A02, A0, A1, B1, B2, B or C	1965	2	
HEXAMETHYLENE DIISOCYANATE	2281	6.1		HYDROCARBON GAS REFILLS FOR SMALL DEVICES with release device	3150	2	
HEXAMETHYLENEIMINE	2493	3		HYDROCARBONS, LIQUID, N.O.S.	3295	3	
HEXAMETHYLENETETRAMINE	1328	4.1		HYDROCHLORIC ACID	1789	8	
Hexamine, see	1328	4.1		HYDROCYANIC ACID, AQUEOUS SOLUTION with not more than 20 % hydrogen cyanide	1613	6.1	
HEXANES	1208	3		HYDROFLUORIC ACID with more than 60 % but not more than 85 % hydrogen fluoride	1790	8	
HEXANITRODIPHENYLAMINE	0079	1		HYDROFLUORIC ACID with more than 85 % hydrogen fluoride	1790	8	
HEXANITROSTILBENE	0392	1		HYDROFLUORIC ACID with not more than 60 % hydrogen fluoride	1790	8	
Hexanoic acid, see	2829	8		HYDROFLUORIC ACID AND SULPHURIC ACID MIXTURE	1786	8	
HEXANOLS	2282	3		Hydrofluoroboric acid, see	1775	8	
1-HEXENE	2370	3		Hydrofluorosilicic acid, see	1778	8	
HEXOGEN AND CYCLOTETRAMETHYLENE-TETRANITRAMINE MIXTURE, WETTED with not less than 15 % water, by mass or DESENSITIZED with not less than 10 % phlegmatizer by mass, see	0391	1		HYDROGEN AND METHANE MIXTURE, COMPRESSED	2034	2	
HEXOGEN, DESENSITIZED, see	0483	1		Hydrogen arsenide, see	2188	2	
HEXOGEN, WETTED with not less than 15 % water, by mass, see	0072	1		HYDROGEN BROMIDE, ANHYDROUS	1048	2	
HEXOLITE, dry or wetted with less than 15 % water, by mass	0118	1		Hydrogen bromide solution, see	1788	8	
HEXOTOL, dry or wetted with less than 15 % water, by mass, see	0118	1		HYDROGEN CHLORIDE, ANHYDROUS	1050	2	
HEXOTONAL	0393	1					
HEXOTONAL, cast, see	0393	1					
HEXYL, see	0079	1					
HEXYLTRICHLOROSILANE	1784	8					
HMX, see	0391	1					
HMX, DESENSITIZED, see	0484	1					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
HYDROGEN CHLORIDE, REFRIGERATED LIQUID	2186	2	Carriage prohibited	HYDROGEN PEROXIDE, AQUEOUS SOLUTION, STABILIZED with more than 60 % hydrogen peroxide and not more than 70 % hydrogen peroxide	2015	5.1	
HYDROGEN, COMPRESSED	1049	2		HYDROGEN PEROXIDE, AQUEOUS SOLUTION, STABILIZED with more than 70 % hydrogen peroxide	2015	5.1	
HYDROGEN CYANIDE, AQUEOUS SOLUTION with not more than 20 % hydrogen cyanide, see	1613	6.1		HYDROGEN PEROXIDE, STABILIZED	2015	5.1	
HYDROGEN CYANIDE, SOLUTION IN ALCOHOL with not more than 45 % hydrogen cyanide	3294	6.1		HYDROGEN, REFRIGERATED LIQUID	1966	2	
HYDROGEN CYANIDE, STABILIZED containing less than 3 % water	1051	6.1		HYDROGEN SELENIDE, ADSORBED	3526	2	
HYDROGEN CYANIDE, STABILIZED, containing less than 3 % water and absorbed in a porous inert material	1614	6.1		HYDROGEN SELENIDE, ANHYDROUS	2202	2	
HYDROGENDIFLUORIDES, SOLID, N.O.S.	1740	8		Hydrogen silicide, see	2203	2	
HYDROGENDIFLUORIDES SOLUTION, N.O.S.	3471	8		HYDROGEN SULPHIDE	1053	2	
HYDROGEN FLUORIDE, ANHYDROUS	1052	8		Hydroselenic acid, see	2202	2	
Hydrogen fluoride solution, see	1790	8		Hydrosilicofluoric acid, see	1778	8	
HYDROGEN IN A METAL HYDRIDE STORAGE SYSTEM	3468	2		1-HYDROXYBENZOTRIAZOLE, ANHYDROUS, dry or wetted with less than 20 % water, by mass	0508	1	
HYDROGEN IN A METAL HYDRIDE STORAGE SYSTEM CONTAINED IN EQUIPMENT	3468	2		1-HYDROXYBENZOTRIAZOLE MONOHYDRATE	3474	4.1	
HYDROGEN IN A METAL HYDRIDE STORAGE SYSTEM PACKED WITH EQUIPMENT	3468	2		3-Hydroxybutan-2-one, see	2621	3	
HYDROGEN IODIDE, ANHYDROUS	2197	2		HYDROXYLAMINE SULPHATE	2865	8	
Hydrogen iodide solution, see	1787	8		1-Hydroxy-3-methyl-2-penten-4-yne, see	2705	8	
HYDROGEN PEROXIDE AND PEROXYACETIC ACID MIXTURE with acid(s), water and not more than 5 % peroxyacetic acid, STABILIZED	3149	5.1		3-Hydroxyphenol, see	2876	6.1	
HYDROGEN PEROXIDE, AQUEOUS SOLUTION with not less than 8 % but less than 20 % hydrogen peroxide (stabilized as necessary)	2984	5.1		HYPOCHLORITES, INORGANIC, N.O.S.	3212	5.1	
HYDROGEN PEROXIDE, AQUEOUS SOLUTION with not less than 20 % but not more than 60 % hydrogen peroxide (stabilized as necessary)	2014	5.1		HYPOCHLORITE SOLUTION	1791	8	
				IGNITERS	0121	1	
					0314	1	
					0315	1	
					0325	1	
					0454	1	
				3,3'-IMINODIPROPYLAMINE	2269	8	
				Indiarubber, see	1287	3	
				INFECTIOUS SUBSTANCE, AFFECTING ANIMALS only	2900	6.2	
				INFECTIOUS SUBSTANCE, AFFECTING HUMANS	2814	6.2	
				Ink, printer's, flammable, see	1210	3	
				INSECTICIDE GAS, N.O.S.	1968	2	
				INSECTICIDE GAS, FLAMMABLE, N.O.S.	3354	2	
				INSECTICIDE GAS, TOXIC, N.O.S.	1967	2	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
INSECTICIDE GAS, TOXIC, FLAMMABLE, N.O.S.	3355	2		ISOBUTYRONITRILE	2284	3	
IODINE	3495	8		ISOBUTYRYL CHLORIDE	2395	3	
IODINE MONOCHLORIDE, LIQUID	3498	8		ISOCYANATES, FLAMMABLE, TOXIC, N.O.S.	2478	3	
IODINE MONOCHLORIDE, SOLID	1792	8		ISOCYANATES, TOXIC, N.O.S.	2206	6.1	
IODINE PENTAFLUORIDE	2495	5.1		ISOCYANATES, TOXIC, FLAMMABLE, N.O.S.	3080	6.1	
2-IODOBUTANE	2390	3		ISOCYANATE SOLUTION, FLAMMABLE, TOXIC, N.O.S.	2478	3	
Iodomethane, see	2644	6.1		ISOCYANATE SOLUTION, TOXIC, N.O.S.	2206	6.1	
IODOMETHYLPROPANES	2391	3		ISOCYANATE SOLUTION, TOXIC, FLAMMABLE, N.O.S.	3080	6.1	
IODOPROPANES	2392	3		ISOCYANATO-BENZOTRIFLUORIDES	2285	6.1	
alpha-Iodotoluene, see	2653	6.1		3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate, see	2290	6.1	
I.p.d.i., see	2290	6.1		Isododecane, see	2286	3	
Iron chloride, anhydrous, see	1773	8		ISOHEPTENE	2287	3	
Iron (III) chloride, anhydrous, see	1773	8		ISOHEXENE	2288	3	
Iron chloride solution, see	2582	8		Isooctane, see	1262	3	
IRON OXIDE, SPENT obtained from coal gas purification	1376	4.2		ISOOCTENE	1216	3	
IRON PENTACARBONYL	1994	6.1		Isopentane, see	1265	3	
Iron perchloride, anhydrous, see	1773	8		ISOPENTENES	2371	3	
Iron powder, pyrophoric, see	1383	4.2		Isopentylamine, see	1106	3	
Iron sesquichloride, anhydrous, see	1773	8		Isopentyl nitrite, see	1113	3	
IRON SPONGE, SPENT obtained from coal gas purification	1376	4.2		ISOPHORONEDIAMINE	2289	8	
Iron swarf, see	2793	4.2		ISOPHORONE DIISOCYANATE	2290	6.1	
ISOBUTANE	1969	2		ISOPRENE, STABILIZED	1218	3	
ISOBUTANOL	1212	3		ISOPROPANOL	1219	3	
Isobutene, see	1055	2		ISOPROPENYL ACETATE	2403	3	
ISOBUTYL ACETATE	1213	3		ISOPROPENYLBENZENE	2303	3	
ISOBUTYL ACRYLATE, STABILIZED	2527	3		ISOPROPYL ACETATE	1220	3	
ISOBUTYL ALCOHOL, see	1212	3		ISOPROPYL ACID PHOSPHATE	1793	8	
ISOBUTYL ALDEHYDE, see	2045	3		ISOPROPYL ALCOHOL, see	1219	3	
ISOBUTYLAMINE	1214	3		ISOPROPYLAMINE	1221	3	
ISOBUTYLENE	1055	2		ISOPROPYLBENZENE	1918	3	
ISOBUTYL FORMATE	2393	3		ISOPROPYL BUTYRATE	2405	3	
ISOBUTYL ISOBUTYRATE	2528	3		Isopropyl chloride, see	2356	3	
ISOBUTYL ISOCYANATE	2486	6.1		ISOPROPYL CHLOROACETATE	2947	3	
ISOBUTYL METHACRYLATE, STABILIZED	2283	3		ISOPROPYL CHLOROFORMATE	2407	6.1	
ISOBUTYL PROPIONATE	2394	3		ISOPROPYL 2-CHLORO-PROPIONATE	2934	3	
ISOBUTYRALDEHYDE	2045	3		Isopropyl-alpha-chloropropionate, see	2934	3	
ISOBUTYRIC ACID	2529	3					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
Isopropyl ether, see	1159	3		LEAD COMPOUND, SOLUBLE, N.O.S.	2291	6.1	
Isopropylethylene, see	2561	3		LEAD CYANIDE	1620	6.1	
Isopropyl formate, see	1281	3		Lead (II) cyanide	1620	6.1	
ISOPROPYL ISOBUTYRATE	2406	3		LEAD DIOXIDE	1872	5.1	
ISOPROPYL ISOCYANATE	2483	6.1		LEAD NITRATE	1469	5.1	
Isopropyl mercaptan, see	2402	3		Lead (II) nitrate	1469	5.1	
ISOPROPYL NITRATE	1222	3		LEAD PERCHLORATE, SOLID	1470	5.1	
ISOPROPYL PROPIONATE	2409	3		LEAD PERCHLORATE, SOLUTION	3408	5.1	
Isopropyltoluene, see	2046	3		Lead (II) perchlorate	1470	5.1	
Isopropyltoluol, see	2046	3			3408	5.1	
ISOSORBIDE DINITRATE	2907	4.1		Lead peroxide, see	1872	5.1	
MIXTURE with not less than 60 % lactose, mannose, starch or calcium hydrogen phosphate				LEAD PHOSPHITE, DIBASIC	2989	4.1	
ISOSORBIDE-5-MONONITRATE	3251	4.1		LEAD STYPHNATE, WETTED with not less than 20 % water, or mixture of alcohol and water, by mass	0130	1	
Isovaleraldehyde, see	2058	3					
JET PERFORATING GUNS, CHARGED, oil well, without detonator	0124 0494	1 1		LEAD SULPHATE with more than 3 % free acid	1794	8	
Jet tappers, without detonator, see	0059	1		Lead tetraethyl, see	1649	6.1	
KEROSENE	1223	3		Lead tetramethyl, see	1649	6.1	
KETONES, LIQUID, N.O.S.	1224	3		LEAD TRINITRORESORCINATE, WETTED with not less than 20 % water, or mixture of alcohol and water, by mass, see	0130	1	
KRILL MEAL	3497	4.2		LIFE-SAVING APPLIANCES NOT SELF-INFLATING containing dangerous goods as equipment	3072	9	
KRYPTON, COMPRESSED	1056	2		LIFE-SAVING APPLIANCES, SELF-INFLATING	2990	9	
KRYPTON, REFRIGERATED LIQUID	1970	2		LIGHTER REFILLS containing flammable gas	1057	2	
Lacquer, see	1263 3066 3469 3470	3 8 3 8		LIGHTERS containing flammable gas	1057	2	
Lacquer base, liquid, see	1263 3066 3469 3470	3 8 3 8		LIGHTERS, FUSE	0131	1	
Lacquer base or lacquer chips, nitrocellulose, dry, see	2557	4.1		Limonene, inactive, see	2052	3	
Lacquer base or lacquer chips, plastic, wet with alcohol or solvent, see	1263 2059 2555 2556	3 3 4.1 4.1		LIQUEFIED GAS, N.O.S.	3163	2	
LEAD ACETATE	1616	6.1		LIQUEFIED GAS, FLAMMABLE, N.O.S.	3161	2	
Lead (II) acetate, see	1616	6.1		LIQUEFIED GASES, non-flammable, charged with nitrogen, carbon dioxide or air	1058	2	
LEAD ARSENATES	1617	6.1		LIQUEFIED GAS, OXIDIZING, N.O.S.	3157	2	
LEAD ARSENITES	1618	6.1		LIQUEFIED GAS, TOXIC, N.O.S.	3162	2	
LEAD AZIDE, WETTED with not less than 20 % water, or mixture of alcohol and water, by mass	0129	1		LIQUEFIED GAS, TOXIC, CORROSIVE, N.O.S.	3308	2	
Lead chloride, solid, see	2291	6.1					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
LIQUEFIED GAS, TOXIC, FLAMMABLE, N.O.S.	3160	2		LITHIUM METAL BATTERIES (including lithium alloy batteries)	3090	9	
LIQUEFIED GAS, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.	3309	2		LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT (including lithium alloy batteries)	3091	9	
LIQUEFIED GAS, TOXIC, OXIDIZING, N.O.S.	3307	2		LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT (including lithium alloy batteries)	3091	9	
LIQUEFIED GAS, TOXIC, OXIDIZING, CORROSIVE, N.O.S.	3310	2		LITHIUM NITRATE	2722	5.1	
Liquefied petroleum gas, see	1075	2		LITHIUM NITRIDE	2806	4.3	
Liquid filler, see	1263	3		LITHIUM PEROXIDE	1472	5.1	
	3066	8		Lithium silicide, see	1417	4.3	
	3469	3		LITHIUM SILICON	1417	4.3	
	3470	8		L.n.g., see	1972	2	
Liquid lacquer base, see	1263	3		LONDON PURPLE	1621	6.1	
	3066	8		L.p.g., see	1075	2	
	3469	3		Lye, see	1823	8	
	3470	8		Lythene, see	1268	3	
LITHIUM	1415	4.3		MACHINERY, FUEL CELL, FLAMMABLE GAS POWERED	3529	2	
Lithium alkyls, liquid, see	3394	4.2		MACHINERY, FUEL CELL, FLAMMABLE LIQUID POWERED	3528	3	
Lithium alkyls, solid, see	3393	4.2		MACHINERY, INTERNAL COMBUSTION,	3530	9	
LITHIUM ALUMINIUM HYDRIDE	1410	4.3		MACHINERY, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED	3529	2	
LITHIUM ALUMINIUM HYDRIDE, ETHEREAL	1411	4.3		MACHINERY, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED	25283	3	528
LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT lithium ion batteries or lithium metal batteries	3536	9		MACHINERY, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED	1869	4.1	
LITHIUM BOROHYDRIDE	1413	4.3		Magnesium alkyls, see	3394	4.2	
LITHIUM FERROSILICON	2830	4.3		MAGNESIUM ALLOYS with more than 50 % magnesium in pellets, turnings or ribbons	1869	4.1	
LITHIUM HYDRIDE	1414	4.3		MAGNESIUM ALLOYS POWDER	1418	4.3	
LITHIUM HYDRIDE, FUSED SOLID	2805	4.3		MAGNESIUM ALUMINIUM PHOSPHIDE	1419	4.3	
LITHIUM HYDROXIDE	2680	8		MAGNESIUM ARSENATE	1622	6.1	
LITHIUM HYDROXIDE SOLUTION	2679	8		Magnesium bisulphite solution, see	2693	8	
LITHIUM HYPOCHLORITE, DRY	1471	5.1		MAGNESIUM BROMATE	1473	5.1	
LITHIUM HYPOCHLORITE MIXTURE	1471	5.1		MAGNESIUM CHLORATE	2723	5.1	
Lithium in cartouches, see	1415	4.3		Magnesium chloride and chlorate mixture, see	1459	5.1	
LITHIUM ION BATTERIES (including lithium ion polymer batteries)	3480	9		3407	5.1		
LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT (including lithium ion polymer batteries)	3481	9		MAGNESIUM DIAMIDE	2004	4.2	
LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)	3481	9		Magnesium diphenyl, see	3393	4.2	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
MAGNESIUM FLUORO-SILICATE	2853	6.1		MEDICAL WASTE, CATEGORY A, AFFECTING HUMANS, solid	3549	6.2	
MAGNESIUM GRANULES, COATED, particle size not less than 149 microns	2950	4.3		MEDICAL WASTE, CATEGORY A, AFFECTING ANIMALS only, solid	3549	6.2	
MAGNESIUM HYDRIDE	2010	4.3		MEDICINE, LIQUID, FLAMMABLE, TOXIC, N.O.S.	3248	3	
MAGNESIUM NITRATE	1474	5.1		MEDICINE, LIQUID, TOXIC, N.O.S.	1851	6.1	
MAGNESIUM PERCHLORATE	1475	5.1		MEDICINE, SOLID, TOXIC, N.O.S.	3249	6.1	
MAGNESIUM PEROXIDE	1476	5.1		p-Mentha-1,8-diene, see	2052	8	
MAGNESIUM PHOSPHIDE	2011	4.3		MERCAPTANS, LIQUID, FLAMMABLE, N.O.S.	3336	3	
MAGNESIUM POWDER	1418	4.3		MERCAPTANS, LIQUID, TOXIC, N.O.S.	1228	3	
Magnesium scrap, see	1869	4.1		MERCAPTANS, LIQUID, TOXIC, FLAMMABLE, N.O.S.	3071	6.1	
MAGNESIUM SILICIDE	2624	4.3		MERCAPTAN MIXTURE, LIQUID, FLAMMABLE, N.O.S.	3336	3	
Magnesium silicofluoride, see	2853	6.1		MERCAPTAN MIXTURE, LIQUID, FLAMMABLE, TOXIC, N.O.S.	1228	3	
Magnetized material	2807	9	Not subject to ADR	MERCAPTAN MIXTURE, LIQUID, TOXIC, FLAMMABLE, N.O.S.	3071	6.1	
MALEIC ANHYDRIDE	2215	8		MERCAPTAN MIXTURE, LIQUID, FLAMMABLE, TOXIC, N.O.S.	3071	6.1	
MALEIC ANHYDRIDE, MOLTEN	2215	8		2-Mercaptoethanol, see	2966	6.1	
Malonic dinitrile, see	2647	6.1		2-Mercaptopropionic acid, see	2936	6.1	
Malonodinitrile, see	2647	6.1		5-MERCAPTOTETRAZOL-1-ACETIC ACID	0448	1	
MALONONITRILE	2647	6.1		MERCURIC ARSENATE	1623	6.1	
MANEB	2210	4.2		MERCURIC CHLORIDE	1624	6.1	
MANEB PREPARATION with not less than 60 % maneb	2210	4.2		MERCURIC NITRATE	1625	6.1	
MANEB PREPARATION, STABILIZED against self-heating	2968	4.3		MERCURIC POTASSIUM CYANIDE	1626	6.1	
MANEB, STABILIZED against self-heating	2968	4.3		Mercuric sulphate, see	1645	6.1	
Manganese ethylene-dithiocarbamate, see	2210	4.2		Mercuriol, see	1639	6.1	
Manganese ethylene-1,2-dithiocarbamate, see	2210	4.2		Mercurous bisulphate, see	1645	6.1	
MANGANESE NITRATE	2724	5.1		Mercurous chloride, see	2025	6.1	
Manganese (II) nitrate, see	2724	5.1		MERCUROUS NITRATE	1627	6.1	
MANGANESE RESINATE	1330	4.1		Mercurous sulphate, see	1645	6.1	
Manganous nitrate, see	2724	5.1		MERCURY	2809	8	
MANNITOL HEXANITRATE, WETTED with not less than 40 % water, or mixture of alcohol and water, by mass	0133	1		MERCURY ACETATE	1629	6.1	
MATCHES, FUSEE	2254	4.1		MERCURY AMMONIUM CHLORIDE	1630	6.1	
MATCHES, SAFETY (book, card or strike on box)	1944	4.1		MERCURY BASED PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	2778	3	
MATCHES, "STRIKE ANYWHERE"	1331	4.1		MERCURY BASED PESTICIDE, LIQUID, TOXIC	3012	6.1	
MATCHES, WAX "VESTA"	1945	4.1					
MEDICAL WASTE, N.O.S.	3291	6.2					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
MERCURY BASED PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	3011	6.1		METAL HYDRIDES, FLAMMABLE, N.O.S.	3182	4.1	
MERCURY BASED PESTICIDE, SOLID, TOXIC	2777	6.1		METAL HYDRIDES, WATER-REACTIVE, N.O.S.	1409	4.3	
MERCURY BENZOATE	1631	6.1		METALLIC SUBSTANCE, WATER-REACTIVE, N.O.S.	3208	4.3	
Mercury bichloride, see	1624	6.1		METALLIC SUBSTANCE, WATER-REACTIVE, SELF-HEATING, N.O.S.	3209	4.3	
MERCURY BROMIDES	1634	6.1		METAL POWDER, FLAMMABLE, N.O.S.	3089	4.1	
MERCURY COMPOUND, LIQUID, N.O.S.	2024	6.1		METAL POWDER, SELF-HEATING, N.O.S.	3189	4.2	
MERCURY COMPOUND, SOLID, N.O.S.	2025	6.1		METAL SALTS OF ORGANIC COMPOUNDS, FLAMMABLE, N.O.S.	3181	4.1	
MERCURY CONTAINED IN MANUFACTURED ARTICLES	3506	8		METHACRYLALDEHYDE, STABILIZED	2396	3	
MERCURY CYANIDE	1636	6.1		METHACRYLIC ACID, STABILIZED	2531	8	
MERCURY FULMINATE, WETTED with not less than 20 % water, or mixture of alcohol and water, by mass	0135	1		METHACRYLONITRILE, STABILIZED	3079	6.1	
MERCURY GLUCONATE	1637	6.1		METHALLYL ALCOHOL	2614	3	
MERCURY IODIDE	1638	6.1		Methanal, see	1198	3	
MERCURY NUCLEATE	1639	6.1			2209	8	
MERCURY OLEATE	1640	6.1		Methane and hydrogen mixture, see	2034	2	
MERCURY OXIDE	1641	6.1		METHANE, COMPRESSED	1971	2	
MERCURY OXYCYANIDE, DESENSITIZED	1642	6.1		METHANE, REFRIGERATED LIQUID	1972	2	
MERCURY POTASSIUM IODIDE	1643	6.1		METHANESULPHONYL CHLORIDE	3246	6.1	
MERCURY SALICYLATE	1644	6.1		METHANOL	1230	3	
MERCURY SULPHATE	1645	6.1		2-Methoxyethyl acetate, see	1189	3	
MERCURY THIOCYANATE	1646	6.1		METHOXYMETHYL ISOCYANATE	2605	6.1	
Mesitylene, see	2325	3		4-METHOXY-4-METHYLPENTAN-2-ONE	2293	3	
MESITYL OXIDE	1229	3		1-Methoxy-2-nitrobenzene, see	2730	6.1	
Metal alkyl halides, water-reactive, n.o.s. / Metal aryl halides, water-reactive, n.o.s., see	3394	4.2			3458	6.1	
Metal alkyl hydrides, water-reactive, n.o.s. / Metal aryl hydrides, water-reactive, n.o.s., see	3394	4.2		1-Methoxy-3-nitrobenzene, see	2730	6.1	
Metal alkyls, water-reactive, n.o.s. / Metal aryls, water-reactive, n.o.s., see	3393	4.2			3458	6.1	
METAL CARBONYLS, LIQUID, N.O.S.	3281	6.1		1-Methoxy-4-nitrobenzene, see	2730	6.1	
METAL CARBONYLS, SOLID, N.O.S.	3466	6.1			3458	6.1	
METAL CATALYST, DRY	2881	4.2		1-METHOXY-2-PROPANOL	3092	3	
METAL CATALYST, WETTED with a visible excess of liquid	1378	4.2		METHYL ACETATE	1231	3	
METALDEHYDE	1332	4.1		METHYLACETYLENE AND PROPADIENE MIXTURE, STABILIZED such as mixture P1 or mixture P2	1060	2	
				beta-Methyl acrolein, see	1143	6.1	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
METHYL ACRYLATE, STABILIZED	1919	3		METHYL CHLOROMETHYL ETHER	1239	6.1	
METHYLAL	1234	3		METHYL 2-CHLORO-PROPIONATE	2933	3	
Methyl alcohol, see	1230	3		Methyl alpha-chloropropionate, see	2933	3	
Methyl allyl alcohol, see	2614	3		METHYLCHLOROSILANE	2534	2	
METHYLALLYL CHLORIDE	2554	3		Methyl cyanide, see	1648	3	
METHYLAMINE, ANHYDROUS	1061	2		METHYLCYCLOHEXANE	2296	3	
METHYLAMINE, AQUEOUS SOLUTION	1235	3		METHYLCYCLOHEXANOLS, flammable	2617	3	
METHYLAMYL ACETATE	1233	3		METHYLCYCLOHEXANONE	2297	3	
Methyl amyl alcohol, see	2053	3		METHYLCYCLOPENTANE	2298	3	
Methyl amyl ketone, see	1110	3		METHYL DICHLOROACETATE	2299	6.1	
N-METHYLANILINE	2294	6.1		METHYLDICHLOROSILANE	1242	4.3	
Methylated spirit, see	1986 1987	3 3		Methylene bromide, see	2664	6.1	
alpha-METHYLBENZYL ALCOHOL, LIQUID	2937	6.1		Methylene chloride, see	1593	6.1	
alpha-METHYLBENZYL ALCOHOL, SOLID	3438	6.1		Methylene chloride and methyl chloride mixture, see	1912	2	
METHYL BROMIDE with not more than 2 % chloropicrin	1062	2		Methylene cyanide, see	2647	6.1	
Methyl bromide and chloropicrin mixture, with more than 2 % chloropicrin, see	1581	2		p,p'-Methylene dianiline, see	2651	6.1	
METHYL BROMIDE AND ETHYLENE DIBROMIDE MIXTURE, LIQUID	1647	6.1		Methylene dibromide, see	2664	6.1	
METHYL BROMOACETATE	2643	6.1		2,2'-Methylene-di-(3,4,6-trichlorophenol), see	2875	6.1	
2-METHYLBUTANAL	3371	3		Methyl ethyl ether, see	1039	2	
3-METHYLBUTAN-2-ONE	2397	3		METHYL ETHYL KETONE, see	1193	3	
2-METHYL-1-BUTENE	2459	3		2-METHYL-5-ETHYLPYRIDINE	2300	6.1	
2-METHYL-2-BUTENE	2460	3		METHYL FLUORIDE	2454	2	
3-METHYL-1-BUTENE	2561	3		METHYL FORMATE	1243	3	
N-METHYLBUTYLAMINE	2945	3		2-METHYLFURAN	2301	3	
METHYL tert-BUTYL ETHER	2398	3		Methyl glycol, see	1188	3	
METHYL BUTYRATE	1237	3		Methyl glycol acetate, see	1189	3	
METHYL CHLORIDE	1063	2		2-METHYL-2-HEPTANETHIOL	3023	6.1	
Methyl chloride and chloropicrin mixture, see	1582	2		5-METHYLHEXAN-2-ONE	2302	3	
METHYL CHLORIDE AND METHYLENE CHLORIDE MIXTURE	1912	2		METHYLHYDRAZINE	1244	6.1	
METHYL CHLOROACETATE	2295	6.1		METHYL IODIDE	2644	6.1	
Methyl chlorocarbonate, see	1238	6.1		METHYL ISOBUTYL CARBINOL	2053	3	
Methyl chloroform, see	2831	6.1		METHYL ISOBUTYL KETONE	1245	3	
METHYL CHLOROFORMATE	1238	6.1		METHYL ISOCYANATE	2480	6.1	
				METHYL ISOPROPENYL KETONE, STABILIZED	1246	3	
				METHYL ISOTHIOCYANATE	2477	6.1	
				METHYL ISOVALERATE	2400	3	
				METHYL MAGNESIUM BROMIDE IN ETHYL ETHER	1928	4.3	
				METHYL MERCAPTAN	1064	2	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
Methyl mercapto-propionaldehyde, see	2785	6.1		Missiles, guided, see	0180	1	
METHYL METHACRYLATE MONOMER, STABILIZED	1247	3			0181	1	
4-METHYLMORPHOLINE	2535	3			0182	1	
N-METHYLMORPHOLINE, see	2535	3			0183	1	
METHYL NITRITE	2455	2	Carriage prohibited		0295	1	
METHYL ORTHOSILICATE	2606	6.1		Mixtures A, A01, A02, A0, A1, B1, B2, B or C, see	0397	1	
METHYLPENTADIENE	2461	3			0398	1	
Methylpentanes, see	1208	3		Mixture F1, mixture F2 or mixture F3, see	0436	1	
2-METHYLPENTAN-2-OL	2560	3			0437	1	
4-Methylpentan-2-ol, see	2053	3		MIXTURES OF 1,3-BUTADIENE AND HYDROCARBONS, STABILIZED, containing more than 40% butadienes	0438	1	
3-Methyl-2-penten-4ynol, see	2705	8			1965	2	
METHYLPHENYL-DICHLOROSILANE	2437	8		Mixture P1 or mixture P2, see	1078	2	
2-Methyl-2-phenylpropane, see	2709	3		MOLYBDENUM PENTACHLORIDE	1010	2	
1-METHYLPYPERIDINE	2399	3			1060	2	
METHYL PROPIONATE	1248	3		Monochloroacetic acid, see	2508	8	
Methylpropylbenzene, see	2046	3			1750	6.1	
METHYL PROPYL ETHER	2612	3		Monochlorobenzene, see	1751	6.1	
METHYL PROPYL KETONE	1249	3		Monochlorodifluoromethane, see	1134	3	
Methyl pyridines, see	2313	3		Monochlorodifluoromethane and monochloropentafluoroethane mixture, see	1018	2	
Methylstyrene, inhibited, see	2618	3			1973	2	
alpha-Methylstyrene, see	2303	3		Monochlorodifluoromonobromomethane, see	1974	2	
Methyl sulphate, see	1595	6.1		Monochloropentafluoroethane and monochlorodifluoromethane mixture, see	1973	2	
Methyl sulphide, see	1164	3			1036	2	
METHYLTETRAHYDROFURAN	2536	3		Monoethylamine, see	2660	6.1	
METHYL TRICHLOROACETATE	2533	6.1		MONONITROTOLUIDINES, see	1277	3	
METHYLTRICHLOROSILANE	1250	3		Monopropylamine, see	2054	8	
alpha-METHYLVALERAL-DEHYDE	2367	3		MORPHOLINE	1649	6.1	
Methyl vinyl benzene, inhibited, see	2618	3		MOTOR FUEL ANTI-KNOCK MIXTURE	3483	6.1	
METHYL VINYL KETONE, STABILIZED	1251	6.1		MOTOR FUEL ANTI-KNOCK MIXTURE, FLAMMABLE	1203	3	
M.i.b.c., see	2053	3		MOTOR SPIRIT	3475	3	
MINES with bursting charge	0136	1		Motor spirit and ethanol mixture, with more than 10 % ethanol, see	1789	8	
	0137	1		Muriatic acid, see	2956	4.1	
	0138	1		MUSK XYLENE, see	2212	9	
	0294	1		Mysorite, see	1268	3	
Mirbane oil, see	1662	6.1		Naphta, see	1268	3	
				Naphta, petroleum, see	1268	3	
				Naphta, solvent, see	1334	4.1	
				NAPHTHALENE, CRUDE			

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
NAPHTHALENE, MOLTEN	2304	4.1		NICOTINE SULPHATE, SOLUTION	1658	6.1	
NAPHTHALENE, REFINED	1334	4.1		NICOTINE TARTRATE	1659	6.1	
alpha-NAPHTHYLAMINE	2077	6.1		NITRATES, INORGANIC, N.O.S.	1477	5.1	
beta-NAPHTHYLAMINE, SOLID	1650	6.1		NITRATES, INORGANIC, AQUEOUS SOLUTION, N.O.S.	3218	5.1	
beta-NAPHTHYLAMINE, SOLUTION	3411	6.1		NITRATING ACID MIXTURE with more than 50 % nitric acid	1796	8	
NAPHTHYLTHIOUREA	1651	6.1		NITRATING ACID MIXTURE with not more than 50 % nitric acid	1796	8	
1-Naphthylthiourea, see	1651	6.1		NITRATING ACID MIXTURE, SPENT, with more than 50 % nitric acid	1826	8	
NAPHTHYLUREA	1652	6.1		NITRATING ACID MIXTURE, SPENT, with not more than 50 % nitric acid	1826	8	
NATURAL GAS, COMPRESSED with high methane content	1971	2		NITRIC ACID, other than red fuming, with at least 65 % but not more than 70 % nitric acid	2031	8	
NATURAL GAS, REFRIGERATED LIQUID with high methane content	1972	2		NITRIC ACID, other than red fuming, with less than 65 % nitric acid	2031	8	
Natural gasoline, see	1203	3		NITRIC ACID, other than red fuming, with more than 70 % nitric acid	2031	8	
Neohexane, see	1208	3		NITRIC ACID, RED FUMING	2032	8	
NEON, COMPRESSED	1065	2		NITRIC OXIDE, COMPRESSED	1660	2	
NEON, REFRIGERATED LIQUID	1913	2		NITRIC OXIDE AND DINITROGEN TETROXIDE MIXTURE	1975	2	
Neothyl, see	2612	3		NITRIC OXIDE AND NITROGEN DIOXIDE MIXTURE, see	1975	2	
NICKEL CARBONYL	1259	6.1		NITRILES, FLAMMABLE, TOXIC, N.O.S.	3273	3	
NICKEL CYANIDE	1653	6.1		NITRILES, LIQUID, TOXIC, N.O.S.	3276	6.1	
Nickel (II) cyanide, see	1653	6.1		NITRILES, SOLID, TOXIC, N.O.S.	3439	6.1	
NICKEL NITRATE	2725	5.1		NITRILES, TOXIC, FLAMMABLE, N.O.S.	3275	6.1	
Nickel (II) nitrate, see	2725	5.1		NITRITES, INORGANIC, N.O.S.	2627	5.1	
NICKEL NITRITE	2726	5.1		NITRITES, INORGANIC, AQUEOUS SOLUTION, N.O.S.	3219	5.1	
Nickel (II) nitrite, see	2726	5.1		NITROANILINES (o-, m-, p-)	1661	6.1	
Nickelous nitrate, see	2725	5.1		NITROANISOLE, LIQUID	2730	6.1	
Nickelous nitrite, see	2726	5.1		NITROANISOLE, SOLID	3458	6.1	
Nickel tetracarbonyl, see	1259	6.1		NITROBENZENE	1662	6.1	
NICOTINE	1654	6.1		Nitrobenzene bromide, see	2732	6.1	
NICOTINE COMPOUND, LIQUID, N.O.S.	3144	6.1		NITROBENZENESULPHONIC ACID	2305	8	
NICOTINE COMPOUND, SOLID, N.O.S.	1655	6.1		Nitrobenzol, see	1662	6.1	
NICOTINE HYDROCHLORIDE, LIQUID	1656	6.1					
NICOTINE HYDROCHLORIDE, SOLID	3444	6.1					
NICOTINE HYDROCHLORIDE, SOLUTION	1656	6.1					
NICOTINE PREPARATION, LIQUID, N.O.S.	3144	6.1					
NICOTINE PREPARATION, SOLID, N.O.S.	1655	6.1					
NICOTINE SALICYLATE	1657	6.1					
NICOTINE SULPHATE, SOLID	3445	6.1					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
5-NITROBENZOTRIAZOL	0385	1		3-NITRO-4-CHLOROBENZO-TRIFLUORIDE	2307	6.1	
NITROBENZOTRIFLUORIDES, LIQUID	2306	6.1		NITROCRESOLS, LIQUID	3434	6.1	
NITROBENZOTRIFLUORIDES, SOLID	3431	6.1		NITROCRESOLS, SOLID	2446	6.1	
NITROBROMOBENZENES, LIQUID	2732	6.1		NITROETHANE	2842	3	
NITROBROMOBENZENES, SOLID	3459	6.1		NITROGEN, COMPRESSED	1066	2	
NITROCELLULOSE, dry or wetted with less than 25 % water (or alcohol), by mass	0340	1		NITROGEN DIOXIDE, see	1067	2	
NITROCELLULOSE, unmodified or plasticized with less than 18 % plasticizing substance, by mass	0341	1		NITROGEN, REFRIGERATED LIQUID	1977	2	
NITROCELLULOSE MEMBRANE FILTERS, with not more than 12.6 % nitrogen, by dry mass	3270	4.1		NITROGEN TRIFLUORIDE	2451	2	
NITROCELLULOSE, with not more than 12.6 % nitrogen, by dry mass, MIXTURE WITH PLASTICIZER, WITH PIGMENT	2557	4.1		NITROGEN TRIOXIDE	2421	2	Carriage prohibited
NITROCELLULOSE, with not more than 12.6 % nitrogen, by dry mass, MIXTURE WITH PLASTICIZER, WITHOUT PIGMENT	2557	4.1		NITROGLYCERIN, DESENSITIZED with not less than 40 % non-volatile water-insoluble phlegmatizer, by mass	0143	1	
NITROCELLULOSE, with not more than 12.6 % nitrogen, by dry mass, MIXTURE WITHOUT PLASTICIZER, WITH PIGMENT	2557	4.1		NITROGLYCERIN MIXTURE, DESENSITIZED, LIQUID, N.O.S. with not more than 30 % nitroglycerin, by mass	3357	3	
NITROCELLULOSE, with not more than 12.6 % nitrogen, by dry mass, MIXTURE WITHOUT PLASTICIZER, WITHOUT PIGMENT	2557	4.1		NITROGLYCERIN MIXTURE, DESENSITIZED, LIQUID, FLAMMABLE, N.O.S. with not more than 30 % nitroglycerin, by mass	3343	3	
NITROCELLULOSE, with not more than 12.6 % nitrogen, by dry mass, MIXTURE WITH PLASTICIZER, WITH PIGMENT	2557	4.1		NITROGLYCERIN MIXTURE, DESENSITIZED, SOLID, N.O.S. with more than 2 % but not more than 10 % nitroglycerin, by mass	3319	4.1	
NITROCELLULOSE, with not more than 12.6 % nitrogen, by dry mass, MIXTURE WITHOUT PLASTICIZER, WITHOUT PIGMENT	2557	4.1		NITROGLYCERIN, SOLUTION IN ALCOHOL with more than 1 % but not more than 5 % nitroglycerin	3064	3	
NITROCELLULOSE, PLASTICIZED with not less than 18 % plasticizing substance, by mass	0343	1		NITROGLYCERIN SOLUTION IN ALCOHOL with more than 1 % but not more than 10 % nitroglycerin	0144	1	
NITROCELLULOSE SOLUTION, FLAMMABLE with not more than 12.6 % nitrogen, by dry mass, and not more than 55 % nitrocellulose	2059	3		NITROGLYCERIN SOLUTION IN ALCOHOL with not more than 1 % nitroglycerin	1204	3	
NITROCELLULOSE, WETTED with not less than 25 % alcohol, by mass	0342	1		NITROGUANIDINE, dry or wetted with less than 20 % water, by mass	0282	1	
NITROCELLULOSE WITH ALCOHOL (not less than 25 % alcohol, by mass, and not more than 12.6 % nitrogen, by dry mass)	2556	4.1		NITROGUANIDINE, WETTED with not less than 20 % water, by mass	1336	4.1	
NITROCELLULOSE WITH WATER (not less than 25 % water, by mass)	2555	4.1		NITROHYDROCHLORIC ACID	1798	8	Carriage prohibited
Nitrochlorobenzenes, see	1578 3409	6.1		NITROMANNITE, WETTED, see	0133	1	
				NITROMETHANE	1261	3	
				Nitromuriatic acid, see	1798	8	
				NITRONAPHTHALENE	2538	4.1	
				NITROPHENOLS (o-, m-, p-)	1663	6.1	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
4-NITROPHENYL-HYDRAZINE, with not less than 30 % water, by mass	3376	4.1		OCTYL ALDEHYDES	1191	3	
NITROPROPANES	2608	3		tert-Octyl mercaptan, see	3023	6.1	
p-NITROSODIMETHYLANILINE	1369	4.2		OCTYLTRICHLOROSILANE	1801	8	
NITROSTARCH, dry or wetted with less than 20 % water, by mass	0146	1		Oenanthol, see	3056	3	
NITROSTARCH, WETTED with not less than 20 % water, by mass	1337	4.1		OIL GAS, COMPRESSED	1071	2	
NITROSYL CHLORIDE	1069	2		Oleum, see	1831	8	
NITROSYLSULPHURIC ACID, LIQUID	2308	8		ORGANIC PEROXIDE TYPE B, LIQUID	3101	5.2	
NITROSYLSULPHURIC ACID, SOLID	3456	8		ORGANIC PEROXIDE TYPE B, LIQUID, TEMPERATURE CONTROLLED	3111	5.2	
NITROTOLUENES, LIQUID	1664	6.1		ORGANIC PEROXIDE TYPE B, SOLID	3102	5.2	
NITROTOLUENES, SOLID	3446	6.1		ORGANIC PEROXIDE TYPE B, SOLID, TEMPERATURE CONTROLLED	3112	5.2	
NITROTOLUIDINES	2660	6.1		ORGANIC PEROXIDE TYPE C, LIQUID	3103	5.2	
NITROTRIAZOLONE	0490	1		ORGANIC PEROXIDE TYPE C, LIQUID, TEMPERATURE CONTROLLED	3113	5.2	
NITRO UREA	0147	1		ORGANIC PEROXIDE TYPE C, SOLID	3104	5.2	
NITROUS OXIDE	1070	2		ORGANIC PEROXIDE TYPE C, SOLID, TEMPERATURE CONTROLLED	3114	5.2	
NITROUS OXIDE, REFRIGERATED LIQUID	2201	2		ORGANIC PEROXIDE TYPE D, LIQUID	3105	5.2	
NITROXYLENES, LIQUID	1665	6.1		ORGANIC PEROXIDE TYPE D, LIQUID, TEMPERATURE CONTROLLED	3115	5.2	
NITROXYLENES, SOLID	3447	6.1		ORGANIC PEROXIDE TYPE D, SOLID	3106	5.2	
Non-activated carbon, see	1361	4.2		ORGANIC PEROXIDE TYPE D, SOLID, TEMPERATURE CONTROLLED	3116	5.2	
Non-activated charcoal, see	1361	4.2		ORGANIC PEROXIDE TYPE E, LIQUID	3107	5.2	
NONANES	1920	3		ORGANIC PEROXIDE TYPE E, LIQUID, TEMPERATURE CONTROLLED	3117	5.2	
NONYLTRICHLOROSILANE	1799	8		ORGANIC PEROXIDE TYPE E, SOLID	3108	5.2	
2,5-NORBORNADIENE, STABILIZED, see	2251	3		ORGANIC PEROXIDE TYPE E, SOLID, TEMPERATURE CONTROLLED	3118	5.2	
Normal propyl alcohol, see	1274	3		ORGANIC PEROXIDE TYPE F, LIQUID	3109	5.2	
NTO, see	0490	1		ORGANIC PEROXIDE TYPE F, LIQUID, TEMPERATURE CONTROLLED	3119	5.2	
OCTADECYLTRICHLORO-SILANE	1800	8					
OCTADIENE	2309	3					
OCTAFLUOROBUT-2-ENE	2422	2					
OCTAFLUOROCYCLOBUTANE	1976	2					
OCTAFLUOROPROPANE	2424	2					
OCTANES	1262	3					
OCTOGEN, see	0226	1					
	0391	1					
	0484	1					
OCTOL, dry or wetted with less than 15 % water, by mass, see	0266	1					
OCTOLITE, dry or wetted with less than 15 % water, by mass	0266	1					
OCTONAL	0496	1					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
ORGANIC PEROXIDE TYPE F, SOLID	3110	5.2		ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE	3398	4.3	
ORGANIC PEROXIDE TYPE F, SOLID, TEMPERATURE CONTROLLED	3120	5.2		ORGANOMETALLIC SUBSTANCE, SOLID, WATER-REACTIVE	3395	4.3	
Organic peroxides, see 2.2.52.4 for an alphabetic list of currently assigned organic peroxides and see	3101 to 3120	5.2		ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE	3399	4.3	
ORGANIC PIGMENTS, SELF-HEATING	3313	4.2		ORGANOMETALLIC SUBSTANCE, SOLID, WATER-REACTIVE, FLAMMABLE	3396	4.3	
ORGANOARSENIC COMPOUND, LIQUID, N.O.S.	3280	6.1		ORGANOMETALLIC SUBSTANCE, SOLID, WATER-REACTIVE, SELF-HEATING	3397	4.3	
ORGANOARSENIC COMPOUND, SOLID, N.O.S.	3465	6.1		ORGANOPHOSPHORUS COMPOUND, LIQUID, TOXIC, N.O.S.	3278	6.1	
ORGANOCHLORINE PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	2762	3		ORGANOPHOSPHORUS COMPOUND, SOLID, TOXIC, N.O.S.	3464	6.1	
ORGANOCHLORINE PESTICIDE, LIQUID, TOXIC	2996	6.1		ORGANOPHOSPHORUS COMPOUND, TOXIC, FLAMMABLE, N.O.S.	3279	6.1	
ORGANOCHLORINE PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	2995	6.1		ORGANOPHOSPHORUS PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	2784	3	
ORGANOCHLORINE PESTICIDE, SOLID, TOXIC	2761	6.1		ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC	3018	6.1	
ORGANOMETALLIC COMPOUND, LIQUID, TOXIC, N.O.S.	3282	6.1		ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	3017	6.1	
ORGANOMETALLIC COMPOUND, SOLID, TOXIC, N.O.S.	3467	6.1		ORGANOPHOSPHORUS PESTICIDE, SOLID, TOXIC	2783	6.1	
Organometallic compound, solid, water-reactive, flammable, n.o.s., see	3396	4.3		ORGANOTIN COMPOUND, LIQUID, N.O.S.	2788	6.1	
Organometallic compound or Organometallic compound solution or Organometallic compound dispersion, water-reactive, flammable, n.o.s., see	3399	4.3		ORGANOTIN COMPOUND, SOLID, N.O.S.	3146	6.1	
ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC	3392	4.2		ORGANOTIN PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	2787	3	
ORGANOMETALLIC SUBSTANCE, SOLID, PYROPHORIC	3391	4.2		ORGANOTIN PESTICIDE, LIQUID, TOXIC	3020	6.1	
ORGANOMETALLIC SUBSTANCE, SOLID, SELF-HEATING	3400	4.2		ORGANOTIN PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	3019	6.1	
ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER-REACTIVE	3394	4.2		ORGANOTIN PESTICIDE, SOLID, TOXIC	2786	6.1	
ORGANOMETALLIC SUBSTANCE, SOLID, PYROPHORIC, WATER-REACTIVE	3393	4.2		Orthophosphoric acid, see	1805	8	
				OSMIUM TETROXIDE	2471	6.1	
				OXIDIZING LIQUID, N.O.S.	3139	5.1	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
OXIDIZING LIQUID, CORROSIVE, N.O.S.	3098	5.1		PENTAERYTHRITE TETRANITRATE with not less than 7 % wax, by mass	0411	1	
OXIDIZING LIQUID, TOXIC, N.O.S.	3099	5.1		PENTAERYTHRITE TETRANITRATE, DESENSITIZED with not less than 15 % phlegmatizer, by mass	0150	1	
OXIDIZING SOLID, N.O.S.	1479	5.1		PENTAERYTHRITE TETRANITRATE MIXTURE, DESENSITIZED, SOLID, N.O.S. with more than 10 % but not more than 20 % PETN, by mass	3344	4.1	
OXIDIZING SOLID, CORROSIVE, N.O.S.	3085	5.1		PENTAERYTHRITE TETRANITRATE, WETTED with not less than 25 % water, by mass	0150	1	
OXIDIZING SOLID, FLAMMABLE, N.O.S.	3137	5.1	Carriage prohibited	PENTAERYTHRITOL TETRANITRATE, see	0150 0411 3344	1 1 4.1	
OXIDIZING SOLID, SELF-HEATING, N.O.S.	3100	5.1	Carriage prohibited	PENTAFLUOROETHANE	3220	2	
OXIDIZING SOLID, TOXIC, N.O.S.	3087	5.1		Pentafluoroethane, 1,1,1-trifluoroethane, and 1,1,1,2-tetrafluoroethane zeotropic mixture with approximately 44 % pentafluoroethane and 52 % 1,1,1-trifluoroethane, see	3337	2	
OXIDIZING SOLID, WATER-REACTIVE, N.O.S.	3121	5.1	Carriage prohibited	PENTAMETHYLHEPTANE	2286	3	
Oxirane, see	1040	2		Pentanal, see	2058	3	
OXYGEN, COMPRESSED	1072	2		PENTANE-2,4-DIONE	2310	3	
OXYGEN DIFLUORIDE, COMPRESSED	2190	2		PENTANES, liquid	1265	3	
OXYGEN GENERATOR, CHEMICAL	3356	5.1		n-Pentane, see	1265	3	
OXYGEN, REFRIGERATED LIQUID	1073	2		PENTANOLS	1105	3	
1-Oxy-4-nitrobenzene, see	1663	6.1		3-Pentanol, see	1105	3	
PACKAGINGS, DISCARDED, EMPTY, UNCLEANED	3509	9		1-PENTENE	1108	3	
PAIN (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)	1263 3066 3469 3470	3 8 3 8		1-PENTOL	2705	8	
PAIN RELATED MATERIAL (including paint thinning and reducing compound)	1263 3066 3469 3470	3 8 3 8		PENTOLITE, dry or wetted with less than 15 % water, by mass	0151	1	
Paint thinning and reducing compound, see	1263 3066 3469 3470	3 8 3 8		Pentyl nitrite, see	1113	3	
PAPER, UNSATURATED OIL TREATED, incompletely dried (including carbon paper)	1379	4.2		PERCHLORATES, INORGANIC, N.O.S.	1481	5.1	
Paraffin, see	1223	3		PERCHLORATES, INORGANIC, AQUEOUS SOLUTION, N.O.S.	3211	5.1	
PARAFORMALDEHYDE	2213	4.1		PERCHLORIC ACID with more than 50 % but not more than 72 % acid, by mass	1873	5.1	
PARALDEHYDE	1264	3		PERCHLORIC ACID with not more than 50 % acid, by mass	1802	8	
PCBs, see	2315 3432	9 9		Perchlorobenzene, see	2729	6.1	
PENTABORANE	1380	4.2		Perchlorocyclopentadiene, see	2646	6.1	
PENTACHLOROETHANE	1669	6.1		Perchloroethylene, see	1897	6.1	
PENTACHLOROPHENOL	3155	6.1		PERCHLOROMETHYL MERCAPTAN	1670	6.1	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
PERCHLORYL FLUORIDE	3083	2		Petroleum spirit, see	1268	3	
Perfluoroacetylchloride, see	3057	2		PHENACYL BROMIDE	2645	6.1	
PERFLUORO (ETHYL VINYL ETHER)	3154	2		PHENETIDINES	2311	6.1	
PERFLUORO (METHYL VINYL ETHER)	3153	2		PHENOLATES, LIQUID	2904	8	
Perfluoropropane, see	2424	2		PHENOLATES, SOLID	2905	8	
PERFUMERY PRODUCTS with flammable solvents	1266	3		PHENOL, MOLTEN	2312	6.1	
PERMANGANATES, INORGANIC, N.O.S.	1482	5.1		PHENOL, SOLID	1671	6.1	
PERMANGANATES, INORGANIC, AQUEOUS SOLUTION, N.O.S.	3214	5.1		PHENOL SOLUTION	2821	6.1	
PEROXIDES, INORGANIC, N.O.S.	1483	5.1		PHENOLSULPHONIC ACID, LIQUID	1803	8	
PERSULPHATES, INORGANIC, N.O.S.	3215	5.1		PHENOXYACETIC ACID DERIVATIVE PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	3346	3	
PERSULPHATES, INORGANIC, AQUEOUS SOLUTION, N.O.S.	3216	5.1		PHENOXYACETIC ACID DERIVATIVE PESTICIDE, LIQUID, TOXIC	3348	6.1	
PESTICIDE, LIQUID, FLAMMABLE, TOXIC, N.O.S., flash-point less than 23 °C	3021	3		PHENOXYACETIC ACID DERIVATIVE PESTICIDE, LIQUID, TOXIC	3347	6.1	
PESTICIDE, LIQUID, TOXIC, N.O.S.	2902	6.1		PHENOXYACETIC ACID DERIVATIVE PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	3345	6.1	
PESTICIDE, LIQUID, TOXIC, FLAMMABLE, N.O.S., flash-point not less than 23 °C	2903	6.1		PHENOXYACETIC ACID DERIVATIVE PESTICIDE, SOLID, TOXIC			
PESTICIDE, SOLID, TOXIC, N.O.S.	2588	6.1		PHENYLACETONITRILE, LIQUID	2470	6.1	
Pesticide, toxic, under compressed gas, n.o.s, see	1950	2		PHENYLACETYL CHLORIDE	2577	8	
PETN, see	0150	1		Phenylamine, see	1547	6.1	
	0411	1		1-Phenylbutane, see	2709	3	
	3344	4.1		2-Phenylbutane, see	2709	3	
PETN/TNT, see	0151	1		PHENYLCARBYLAMINE CHLORIDE	1672	6.1	
PETROL	1203	3		PHENYL CHLOROFORMATE	2746	6.1	
Petrol and ethanol mixture, with more than 10 % ethanol, see	3475	3		Phenyl cyanide, see	2224	6.1	
PETROLEUM CRUDE OIL	1267	3		PHENYLENEDIAMINES (o-, m-, p-)	1673	6.1	
PETROLEUM DISTILLATES, N.O.S.	1268	3		Phenylethylene, see	2055	3	
Petroleum ether, see	1268	3		PHENYLHYDRAZINE	2572	6.1	
PETROLEUM GASES, LIQUEFIED	1075	2		PHENYL ISOCYANATE	2487	6.1	
Petroleum naphtha, see	1268	3		Phenylisocyanodichloride, see	1672	6.1	
Petroleum oil, see	1268	3		PHENYL MERCAPTAN	2337	6.1	
PETROLEUM PRODUCTS, N.O.S.	1268	3		PHENYLMERCURIC ACETATE	1674	6.1	
Petroleum raffinate, see	1268	3		PHENYLMERCURIC COMPOUND, N.O.S.	2026	6.1	
PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC	3494	3		PHENYLMERCURIC HYDROXIDE	1894	6.1	
				PHENYLMERCURIC NITRATE	1895	6.1	
				PHENYLPHOSPHORUS DICHLORIDE	2798	8	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
PHENYLPHOSPHORUS THIODICHLORIDE	2799	8		PHOSPHORUS, WHITE, MOLTEN	2447	4.2	
2-Phenylpropene, see	2303	3		PHOSPHORUS, WHITE, UNDER WATER	1381	4.2	
PHENYLTRICHLOROSILANE	1804	8		PHOSPHORUS, YELLOW, DRY	1381	4.2	
PHOSGENE	1076	2		PHOSPHORUS, YELLOW, IN SOLUTION	1381	4.2	
9-PHOSPHABICYCLO-NONANES	2940	4.2		PHOSPHORUS, YELLOW, UNDER WATER	1381	4.2	
PHOSPHINE	2199	2		Phosphoryl chloride, see	1810	6.1	
PHOSPHINE, ADSORBED	3525	2		PHTHALIC ANHYDRIDE with more than 0.05 % of maleic anhydride	2214	8	
Phosphoretted hydrogen, see	2199	2		PICOLINES	2313	3	
PHOSPHORIC ACID, SOLUTION	1805	8		PICRAMIDE, see	0153	1	
PHOSPHORIC ACID, SOLID	3453	8		PICRIC ACID, WETTED, see	1344 3364	4.1 4.1	
Phosphoric acid, anhydrous, see	1807	8		PICRITE, see	0282	1	
PHOSPHOROUS ACID	2834	8		PICRITE, WETTED, see	1336	4.1	
PHOSPHORUS, AMORPHOUS	1338	4.1		Picrotoxin, see	3172 3462	6.1 6.1	
Phosphorus bromide, see	1808	8		PICRYL CHLORIDE, see	0155	1	
Phosphorus chloride, see	1809	6.1		PICRYL CHLORIDE, WETTED, see	3365	4.1	
PHOSPHORUS HEPTASULPHIDE, free from yellow and white phosphorus	1339	4.1		alpha-PINENE	2368	3	
PHOSPHORUS OXYBROMIDE	1939	8		PINE OIL	1272	3	
PHOSPHORUS OXYBROMIDE, MOLTEN	2576	8		PIPERAZINE	2579	8	
PHOSPHORUS OXYCHLORIDE	1810	6.1		PIPERIDINE	2401	8	
PHOSPHORUS PENTABROMIDE	2691	8		Pivaloyl chloride, see	2438	6.1	
PHOSPHORUS PENTACHLORIDE	1806	8		Plastic explosives, see	0084	1	
PHOSPHORUS PENTAFLUORIDE	2198	2		PLASTICS MOULDING COMPOUND in dough, sheet or extruded rope form evolving flammable vapour	3314	9	
PHOSPHORUS PENTAFLUORIDE, ADSORBED	3524	2		PLASTICS, NITROCELLULOSE-BASED, SELF-HEATING, N.O.S.	2006	4.2	
PHOSPHORUS PENTASULPHIDE, free from yellow and white phosphorus	1340	4.3		Polish, see	1263 3066 3469 3470	3 8 3 8	
PHOSPHORUS PENTOXIDE	1807	8		POLYAMINES, FLAMMABLE, CORROSIVE, N.O.S.	2733	3	
PHOSPHORUS SESQUISULPHIDE, free from yellow and white phosphorus	1341	4.1		POLYAMINES, LIQUID, CORROSIVE, N.O.S.	2735	8	
Phosphorus (V) sulphide, free from yellow and white phosphorus, see	1340	4.3		POLYAMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.	2734	8	
Phosphorus sulphochloride, see	1837	8		POLYAMINES, SOLID, CORROSIVE, N.O.S.	3259	8	
PHOSPHORUS TRIBROMIDE	1808	8		POLYCHLORINATED BIPHENYLS, LIQUID	2315	9	
PHOSPHORUS TRICHLORIDE	1809	6.1					
PHOSPHORUS TRIOXIDE	2578	8					
PHOSPHORUS TRISULPHIDE, free from yellow and white phosphorus	1343	4.1					
PHOSPHORUS, WHITE, DRY	1381	4.2					
PHOSPHORUS, WHITE IN SOLUTION	1381	4.2					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
POLYCHLORINATED BIPHENYLS, SOLID	3432	9		POTASSIUM FLUORIDE, SOLUTION	3422	6.1	
POLYESTER RESIN KIT, liquid base material	3269	3		POTASSIUM FLUOROACETATE	2628	6.1	
POLYESTER RESIN KIT, solid base material	3527	4.1		POTASSIUM FLUROSILICATE	2655	6.1	
POLYHALOGENATED BIPHENYLS, LIQUID	3151	9		Potassium hexafluorosilicate, see	2655	6.1	
POLYHALOGENATED BIPHENYLS, SOLID	3152	9		Potassium hydrate, see	1814	8	
POLYHALOGENATED TERPHENYLS, LIQUID	3151	9		POTASSIUM HYDROGENDIFLUORIDE, SOLID	1811	8	
POLYHALOGENATED TERPHENYLS, SOLID	3152	9		POTASSIUM HYDROGENDIFLUORIDE, SOLUTION	3421	8	
POLYMERIC BEADS, EXPANDABLE, evolving flammable vapour	2211	9		POTASSIUM HYDROGEN SULPHATE	2509	8	
POLYMERIZING SUBSTANCE, LIQUID, STABILIZED, N.O.S.	3532	4.1		POTASSIUM HYDROSULPHITE, see	1929	4.2	
POLYMERIZING SUBSTANCE, LIQUID, TEMPERATURE CONTROLLED, N.O.S.	3534	4.1		Potassium hydroxide, liquid, see	1814	8	
POLYMERIZING SUBSTANCE, SOLID, STABILIZED, N.O.S.	3531	4.1		POTASSIUM HYDROXIDE, SOLID	1813	8	
POLYMERIZING SUBSTANCE, SOLID, TEMPERATURE CONTROLLED, N.O.S.	3533	4.1		POTASSIUM HYDROXIDE SOLUTION	1814	8	
Polystyrene beads, expandable, see	2211	9		POTASSIUM METAL ALLOYS, LIQUID	1420	4.3	
POTASSIUM	2257	4.3		POTASSIUM METAL ALLOYS, SOLID	3403	4.3	
POTASSIUM ARSENATE	1677	6.1		POTASSIUM METAVANADATE	2864	6.1	
POTASSIUM ARSENITE	1678	6.1		POTASSIUM MONOXIDE	2033	8	
Potassium bifluoride, see	1811	8		POTASSIUM NITRATE	1486	5.1	
Potassium bisulphate, see	2509	8		Potassium nitrate and sodium nitrate mixture, see	1499	5.1	
Potassium bisulphite solution, see	2693	8		POTASSIUM NITRATE AND SODIUM NITRITE MIXTURE	1487	5.1	
POTASSIUM BOROHYDRIDE	1870	4.3		POTASSIUM NITRITE	1488	5.1	
POTASSIUM BROMATE	1484	5.1		POTASSIUM PERCHLORATE	1489	5.1	
POTASSIUM CHLORATE	1485	5.1		POTASSIUM PERMANGANATE	1490	5.1	
POTASSIUM CHLORATE, AQUEOUS SOLUTION	2427	5.1		POTASSIUM PEROXIDE	1491	5.1	
Potassium chlorate mixed with mineral oil, see	0083	1		POTASSIUM PERSULPHATE	1492	5.1	
POTASSIUM CUPROCYANIDE	1679	6.1		POTASSIUM PHOSPHIDE	2012	4.3	
POTASSIUM CYANIDE, SOLID	1680	6.1		Potassium selenate, see	2630	6.1	
POTASSIUM CYANIDE, SOLUTION	3413	6.1		Potassium selenite, see	2630	6.1	
Potassium dicyanocuprate (I), see	1679	6.1		Potassium silicofluoride, see	2655	6.1	
POTASSIUM DITHIONITE	1929	4.2		POTASSIUM SODIUM ALLOYS, LIQUID	1422	4.3	
POTASSIUM FLUORIDE, SOLID	1812	6.1		POTASSIUM SODIUM ALLOYS, SOLID	3404	4.3	
				POTASSIUM SULPHIDE with less than 30 % water of crystallization	1382	4.2	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
POTASSIUM SULPHIDE, ANHYDROUS	1382	4.2		PROPANETHIOLS	2402	3	
POTASSIUM SULPHIDE, HYDRATED with not less than 30 % water of crystallization	1847	8		n-PROPANOL	1274	3	
POTASSIUM SUPEROXIDE	2466	5.1		PROPELLANT, LIQUID	0495	1	
Potassium tetracyanomercurate (II), see	1626	6.1		0497	1		
POWDER CAKE, WETTED with not less than 17 % alcohol, by mass	0433	1		PROPELLANT, SOLID	0498	1	
POWDER CAKE, WETTED with not less than 25 % water, by mass	0159	1		0499	1		
POWDER PASTE, see	0159	1		0501	1		
POWDER, SMOKELESS	0160	1		Propellant with a single base,	0160	1	
	0161	1		Propellant with a double base,	0161	1	
	0509	1		Propellant with a triple base, see			
Power devices, explosive, see	0275	1		Propene, see	1077	2	
	0276	1		PROPIONALDEHYDE	1275	3	
	0323	1		PROPIONIC ACID with not less than 10 % and less than 90 % acid by mass	1848	8	
	0381	1		PROPIONIC ACID with not less than 90 % acid by mass	3463	8	
PRIMERS, CAP TYPE	0044	1		PROPIONIC ANHYDRIDE	2496	8	
	0377	1		PROPIONITRILE	2404	3	
	0378	1		PROPIONYL CHLORIDE	1815	3	
Primers, small arms, see	0044	1		n-PROPYL ACETATE	1276	3	
PRIMERS, TUBULAR	0319	1		PROPYL ALCOHOL, NORMAL, see	1274	3	
	0320	1		PROPYLAMINE	1277	3	
	0376	1		n-PROPYLBENZENE	2364	3	
PRINTING INK, flammable or PRINTING INK RELATED MATERIAL (including printing ink thinning or reducing compound), flammable	1210	3		Propyl chloride, see	1278	3	
Projectiles, illuminating, see	0171	1		n-PROPYL CHLOROFORMATE	2740	6.1	
	0254	1		PROPYLENE	1077	2	
	0297	1		PROPYLENE CHLOROHYDRIN	2611	6.1	
PROJECTILES, inert with tracer	0345	1		1,2-PROPYLENEDIAMINE	2258	8	
	0424	1		Propylene dichloride, see	1279	3	
	0425	1		PROPYLENEIMINE, STABILIZED	1921	3	
PROJECTILES with burster or expelling charge	0346	1		PROPYLENE OXIDE	1280	3	
	0347	1		PROPYLENE TETRAMER	2850	3	
	0426	1		Propylene trimer, see	2057	3	
	0427	1		PROPYL FORMATES	1281	3	
	0434	1		n-PROPYL ISOCYANATE	2482	6.1	
	0435	1		Propyl mercaptan, see	2402	3	
PROJECTILES with bursting charge	0167	1		n-PROPYL NITRATE	1865	3	
	0168	1		PROPYLTRICHLOROSILANE	1816	8	
	0169	1		Pyrazine hexahydride, see	2579	8	
	0324	1		PYRETHROID PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	3350	3	
	0344	1		PYRETHROID PESTICIDE, LIQUID, TOXIC	3352	6.1	
PROPADIENE, STABILIZED	2200	2					
Propadiene and methyl acetylene mixture, stabilized, see	1060	2					
PROPANE	1978	2					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
PYRETHROID PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	3351	6.1		RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-III), FISSILE	3325	7	
PYRETHROID PESTICIDE, SOLID, TOXIC	3349	6.1		RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-III), non fissile or fissile-excepted	3322	7	
PYRIDINE	1282	3		RADIOACTIVE MATERIAL, SURFACE CONTAMINATED OBJECTS (SCO-I or SCO-II), FISSILE	3326	7	
PYROPHORIC ALLOY, N.O.S.	1383	4.2		RADIOACTIVE MATERIAL, SURFACE CONTAMINATED OBJECTS (SCO-I, SCO-II or SCO-III), non fissile or fissile-excepted	2913	7	
Pyrophoric organometallic compound, water-reactive, n.o.s., liquid, see	3394	4.2		RADIOACTIVE MATERIAL, TRANSPORTED UNDER SPECIAL ARRANGEMENT, FISSILE	3331	7	
Pyrophoric organometallic compound, water-reactive, n.o.s., solid, see	3393	4.2		RADIOACTIVE MATERIAL, TRANSPORTED UNDER SPECIAL ARRANGEMENT, non fissile or fissile-excepted	2919	7	
PYROPHORIC LIQUID, INORGANIC, N.O.S.	3194	4.2		RADIOACTIVE MATERIAL, TYPE A PACKAGE, FISSILE, non-special form	3327	7	
PYROPHORIC LIQUID, ORGANIC, N.O.S.	2845	4.2		RADIOACTIVE MATERIAL, TYPE A PACKAGE, non-special form, non fissile or fissile-excepted	2915	7	
PYROPHORIC METAL, N.O.S.	1383	4.2		RADIOACTIVE MATERIAL, TYPE A PACKAGE, SPECIAL FORM, FISSILE	3333	7	
PYROPHORIC SOLID, INORGANIC, N.O.S.	3200	4.2		RADIOACTIVE MATERIAL, TYPE A PACKAGE, SPECIAL FORM, non fissile or fissile-excepted	3332	7	
PYROPHORIC SOLID, ORGANIC, N.O.S.	2846	4.2		RADIOACTIVE MATERIAL, TYPE B(M) PACKAGE, FISSILE	3329	7	
PYROSULPHURYL CHLORIDE	1817	8		RADIOACTIVE MATERIAL, TYPE B(M) PACKAGE, non fissile or fissile-excepted	2917	7	
Pyroxylin solution, see	2059	3		RADIOACTIVE MATERIAL, TYPE B(U) PACKAGE, FISSILE	3328	7	
PYRROLIDINE	1922	3		RADIOACTIVE MATERIAL, TYPE B(U) PACKAGE, non fissile or fissile-excepted	2916	7	
QUINOLINE	2656	6.1		RADIOACTIVE MATERIAL, TYPE C PACKAGE, FISSILE	3330	7	
Quinone, see	2587	6.1		RADIOACTIVE MATERIAL, TYPE C PACKAGE, non fissile or fissile-excepted	3323	7	
RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - ARTICLES MANUFACTURED FROM NATURAL URANIUM or DEPLETED URANIUM or NATURAL THORIUM	2909	7		RADIOACTIVE MATERIAL, URANIUM HEXAFLUORIDE, FISSILE	2977	7	
RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - EMPTY PACKAGING	2908	7		RADIOACTIVE MATERIAL, URANIUM HEXAFLUORIDE, non fissile or fissile-excepted	2978	7	
RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - INSTRUMENTS or ARTICLES	2911	7					
RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - LIMITED QUANTITY OF MATERIAL	2910	7					
RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-I), non fissile or fissile-excepted	2912	7					
RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-II), FISSILE	3324	7					
RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-II), non fissile or fissile-excepted	3321	7					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
Rags, oily	1856	4.2	Not subject to ADR	REFRIGERANT GAS R 1318, see	2422	2	
RDX, see	0072	1		REFRIGERANT GAS RC 318, see	1976	2	
	0391	1		REFRIGERATING MACHINES	3358	2	
	0483	1		containing flammable, non-toxic, liquefied gas			
RECEPTACLES, SMALL, CONTAINING GAS without a release device, non-refillable	2037	2		REFRIGERATING MACHINES	2857	2	
Red phosphorus, see	1338	4.1		containing non-flammable, non-toxic, gases or ammonia solutions (UN 2672)			
REFRIGERANT GAS, N.O.S., such as mixture F1, mixture F2 or mixture P2	1078	2		REGULATED MEDICAL WASTE, N.O.S.	3291	6.2	
REFRIGERANT GAS R 12, see	1028	2		RELEASE DEVICES, EXPLOSIVE	0173	1	
REFRIGERANT GAS R 12B1, see	1974	2		RESIN SOLUTION, flammable	1866	3	
REFRIGERANT GAS R 13, see	1022	2		Resorcin, see	2876	6.1	
REFRIGERANT GAS R 13B1, see	1009	2		RESORCINOL	2876	6.1	
REFRIGERANT GAS R 14, see	1982	2		RIVETS, EXPLOSIVE	0174	1	
REFRIGERANT GAS R 21, see	1029	2		Road oil, with a flash-point not greater than 60 °C, see	1999	3	
REFRIGERANT GAS R 22, see	1018	2		Road oil, with a flash-point above 60 °C, at or above its flash-point, see	3256	3	
REFRIGERANT GAS R 23, see	1984	2		Road oil, at or above 100 °C and below its flash-point, see	3257	9	
REFRIGERANT GAS R 32, see	3252	2		ROCKET MOTORS	0186	1	
REFRIGERANT GAS R 40, see	1063	2			0280	1	
REFRIGERANT GAS R 41, see	2454	2			0281	1	
REFRIGERANT GAS R 114, see	1958	2			0510	1	
REFRIGERANT GAS R 115, see	1020	2		ROCKET MOTORS, LIQUID FUELLED	0395	1	
REFRIGERANT GAS R 116, see	2193	2			0396	1	
REFRIGERANT GAS R 124, see	1021	2		ROCKET MOTORS WITH HYPERGOLIC LIQUIDS with or without expelling charge	0250	1	
REFRIGERANT GAS R 125, see	3220	2			0322	1	
REFRIGERANT GAS R 133a, see	1983	2		ROCKETS with bursting charge	0180	1	
REFRIGERANT GAS R 134a, see	3159	2			0181	1	
REFRIGERANT GAS R 142b, see	2517	2			0182	1	
REFRIGERANT GAS R 143a, see	2035	2			0295	1	
REFRIGERANT GAS R 152a, see	1030	2		ROCKETS with expelling charge	0436	1	
REFRIGERANT GAS R 161, see	2453	2			0437	1	
REFRIGERANT GAS R 218, see	2424	2			0438	1	
REFRIGERANT GAS R 227, see	3296	2		ROCKETS with inert head	0183	1	
REFRIGERANT GAS R 404A	3337	2			0502	1	
REFRIGERANT GAS R 407A	3338	2		ROCKETS, LINE-THROWING	0238	1	
REFRIGERANT GAS R 407B	3339	2			0240	1	
REFRIGERANT GAS R 407C	3340	2		ROCKETS, LIQUID FUELLED with bursting charge	0397	1	
REFRIGERANT GAS R 500, see	2602	2			0398	1	
REFRIGERANT GAS R 502, see	1973	2		ROSIN OIL	1286	3	
REFRIGERANT GAS R 503, see	2599	2		RUBBER SCRAP, powdered or granulated, not exceeding 840 microns and rubber content exceeding 45 %	1345	4.1	
REFRIGERANT GAS R 1132a, see	1959	2					
REFRIGERANT GAS R 1216, see	1858	2					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
RUBBER SHODDY, powdered or granulated, not exceeding 840 microns and rubber content exceeding 45 %	1345	4.1		SELF-HEATING SOLID, CORROSIVE, INORGANIC, N.O.S.	3192	4.2	
RUBBER SOLUTION	1287	3		SELF-HEATING SOLID, CORROSIVE, ORGANIC, N.O.S.	3126	4.2	
RUBIDIUM	1423	4.3		SELF-HEATING SOLID, INORGANIC, N.O.S.	3190	4.2	
RUBIDIUM HYDROXIDE	2678	8		SELF-HEATING SOLID, ORGANIC, N.O.S.	3088	4.2	
RUBIDIUM HYDROXIDE SOLUTION	2677	8		SELF-HEATING SOLID, OXIDIZING, N.O.S.	3127	4.2	Carriage prohibited
Rubidium nitrate, see	1477	5.1		SELF-HEATING SOLID, TOXIC, INORGANIC, N.O.S.	3191	4.2	
SAFETY DEVICES, electrically initiated	3268	9		SELF-HEATING SOLID, TOXIC, ORGANIC, N.O.S.	3128	4.2	
SAFETY DEVICES, PYROTECHNIC	0503	1		SELF-REACTIVE LIQUID TYPE B	3221	4.1	
Saltpetre, see	1486	5.1		SELF-REACTIVE LIQUID TYPE B, TEMPERATURE CONTROLLED	3231	4.1	
SAMPLES, EXPLOSIVE, other than initiating explosive	0190	1		SELF-REACTIVE LIQUID TYPE C	3223	4.1	
Sand acid, see	1778	8		SELF-REACTIVE LIQUID TYPE C, TEMPERATURE CONTROLLED	3233	4.1	
Seat-belt pretensioners, see	0503	1		SELF-REACTIVE LIQUID TYPE D	3225	4.1	
SEED CAKE with more than 1.5 % oil and not more than 11 % moisture	1386	4.2		SELF-REACTIVE LIQUID TYPE D, TEMPERATURE CONTROLLED	3235	4.1	
SEED CAKE with not more than 1.5 % oil and not more than 11 % moisture	2217	4.2		SELF-REACTIVE LIQUID TYPE E	3227	4.1	
Seed expellers, see	1386	4.2		SELF-REACTIVE LIQUID TYPE E, TEMPERATURE CONTROLLED	3237	4.1	
SELENATES	2630	6.1		SELF-REACTIVE LIQUID TYPE F	3229	4.1	
SELENIC ACID	1905	8		SELF-REACTIVE LIQUID TYPE F, TEMPERATURE CONTROLLED	3239	4.1	
SELENITES	2630	6.1		SELF-REACTIVE SOLID TYPE B	3222	4.1	
SELENIUM COMPOUND, LIQUID, N.O.S.	3440	6.1		SELF-REACTIVE SOLID TYPE B, TEMPERATURE CONTROLLED	3232	4.1	
SELENIUM COMPOUND, SOLID, N.O.S.	3283	6.1		SELF-REACTIVE SOLID TYPE C	3224	4.1	
SELENIUM DISULPHIDE	2657	6.1		SELF-REACTIVE SOLID TYPE C, TEMPERATURE CONTROLLED	3234	4.1	
SELENIUM HEXAFLUORIDE	2194	2		SELF-REACTIVE SOLID TYPE D	3226	4.1	
SELENIUM OXYCHLORIDE	2879	8		SELF-REACTIVE SOLID TYPE D, TEMPERATURE CONTROLLED	3236	4.1	
SELF-HEATING LIQUID, CORROSIVE, INORGANIC, N.O.S.	3188	4.2		SELF-REACTIVE SOLID TYPE E	3228	4.1	
SELF-HEATING LIQUID, CORROSIVE, ORGANIC, N.O.S.	3185	4.2		SELF-REACTIVE SOLID TYPE E, TEMPERATURE CONTROLLED	3238	4.1	
SELF-HEATING LIQUID, INORGANIC, N.O.S.	3186	4.2		SELF-REACTIVE SOLID TYPE F	3230	4.1	
SELF-HEATING LIQUID, ORGANIC, N.O.S.	3183	4.2		SELF-REACTIVE SOLID TYPE F, TEMPERATURE CONTROLLED	3240	4.1	
SELF-HEATING LIQUID, TOXIC, INORGANIC, N.O.S.	3187	4.2		SHALE OIL	1288	3	
SELF-HEATING LIQUID, TOXIC, ORGANIC, N.O.S.	3184	4.2					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
Shaped charges, see	0059	1		SODIUM ARSANILATE	2473	6.1	
	0439	1		SODIUM ARSENATE	1685	6.1	
	0440	1		SODIUM ARSENITE, AQUEOUS SOLUTION	1686	6.1	
	0441	1		SODIUM ARSENITE, SOLID	2027	6.1	
Shellac, see	1263	3		SODIUM AZIDE	1687	6.1	
	3066	8		Sodium bifluoride, see	2439	8	
	3469	3		Sodium binoxide, see	1504	5.1	
	3470	8		Sodium bisulphite solution, see	2693	8	
SIGNAL DEVICES, HAND	0191	1		SODIUM BOROHYDRIDE	1426	4.3	
	0373	1		SODIUM BOROHYDRIDE AND SODIUM HYDROXIDE SOLUTION, with not more than 12 % sodium borohydride and not more than 40 % sodium hydroxide by mass	3320	8	
SIGNALS, DISTRESS, ship	0194	1		SODIUM BROMATE	1494	5.1	
	0195	1		SODIUM CACODYLATE	1688	6.1	
	0505	1		SODIUM CARBONATE PEROXYHYDRATE	3378	5.1	
	0506	1		SODIUM CHLORATE	1495	5.1	
Signals, distress, ship, water-activated, see	0249	1		SODIUM CHLORATE, AQUEOUS SOLUTION	2428	5.1	
SIGNALS, RAILWAY TRACK, EXPLOSIVE	0192	1		Sodium chlorate mixed with dinitrotoluene, see	0083	1	
	0193	1		SODIUM CHLORITE	1496	5.1	
	0492	1		SODIUM CHLOROACETATE	2659	6.1	
	0493	1		SODIUM CUPROCYANIDE, SOLID	2316	6.1	
SIGNALS, SMOKE	0196	1		SODIUM CUPROCYANIDE SOLUTION	2317	6.1	
	0197	1		SODIUM CYANIDE, SOLID	1689	6.1	
	0313	1		SODIUM CYANIDE, SOLUTION	3414	6.1	
	0487	1		Sodium dicyanocuprate (I), solid, see	2316	6.1	
	0507	1		Sodium dicyanocuprate (I) solution, see	2317	6.1	
SILANE	2203	2		Sodium dimethylarsenate, see	1688	6.1	
Silicofluoric acid, see	1778	8		SODIUM DINITRO-o-CRESOLATE, dry or wetted with less than 15 % water, by mass	0234	1	
Silicofluorides, n.o.s., see	2856	6.1		SODIUM DINITRO-o-CRESOLATE, WETTED with not less than 10 % water, by mass	3369	4.1	
Silicon chloride, see	1818	8		SODIUM DINITRO-o-CRESOLATE, WETTED with not less than 15 % water, by mass	1348	4.1	
SILICON POWDER, AMORPHOUS	1346	4.1		Sodium dioxide, see	1504	5.1	
SILICON TETRACHLORIDE	1818	8		SODIUM DITHIONITE	1384	4.2	
SILICON TETRAFLUORIDE	1859	2		SODIUM FLUORIDE, SOLID	1690	6.1	
SILICON TETRAFLUORIDE, ADSORBED	3521	2					
SILVER ARSENITE	1683	6.1					
SILVER CYANIDE	1684	6.1					
SILVER NITRATE	1493	5.1					
SILVER PICRATE, WETTED with not less than 30 % water, by mass	1347	4.1					
SLUDGE ACID	1906	8					
SODA LIME with more than 4 % sodium hydroxide	1907	8					
SODIUM	1428	4.3					
Sodium aluminate, solid	2812	8	Not subject to ADR				
SODIUM ALUMINATE SOLUTION	1819	8					
SODIUM ALUMINIUM HYDRIDE	2835	4.3					
SODIUM AMMONIUM VANADATE	2863	6.1					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
SODIUM FLUORIDE, SOLUTION	3415	6.1		SODIUM PICRAMATE, WETTED with not less than 20 % water, by mass	1349	4.1	
SODIUM FLUOROACETATE	2629	6.1		Sodium potassium alloys, liquid, see	1422	4.3	
SODIUM FLUROSILICATE	2674	6.1		Sodium selenate, see	2630	6.1	
Sodium hexafluorosilicate, see	2674	6.1		Sodium selenite, see	2630	6.1	
Sodium hydrate, see	1824	8		Sodium silicofluoride, see	2674	6.1	
SODIUM HYDRIDE	1427	4.3		SODIUM SULPHIDE, ANHYDROUS	1385	4.2	
Sodium hydrogen 4-amino-phenylarsenate, see	2473	6.1		SODIUM SULPHIDE with less than 30 % water of crystallization	1385	4.2	
SODIUM HYDROGEN-DIFLUORIDE	2439	8		SODIUM SULPHIDE, HYDRATED with not less than 30 % water	1849	8	
SODIUM HYDROSULPHIDE with less than 25 % water of crystallization	2318	4.2		SODIUM SUPEROXIDE	2547	5.1	
SODIUM HYDROSULPHIDE, HYDRATED with not less than 25 % water of crystallization	2949	8		SOLIDS CONTAINING CORROSIVE LIQUID, N.O.S.	3244	8	
SODIUM HYDROSULPHITE, see	1384	4.2		SOLIDS or mixtures of solids (such as preparations and wastes) CONTAINING FLAMMABLE LIQUID, N.O.S. having a flash-point up to 60 °C	3175	4.1	
SODIUM HYDROXIDE, SOLID	1823	8		SOLIDS CONTAINING TOXIC LIQUID, N.O.S.	3243	6.1	
SODIUM HYDROXIDE SOLUTION	1824	8		Solvents, flammable, n.o.s., see	1993	3	
Sodium metasilicate pentahydrate, see	3253	8		Solvents, flammable, toxic, n.o.s., see	1992	3	
SODIUM METHYLATE	1431	4.2		SOUNDING DEVICES, EXPLOSIVE	0204	1	
SODIUM METHYLATE SOLUTION in alcohol	1289	3			0296	1	
SODIUM MONOXIDE	1825	8			0374	1	
SODIUM NITRATE	1498	5.1			0375	1	
SODIUM NITRATE AND POTASSIUM NITRATE MIXTURE	1499	5.1		Squibs, see	0325	1	
SODIUM NITRITE	1500	5.1			0454	1	
Sodium nitrite and potassium nitrate mixture, see	1487	5.1		Stain, see	1263	3	
SODIUM PENTACHLOROHENATE	2567	6.1			3066	8	
SODIUM PERBORATE MONOHYDRATE	3377	5.1		STANNIC CHLORIDE, ANHYDROUS	1827	8	
SODIUM PERCHLORATE	1502	5.1		STANNIC CHLORIDE PENTAHYDRATE	2440	8	
SODIUM PERMANGANATE	1503	5.1		STANNIC PHOSPHIDES	1433	4.3	
SODIUM PEROXIDE	1504	5.1		Steel swarf, see	2793	4.2	
SODIUM PEROXOBORATE, ANHYDROUS	3247	5.1		STIBINE	2676	2	
SODIUM PERSULPHATE	1505	5.1		Straw	1327	4.1	Not subject to ADR
SODIUM PHOSPHIDE	1432	4.3		Strontium alloys, pyrophoric, see	1383	4.2	
SODIUM PICRAMATE, dry or wetted with less than 20 % water, by mass	0235	1		STRONTIUM ARSENITE	1691	6.1	
				STRONTIUM CHLORATE	1506	5.1	
				Strontium dioxide, see	1509	5.1	
				STRONTIUM NITRATE	1507	5.1	
				STRONTIUM PERCHLORATE	1508	5.1	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
STRONTIUM PEROXIDE	1509	5.1		SULPHURIC ACID, SPENT	1832	8	
STRONTIUM PHOSPHIDE	2013	4.3		Sulphuric and hydrofluoric acid mixture, see	1786	8	
STRYCHNINE	1692	6.1		SULPHUR, MOLTEN	2448	4.1	
STRYCHNINE SALTS	1692	6.1		Sulphur monochloride, see	1828	8	
STYPHNIC ACID, see	0219	1		SULPHUROUS ACID	1833	8	
	0394	1		SULPHUR TETRAFLUORIDE	2418	2	
STYRENE MONOMER, STABILIZED	2055	3		SULPHUR TRIOXIDE, STABILIZED	1829	8	
SUBSTANCES, EVI, N.O.S., see	0482	1		SULPHURYL CHLORIDE	1834	6.1	
SUBSTANCES, EXPLOSIVE, N.O.S.	0357	1		SULPHURYL FLUORIDE	2191	2	
	0358	1		Table Tennis Balls, see	2000	4.1	
	0359	1		Talcum with tremolite and/or actinolite, see	2212	9	
	0473	1		TARS, LIQUID, including road oils, and cutback bitumens, with a flash-point not greater than 60 °C	1999	3	
	0474	1					
	0475	1		Tars, liquid, with a flash-point above 60 °C, at or above its flash-point, see	3256	3	
	0476	1					
	0477	1		Tars, liquid, at or above 100 °C and below its flash-point, see	3257	9	
	0478	1		Tartar emetic, see	1551	6.1	
	0479	1		TEAR GAS CANDLES	1700	6.1	
	0480	1		TEAR GAS SUBSTANCE, LIQUID, N.O.S.	1693	6.1	
	0481	1		TEAR GAS SUBSTANCE, SOLID, N.O.S.	3448	6.1	
	0485	1		TELLURIUM COMPOUND, N.O.S.	3284	6.1	
SUBSTANCES, EXPLOSIVE, VERY INSENSITIVE, N.O.S.	0482	1		TELLURIUM HEXAFLUORIDE	2195	2	
Substances liable to spontaneous combustion, n.o.s., see	2845	4.2		TERPENE HYDROCARBONS, N.O.S.	2319	3	
	2846	4.2		TERPINOLENE	2541	3	
	3194	4.2		TETRABROMOETHANE	2504	6.1	
	3200	4.2		1,1,2,2-TETRACHLOROETHANE	1702	6.1	
SUBSTITUTED NITROPHENOL PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	2780	3		TETRACHLOROETHYLENE	1897	6.1	
SUBSTITUTED NITROPHENOL PESTICIDE, LIQUID, TOXIC	3014	6.1		TETRAETHYL DITHIO-PYROPHOSPHATE	1704	6.1	
SUBSTITUTED NITROPHENOL PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	3013	6.1		TETRAETHYLENEPENTAMINE	2320	8	
SUBSTITUTED NITROPHENOL PESTICIDE, SOLID, TOXIC	2779	6.1		Tetraethyl lead, see	1649	6.1	
SULPHAMIC ACID	2967	8		TETRAETHYL SILICATE	1292	3	
SULPHUR	1350	4.1		Tetraethyoxysilane, see	1292	3	
SULPHUR CHLORIDES	1828	8		Tetrafluorodichloroethane, see	1958	2	
Sulphur dichloride, see	1828	8		1,1,1,2-TETRAFLUOROETHANE	3159	2	
SULPHUR DIOXIDE	1079	2		TETRAFLUOROETHYLENE, STABILIZED	1081	2	
Sulphuretted hydrogen, see	1053	2		TETRAFLUOROMETHANE	1982	2	
SULPHUR HEXAFLUORIDE	1080	2					
SULPHURIC ACID with more than 51 % acid	1830	8					
SULPHURIC ACID with not more than 51 % acid	2796	8					
SULPHURIC ACID, FUMING	1831	8					

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
1,2,3,6-TETRAHYDRO-BENZALDEHYDE	2498	3		THIOCARBAMATE PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	3005	6.1	
TETRAHYDROFURAN	2056	3		THIOCARBAMATE PESTICIDE, SOLID, TOXIC	2771	6.1	
TETRAHYDRO-FURFURYLAMINE	2943	3		THIOGLYCOL	2966	6.1	
Tetrahydro-1,4-oxazine, see	2054	3		THIOGLYCOLIC ACID	1940	8	
TETRAHYDROPHthalic ANHYDRIDES with more than 0.05 % of maleic anhydride	2698	8		THIOLACTIC ACID	2936	6.1	
1,2,3,6-TETRAHYDROPYRIDINE	2410	3		THIONYL CHLORIDE	1836	8	
TETRAHYDROTHIOPHENE	2412	3		THIOPHENE	2414	3	
Tetramethoxysilane, see	2606	6.1		Thiophenol, see	2337	6.1	
TETRAMETHYLAMMONIUM HYDROXIDE SOLID	3423	8		THIOPHOSGENE	2474	6.1	
TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION	1835	8		THIOPHOSPHORYL CHLORIDE	1837	8	
Tetramethylene, see	2601	2		THIOUREA DIOXIDE	3341	4.2	
Tetramethylene cyanide, see	2205	6.1		Tin (IV) chloride, anhydrous, see	1827	8	
Tetramethyl lead, see	1649	6.1		Tin (IV) chloride pentahydrate, see	2440	8	
TETRAMETHYLSILANE	2749	3		TINCTURES, MEDICINAL	1293	3	
TETRANITROANILINE	0207	1		Tin tetrachloride, see	1827	8	
TETRANITROMETHANE	1510	6.1		TITANIUM DISULPHIDE	3174	4.2	
TETRAPROPYL ORTHOTITANATE	2413	3		TITANIUM HYDRIDE	1871	4.1	
TETRAZENE, WETTED with not less than 30 % water, or mixture of alcohol and water, by mass, see	0114	1		TITANIUM POWDER, DRY	2546	4.2	
TETRAZOL-1-ACETIC ACID	0407	1		TITANIUM POWDER, WETTED with not less than 25 % water	1352	4.1	
1H-TETRAZOLE	0504	1		TITANIUM SPONGE GRANULES	2878	4.1	
TETRYL, see	0208	1		TITANIUM SPONGE POWDERS	2878	4.1	
Textile waste, wet	1857	4.2	Not subject to ADR	TITANIUM TETRACHLORIDE	1838	6.1	
THALLIUM CHLORATE	2573	5.1		TITANIUM TRICHLORIDE MIXTURE	2869	8	
Thallium (I) chlorate, see	2573	5.1		TITANIUM TRICHLORIDE MIXTURE, PYROPHORIC	2441	4.2	
THALLIUM COMPOUND, N.O.S.	1707	6.1		TITANIUM TRICHLORIDE, PYROPHORIC	2441	4.2	
THALLIUM NITRATE	2727	6.1		TNT, see	0209	1	
Thallium (I) nitrate, see	2727	6.1			0388	1	
Thallos chlorate, see	2573	5.1			0389	1	
4-THIAPENTANAL	2785	6.1		TNT mixed with aluminium, see	0390	1	
Thia-4-pentanal, see	2785	6.1		TNT, WETTED with not less than 30 % water, by mass, see	1356	4.1	
THIOACETIC ACID	2436	3		TNT, WETTED with not less than 10 % water, by mass, see	3366	4.1	
THIOCARBAMATE PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	2772	3		Toe puffs, nitrocellulose base, see	1353	4.1	
THIOCARBAMATE PESTICIDE, LIQUID, TOXIC	3006	6.1		TOLUENE	1294	3	
				TOLUENE DIISOCYANATE	2078	6.1	
				TOLUIDINES, LIQUID	1708	6.1	
				TOLUIDINES, SOLID	3451	6.1	
				Toluol, see	1294	3	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
2,4-TOLUYLENEDIAMINE, SOLID	1709	6.1		TOXIC BY INHALATION LIQUID, FLAMMABLE, CORROSIVE, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀	3489	6.1	
2,4-TOLUYLENEDIAMINE, SOLUTION	3418	6.1					
Toluylene diisocyanate, see	2078	6.1					
Tolylene diisocyanate, see	2078	6.1		TOXIC BY INHALATION LIQUID, OXIDIZING, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀	3387	6.1	
Tolyethylene, inhibited, see	2618	3					
TORPEDOES with bursting charge	0329 0330 0451	1 1 1		TOXIC BY INHALATION LIQUID, OXIDIZING, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀	3388	6.1	
TORPEDOES, LIQUID FUELLED with inert head	0450	1					
TORPEDOES, LIQUID FUELLED with or without bursting charge	0449	1					
TOXIC BY INHALATION LIQUID, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀	3381	6.1		TOXIC BY INHALATION LIQUID, WATER-REACTIVE, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀	3385	6.1	
TOXIC BY INHALATION LIQUID, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀	3382	6.1		TOXIC BY INHALATION LIQUID, WATER-REACTIVE, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀	3386	6.1	
TOXIC BY INHALATION LIQUID, CORROSIVE, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀	3389	6.1		TOXIC BY INHALATION LIQUID, WATER-REACTIVE, FLAMMABLE, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀	3490	6.1	
TOXIC BY INHALATION LIQUID, CORROSIVE, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀	3390	6.1					
TOXIC BY INHALATION LIQUID, FLAMMABLE, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀	3383	6.1		TOXIC BY INHALATION LIQUID, WATER-REACTIVE, FLAMMABLE, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀	3491	6.1	
TOXIC BY INHALATION LIQUID, FLAMMABLE, N.O.S. with an LC ₅₀ lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀	3384	6.1		TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S.	3289	6.1	
				TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S.	2927	6.1	
				TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S.	2929	6.1	
TOXIC BY INHALATION LIQUID, FLAMMABLE, CORROSIVE, N.O.S. with an LC ₅₀ lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀	3488	6.1		TOXIC LIQUID, INORGANIC, N.O.S.	3287	6.1	
				TOXIC LIQUID, ORGANIC, N.O.S.	2810	6.1	
				TOXIC LIQUID, OXIDIZING, N.O.S.	3122	6.1	
				TOXIC LIQUID, WATER-REACTIVE, N.O.S.	3123	6.1	
				TOXIC SOLID, CORROSIVE, INORGANIC, N.O.S.	3290	6.1	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
TOXIC SOLID, CORROSIVE, ORGANIC, N.O.S.	2928	6.1		TRICHLOROISOCYANURIC ACID, DRY	2468	5.1	
TOXIC SOLID, FLAMMABLE, INORGANIC, N.O.S.	3535	6.1		Trichloronitromethane, see	1580	6.1	
TOXIC SOLID, FLAMMABLE, ORGANIC, N.O.S.	2930	6.1		TRICHLOROSILANE	1295	4.3	
TOXIC SOLID, INORGANIC, N.O.S.	3288	6.1		1,3,5-Trichloro-s-triazine-2,4,6-trione, see	2468	5.1	
TOXIC SOLID, ORGANIC, N.O.S.	2811	6.1		2,4,6-Trichloro-1,3,5- triazine, see	2670	8	
TOXIC SOLID, OXIDIZING, N.O.S.	3086	6.1		TRICRESYL PHOSPHATE with more than 3 % ortho isomer	2574	6.1	
TOXIC SOLID, SELF-HEATING, N.O.S.	3124	6.1		TRIETHYLAMINE	1296	3	
TOXIC SOLID, WATER-REACTIVE, N.O.S.	3125	6.1		Triethyl borate, see	1176	3	
TOXINS, EXTRACTED FROM LIVING SOURCES, LIQUID, N.O.S.	3172	6.1		TRIETHYLENETETRAMINE	2259	8	
TOXINS, EXTRACTED FROM LIVING SOURCES, SOLID, N.O.S.	3462	6.1		Triethyl orthoformate, see	2524	3	
TRACERS FOR AMMUNITION	0212	1		TRIETHYL PHOSPHITE	2323	3	
	0306	1		TRIFLUOROACETIC ACID	2699	8	
Tremolite, see	2212	9		TRIFLUOROACETYL CHLORIDE	3057	2	
TRIALLYLAMINE	2610	3		Trifluorobromomethane, see	1009	2	
TRIALLYL BORATE	2609	6.1		Trifluorochloroethane, see	1983	2	
TRIAZINE PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash-point less than 23 °C	2764	3		TRIFLUOROCHLORO-ETHYLENE, STABILIZED, REFRIGERANT GAS R 1113	1082	2	
TRIAZINE PESTICIDE, LIQUID, TOXIC	2998	6.1		Trifluorochloromethane, see	1022	2	
TRIAZINE PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash-point not less than 23 °C	2997	6.1		1,1,1-TRIFLUOROETHANE	2035	2	
TRIAZINE PESTICIDE, SOLID, TOXIC	2763	6.1		TRIFLUOROMETHANE	1984	2	
Tribromoborane, see	2692	8		TRIFLUOROMETHANE, REFRIGERATED LIQUID	3136	2	
TRIBUTYLAMINE	2542	6.1		2-TRIFLUOROMETHYLANILINE	2942	6.1	
TRIBUTYLPHOSPHANE	3254	4.2		3-TRIFLUOROMETHYLANILINE	2948	6.1	
Trichloroacetaldehyde, see	2075	6.1		TRIISOBUTYLENE	2324	3	
TRICHLOROACETIC ACID	1839	8		TRIISOPROPYL BORATE	2616	3	
TRICHLOROACETIC ACID SOLUTION	2564	8		TRIMETHYLACETYL CHLORIDE	2438	6.1	
Trichloroacetaldehyde, see	2075	6.1		TRIMETHYLAMINE, ANHYDROUS	1083	2	
TRICHLOROACETYL CHLORIDE	2442	8		TRIMETHYLAMINE, AQUEOUS SOLUTION, not more than 50 % trimethylamine, by mass	1297	3	
TRICHLOROBENZENES, LIQUID	2321	6.1		1,3,5-TRIMETHYLBENZENE	2325	3	
TRICHLOROBUTENE	2322	6.1		TRIMETHYL BORATE	2416	3	
1,1,1-TRICHLOROETHANE	2831	6.1		TRIMETHYLCHLOROSILANE	1298	3	
TRICHLOROETHYLENE	1710	6.1		TRIMETHYLCYCLOHEXYLAMINE	2326	8	
				Trimethylene chlorobromide, see	2688	6.1	
				TRIMETHYLHEXA-METHYLENEDIAMINES	2327	8	
				TRIMETHYLHEXAMETHYLENE DIISOCYANATE	2328	6.1	
				2,4,4-Trimethylpentene-1, see	2050	3	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
2,4,4-Trimethylpentene-2, see	2050	3		TRINITROTOLUENE AND HEXANITROSTILBENE MIXTURE	0388	1	
TRIMETHYL PHOSPHITE	2329	3		TRINITROTOLUENE MIXTURE CONTAINING TRINITROBENZENE AND HEXANITROSTILBENE	0389	1	
TRINITROANILINE	0153	1		TRINITROTOLUENE AND TRINITROBENZENE MIXTURE	0388	1	
TRINITROANISOLE	0213	1		TRINITROTOLUENE, WETTED with not less than 10 % water, by mass	3366	4.1	
TRINITROBENZENE, dry or wetted with less than 30 % water, by mass	0214	1		TRINITROTOLUENE, WETTED with not less than 30 % water, by mass	1354	4.1	
TRINITROBENZENE, WETTED with not less than 10 % water, by mass	3367	4.1		TRINITROTOLUENE, WETTED with not less than 30 % water, by mass	0386	1	
TRINITROBENZENE, WETTED with not less than 30 % water, by mass	1354	4.1		TRIPROPYLAMINE	2260	3	
TRINITROBENZENE- SULPHONIC ACID	0386	1		TRIPROPYLENE	2057	3	
TRINITROBENZOIC ACID, dry or wetted with less than 30 % water, by mass	0215	1		TRIS-(1-AZIRIDINYL) PHOSPHINE OXIDE SOLUTION	2501	6.1	
TRINITROBENZOIC ACID, WETTED with not less than 10 % water, by mass	3368	4.1		TRITONAL	0390	1	
TRINITROBENZOIC ACID, WETTED with not less than 30 % water, by mass	1355	4.1		Tropilidene, see	2603	3	
TRINITROCHLOROGENZENE	0155	1		TUNGSTEN HEXAFLUORIDE	2196	2	
TRINITROCHLOROGENZENE WETTED with not less than 10 % water, by mass	3365	4.1		TURPENTINE	1299	3	
TRINITRO-m-CRESOL	0216	1		TURPENTINE SUBSTITUTE	1300	3	
TRINITROFLUORENONE	0387	1		UNDECANE	2330	3	
TRINITRONAPHTHALENE	0217	1		URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE, less than 0.1 kg per package, non-fissile or fissile-excepted	3507	6.1	
TRINITROPHENETOLE	0218	1		UREA HYDROGEN PEROXIDE	1511	5.1	
TRINITROPHENOL, dry or wetted with less than 30 % water, by mass	0154	1		UREA NITRATE, dry or wetted with less than 20 % water, by mass	0220	1	
TRINITROPHENOL (PICRIC ACID), WETTED with not less than 30 % water, by mass	1344	4.1		UREA NITRATE, WETTED with not less than 10 % water, by mass	3370	4.1	
TRINITROPHENOL WETTED with not less than 10 % water, by mass	3364	4.1		UREA NITRATE, WETTED with not less than 20 % water, by mass	1357	4.1	
TRINITROPHENYL- METHYLNITRAMINE	0208	1		Valeral, see	2058	3	
TRINITRORESORCINOL, dry or wetted with less than 20 % water, or mixture of alcohol and water, by mass	0219	1		VALERALDEHYDE	2058	3	
TRINITRORESORCINOL, WETTED with not less than 20 % water, or mixture of alcohol and water, by mass	0394	1		n-Valeraldehyde, see	2058	3	
TRINITROTOLUENE (TNT), dry or wetted with less than 30 % water, by mass	0209	1		Valeric aldehyde, see	2058	3	
				VALERYL CHLORIDE	2502	8	
				VANADIUM COMPOUND, N.O.S.	3285	6.1	
				Vanadium (IV) oxide sulphate, see	2931	6.1	
				Vanadium oxysulphate, see	2931	6.1	
				VANADIUM OXYTRICHLORIDE	2443	8	
				VANADIUM PENTOXIDE, non- fused form	2862	6.1	
				VANADIUM TETRACHLORIDE	2444	8	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
VANADIUM TRICHLORIDE	2475	8		WATER-REACTIVE LIQUID, TOXIC, N.O.S.	3130	4.3	
VANADYL SULPHATE	2931	6.1		WATER-REACTIVE SOLID, N.O.S.	2813	4.3	
Varnish, see	1263	3		WATER-REACTIVE SOLID, CORROSIVE, N.O.S.	3131	4.3	
	3066	8					
	3469	3					
	3470	8					
VEHICLE, FLAMMABLE GAS POWERED	3166	9		WATER-REACTIVE SOLID, FLAMMABLE, N.O.S.	3132	4.3	
VEHICLE, FLAMMABLE LIQUID POWERED	3166	9		WATER-REACTIVE SOLID, OXIDIZING, N.O.S.	3133	4.3	Carriage prohibited
VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED	3166	9		WATER-REACTIVE SOLID, SELF-HEATING, N.O.S.	3135	4.3	
VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED	3166	9		WATER-REACTIVE SOLID, TOXIC, N.O.S.	3134	4.3	
Villiaumite, see	1690	6.1		White arsenic, see	1561	6.1	
VINYL ACETATE, STABILIZED	1301	3		White spirit, see	1300	3	
Vinylbenzene, see	2055	3		WOOD PRESERVATIVES, LIQUID	1306	3	
VINYL BROMIDE, STABILIZED	1085	2		Wool waste, wet	1387	4.2	Not subject to ADR
VINYL BUTYRATE, STABILIZED	2838	3		XANTHATES	3342	4.2	
VINYL CHLORIDE, STABILIZED	1086	2		XENON	2036	2	
VINYL CHLOROACETATE	2589	6.1		XENON, REFRIGERATED LIQUID	2591	2	
VINYL ETHYL ETHER, STABILIZED	1302	3		XYLENES	1307	3	
VINYL FLUORIDE, STABILIZED	1860	2		XYLENOLS, LIQUID	3430	6.1	
VINYLDENE CHLORIDE, STABILIZED	1303	3		XYLENOLS, SOLID	2261	6.1	
VINYL ISOBUTYL ETHER, STABILIZED	1304	3		XYLIDINES, LIQUID	1711	6.1	
VINYL METHYL ETHER, STABILIZED	1087	2		XYLIDINES, SOLID	3452	6.1	
VINYLPYRIDINES, STABILIZED	3073	6.1		Xylols, see	1307	3	
VINYLTOLUENES, STABILIZED	2618	3		XYLYL BROMIDE, LIQUID	1701	6.1	
VINYLTRICHLOROSILANE	1305	3		XYLYL BROMIDE, SOLID	3417	6.1	
Warheads for guided missiles, see	0286	1		ZINC AMMONIUM NITRITE	1512	5.1	
	0287	1		ZINC ARSENATE	1712	6.1	
	0369	1		ZINC ARSENATE AND ZINC ARSENITE MIXTURE	1712	6.1	
	0370	1		ZINC ARSENITE	1712	6.1	
	0371	1		ZINC ASHES	1435	4.3	
WARHEADS, ROCKET with burster or expelling charge	0370	1		Zinc bisulphite solution, see	2693	8	
	0371	1		ZINC BROMATE	2469	5.1	
WARHEADS, ROCKET with bursting charge	0286	1		ZINC CHLORATE	1513	5.1	
	0287	1		ZINC CHLORIDE, ANHYDROUS	2331	8	
	0369	1		ZINC CHLORIDE SOLUTION	1840	8	
WARHEADS, TORPEDO with bursting charge	0221	1		ZINC CYANIDE	1713	6.1	
WATER-REACTIVE LIQUID, N.O.S.	3148	4.3		ZINC DITHIONITE	1931	9	
WATER-REACTIVE LIQUID, CORROSIVE, N.O.S.	3129	4.3		ZINC DUST	1436	4.3	

Name and description	UN	Class	Remarks	Name and description	UN No.	Class	Remarks
ZINC FLUOROSILICATE	2855	6.1					
Zinc hexafluorosilicate, see	2855	6.1					
ZINC HYDROSULPHITE, see	1931	9					
ZINC NITRATE	1514	5.1					
ZINC PERMANGANATE	1515	5.1					
ZINC PEROXIDE	1516	5.1					
ZINC PHOSPHIDE	1714	4.3					
ZINC POWDER	1436	4.3					
ZINC RESINATE	2714	4.1					
Zinc selenate, see	2630	4.1					
Zinc selenite, see	2630	4.1					
Zinc silicofluoride, see	2855	6.1					
ZIRCONIUM, DRY, coiled wire, finished metal sheets, strip (thinner than 254 microns but not thinner than 18 microns)	2858	4.1					
ZIRCONIUM, DRY, finished sheets, strip or coiled wire	2009	4.2					
ZIRCONIUM HYDRIDE	1437	4.1					
ZIRCONIUM NITRATE	2728	5.1					
ZIRCONIUM PICRAMATE, dry or wetted with less than 20 % water, by mass	0236	1					
ZIRCONIUM PICRAMATE, WETTED with not less than 20 % water, by mass	1517	4.1					
ZIRCONIUM POWDER, DRY	2008	4.2					
ZIRCONIUM POWDER, WETTED with not less than 25 % water	1358	4.1					
ZIRCONIUM SCRAP	1932	4.2					
ZIRCONIUM SUSPENDED IN A FLAMMABLE LIQUID	1308	3					
ZIRCONIUM TETRACHLORIDE	2503	8					

CHAPTER 3.3

SPECIAL PROVISIONS APPLICABLE TO CERTAIN ARTICLES OR SUBSTANCES

- 3.3.1 When Column (6) of Table A of Chapter 3.2 indicates that a special provision is relevant to a substance or article, the meaning and requirements of that special provision are as set forth below. Where a special provision includes a requirement for package marking, the provisions of 5.2.1.2 (a) and (b) shall be met. If the required mark is in the form of specific wording indicated in quotation marks, such as "LITHIUM BATTERIES FOR DISPOSAL", the size of the mark shall be at least 12 mm, unless otherwise indicated in the special provision or elsewhere in ADR.
- 16 Samples of new or existing explosive substances or articles may be carried as directed by the competent authorities (see 2.2.1.1.3) for purposes including: testing, classification, research and development, quality control, or as a commercial sample. Explosive samples which are not wetted or desensitized shall be limited to 10 kg in small packages as specified by the competent authorities. Explosive samples which are wetted or desensitized shall be limited to 25 kg.
- 23 Even though this substance has a flammability hazard, it only exhibits such hazard under extreme fire conditions in confined areas.
- 32 This substance is not subject to the requirements of ADR when in any other form.
- 37 This substance is not subject to the requirements of ADR when coated.
- 38 This substance is not subject to the requirements of ADR when it contains not more than 0.1 % calcium carbide.
- 39 This substance is not subject to the requirements of ADR when it contains less than 30 % or not less than 90 % silicon.
- 43 When offered for carriage as pesticides, these substances shall be carried under the relevant pesticide entry and in accordance with the relevant pesticide provisions (see 2.2.61.1.10 to 2.2.61.1.11.2).
- 45 Antimony sulphides and oxides which contain not more than 0.5 % of arsenic calculated on the total mass are not subject to the requirements of ADR.
- 47 Ferricyanides and ferrocyanides are not subject to the requirements of ADR.
- 48 The carriage of this substance, when it contains more than 20 % hydrocyanic acid, is prohibited.
- 59 These substances are not subject to the requirements of ADR when they contain not more than 50 % magnesium.
- 60 If the concentration is more than 72 %, the carriage of this substance is prohibited.
- 61 The technical name which shall supplement the proper shipping name shall be the ISO common name (see also ISO 1750:1981 "*Pesticides and other agrochemicals - common names*", as amended), other name listed in the WHO "*Recommended Classification of Pesticides by Hazard and Guidelines to Classification*" or the name of the active substance (see also 3.1.2.8.1 and 3.1.2.8.1.1).
- 62 This substance is not subject to the requirements of ADR when it contains not more than 4 % sodium hydroxide.
- 65 Hydrogen peroxide aqueous solutions with less than 8 % hydrogen peroxide are not subject to the requirements of ADR.
- 66 Cinnabar is not subject to the requirements of ADR.
- 103 The carriage of ammonium nitrites and mixtures of an inorganic nitrite with an ammonium salt is prohibited.

- 105 Nitrocellulose meeting the descriptions of UN No. 2556 or UN No. 2557 may be classified in Class 4.1.
- 113 The carriage of chemically unstable mixtures is prohibited.
- 119 Refrigerating machines include machines or other appliances which have been designed for the specific purpose of keeping food or other items at a low temperature in an internal compartment, and air conditioning units. Refrigerating machines and refrigerating machine components are not subject to the provisions of ADR if they contain less than 12 kg of gas in Class 2, group A or O according to 2.2.2.1.3, or if they contain less than 12 litres ammonia solution (UN No. 2672).

NOTE: For the purposes of carriage, heat pumps may be considered as refrigerating machines.

- 122 The subsidiary hazards, control and emergency temperatures if any, and the UN number (generic entry) for each of the currently assigned organic peroxide formulations are given in 2.2.52.4, 4.1.4.2 packing instruction IBC520 and 4.2.5.2.6 portable tank instruction T23.
- 123 *(Reserved)*
- 127 Other inert material or inert material mixture may be used, provided this inert material has identical phlegmatizing properties.
- 131 The phlegmatized substance shall be significantly less sensitive than dry PETN.
- 135 The dihydrated sodium salt of dichloroisocyanuric acid does not meet the criteria for inclusion in Class 5.1 and is not subject to ADR unless meeting the criteria for inclusion in another Class.
- 138 p-Bromobenzyl cyanide is not subject to the requirements of ADR.
- 141 Products which have undergone sufficient heat treatment so that they present no hazard during carriage are not subject to the requirements of ADR.
- 142 Solvent extracted soya bean meal containing not more than 1.5 % oil and 11 % moisture, which is substantially free of flammable solvent, is not subject to the requirements of ADR.
- 144 An aqueous solution containing not more than 24 % alcohol by volume is not subject to the requirements of ADR.
- 145 Alcoholic beverages of packing group III, when carried in receptacles of 250 litres or less, are not subject to the requirements of ADR.
- 152 The classification of this substance will vary with particle size and packaging, but borderlines have not been experimentally determined. Appropriate classifications shall be made in accordance with 2.2.1.
- 153 This entry applies only if it is demonstrated, on the basis of tests, that the substances when in contact with water are not combustible nor show a tendency to auto-ignition and that the mixture of gases evolved is not flammable.
- 162 *(Deleted)*
- 163 A substance mentioned by name in Table A of Chapter 3.2 shall not be carried under this entry. Substances carried under this entry may contain 20 % or less nitrocellulose provided the nitrocellulose contains not more than 12.6 % nitrogen (by dry mass).
- 168 Asbestos which is immersed or fixed in a natural or artificial binder (such as cement, plastics, asphalt, resins or mineral ore) in such a way that no escape of hazardous quantities of respirable asbestos fibres can occur during carriage is not subject to the requirements of ADR. Manufactured articles containing asbestos and not meeting this provision are nevertheless not subject to the requirements of ADR when packed so that no escape of hazardous quantities of respirable asbestos fibres can occur during carriage.
- 169 Phthalic anhydride in the solid state and tetrahydrophthalic anhydrides, with not more than 0.05 % maleic anhydride, are not subject to the requirements of ADR. Phthalic anhydride

molten at a temperature above its flash-point, with not more than 0.05 % maleic anhydride, shall be classified under UN No. 3256.

- 172 Where a radioactive material has (a) subsidiary hazard(s):
- (a) The substance shall be allocated to packing group I, II or III, if appropriate, by application of the packing group criteria provided in Part 2 corresponding to the nature of the predominant subsidiary hazard;
 - (b) Packages shall be labelled with subsidiary hazard labels corresponding to each subsidiary risk exhibited by the material; corresponding placards shall be affixed to cargo transport units in accordance with the relevant provisions of 5.3.1;
 - (c) For the purposes of documentation and package marking, the proper shipping name shall be supplemented with the name of the constituents which most predominantly contribute to this (these) subsidiary hazard(s) and which shall be enclosed in parenthesis;
 - (d) The dangerous goods transport document shall indicate the label model number(s) corresponding to each subsidiary hazard in parenthesis after the Class number "7" and, where assigned the packing group as required by 5.4.1.1.1 (d).

For packing, see also 4.1.9.1.5.

- 177 Barium sulphate is not subject to the requirements of ADR.
- 178 This designation shall be used only when no other appropriate designation exists in Table A of Chapter 3.2, and only with the approval of the competent authority of the country of origin (see 2.2.1.1.3).
- 181 Packages containing this type of substance shall bear a label conforming to model No. 1 (see 5.2.2.2.2) unless the competent authority of the country of origin has permitted this label to be dispensed with for the specific packaging employed because test data have proved that the substance in this packaging does not exhibit explosive behaviour (see 5.2.2.1.9).
- 182 The group of alkali metals includes lithium, sodium, potassium, rubidium and caesium.
- 183 The group of alkaline earth metals includes magnesium, calcium, strontium and barium.
- 186 *(Deleted)*
- 188 Cells and batteries offered for carriage are not subject to other provisions of ADR if they meet the following:
- (a) For a lithium metal or lithium alloy cell, the lithium content is not more than 1 g, and for a lithium ion cell, the Watt-hour rating is not more than 20 Wh;

NOTE: When lithium batteries in conformity with 2.2.9.1.7 (f) are carried in accordance with this special provision, the total lithium content of all lithium metal cells contained in the battery shall not exceed 1.5 g and the total capacity of all lithium ion cells contained in the battery shall not exceed 10 Wh (see special provision 387).
 - (b) For a lithium metal or lithium alloy battery the aggregate lithium content is not more than 2 g, and for a lithium ion battery, the Watt-hour rating is not more than 100 Wh. Lithium ion batteries subject to this provision shall be marked with the Watt-hour rating on the outside case, except those manufactured before 1 January 2009;

NOTE: When lithium batteries in conformity with 2.2.9.1.7 (f) are carried in accordance with this special provision, the total lithium content of all lithium metal cells contained in the battery shall not exceed 1.5 g and the total capacity of all lithium ion cells contained in the battery shall not exceed 10 Wh (see special provision 387).
 - (c) Each cell or battery meets the provisions of 2.2.9.1.7 (a), (e), (f) if applicable and (g);
 - (d) Cells and batteries, except when installed in equipment, shall be packed in inner packagings that completely enclose the cell or battery. Cells and batteries shall be

protected so as to prevent short circuits. This includes protection against contact with electrically conductive material within the same packaging that could lead to a short circuit. The inner packagings shall be packed in strong outer packagings which conform to the provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.5;

- (e) Cells and batteries when installed in equipment shall be protected from damage and short circuit, and the equipment shall be equipped with an effective means of preventing accidental activation. This requirement does not apply to devices which are intentionally active in carriage (radio frequency identification (RFID) transmitters, watches, sensors, etc.) and which are not capable of generating a dangerous evolution of heat. When batteries are installed in equipment, the equipment shall be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained;
- (f) Each package shall be marked with the appropriate lithium battery mark, as illustrated in 5.2.1.9;

This requirement does not apply to:

- (i) Packages containing only button cell batteries installed in equipment (including circuit boards); and
- (ii) Packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment;

When packages are placed in an overpack, the lithium battery mark shall either be clearly visible or be reproduced on the outside of the overpack and the overpack shall be marked with the word "OVERPACK". The lettering of the "OVERPACK" mark shall be at least 12 mm high.

NOTE: Packages containing lithium batteries packed in conformity with the provisions of Part 4, Chapter 11, packing instructions 965 or 968, Section IB of the ICAO Technical Instructions that bear the mark as shown in 5.2.1.9 (lithium battery mark) and the label shown in 5.2.2.2.2, model No. 9A shall be deemed to meet the provisions of this special provision.

- (g) Except when cells or batteries are installed in equipment, each package shall be capable of withstanding a 1.2 m drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell to cell) contact and without release of contents; and
- (h) Except when cells or batteries are installed in or packed with equipment, packages shall not exceed 30 kg gross mass.

As used above and elsewhere in ADR, "lithium content" means the mass of lithium in the anode of a lithium metal or lithium alloy cell. As used in this special provision "equipment" means apparatus for which the lithium cells or batteries will provide electrical power for its operation.

Separate entries exist for lithium metal batteries and lithium ion batteries to facilitate the carriage of these batteries for specific modes of carriage and to enable the application of different emergency response actions.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the Manual of Tests and Criteria is considered a "cell" and shall be carried according to the requirements for "cells" for the purpose of this special provision.

- 190 Aerosol dispensers shall be provided with protection against inadvertent discharge. Aerosols with a capacity not exceeding 50 ml containing only non-toxic constituents are not subject to the requirements of ADR.
- 191 Receptacles, small, with a capacity not exceeding 50 ml, containing only non-toxic constituents are not subject to the requirements of ADR.

- 193 This entry may only be used for ammonium nitrate based compound fertilizers. They shall be classified in accordance with the procedure as set out in the Manual of Tests and Criteria, Part III, Section 39. Fertilizers meeting the criteria for this UN number are not subject to the requirements of ADR.
- 194 The control and emergency temperatures, if any, and the UN number (generic entry) for each of the currently assigned self-reactive substances are given in 2.2.41.4.
- 196 Formulations which in laboratory testing neither detonate in the cavitated state nor deflagrate, which show no effect when heated under confinement and which exhibit no explosive power may be carried under this entry. The formulation must also be thermally stable (i.e. the SADT is 60 °C or higher for a 50 kg package). Formulations not meeting these criteria shall be carried under the provisions of Class 5.2, (see 2.2.52.4).
- 198 Nitrocellulose solutions containing not more than 20 % nitrocellulose may be carried as paint, perfumery products or printing ink, as applicable (see UN Nos. 1210, 1263, 1266, 3066, 3469 and 3470).
- 199 Lead compounds which, when mixed in a ratio of 1:1000 with 0.07M hydrochloric acid and stirred for one hour at a temperature of 23 °C ± 2 °C, exhibit a solubility of 5 % or less (see ISO 3711:1990 "*Lead chromate pigments and lead chromate -molybdate pigments – Specifications and methods of test*") are considered insoluble and are not subject to the requirements of ADR unless they meet the criteria for inclusion in another class.
- 201 Lighters and lighter refills shall comply with the provisions of the country in which they were filled. They shall be provided with protection against inadvertent discharge. The liquid portion of the gas shall not exceed 85 % of the capacity of the receptacle at 15 °C. The receptacles, including the closures, shall be capable of withstanding an internal pressure of twice the pressure of the liquefied petroleum gas at 55 °C. The valve mechanisms and ignition devices shall be securely sealed, taped or otherwise fastened or designed to prevent operation or leakage of the contents during carriage. Lighters shall not contain more than 10 g of liquefied petroleum gas. Lighter refills shall not contain more than 65 g of liquefied petroleum gas.
- NOTE: For waste lighters collected separately see Chapter 3.3, special provision 654.*
- 203 This entry shall not be used for polychlorinated biphenyls, liquid, UN No. 2315 and polychlorinated biphenyls, solid, UN No.3432.
- 204 *(Deleted)*
- 205 This entry shall not be used for UN No. 3155 PENTACHLOROPHENOL.
- 207 Plastics moulding compounds may be made from polystyrene, poly(methyl methacrylate) or other polymeric material.
- 208 The commercial grade of calcium nitrate fertilizer, when consisting mainly of a double salt (calcium nitrate and ammonium nitrate) containing not more than 10 % ammonium nitrate and at least 12 % water of crystallization, is not subject to the requirements of ADR.
- 210 Toxins from plant, animal or bacterial sources which contain infectious substances, or toxins that are contained in infectious substances, shall be classified in Class 6.2.
- 215 This entry only applies to the technically pure substance or to formulations derived from it having an SADT higher than 75 °C and therefore does not apply to formulations which are self-reactive substances (for self-reactive substances, see 2.2.41.4). Homogeneous mixtures containing not more than 35 % by mass of azodicarbonamide and at least 65 % of inert substance are not subject to the requirements of ADR unless criteria of other classes are met.
- 216 Mixtures of solids which are not subject to the requirements of ADR and flammable liquids may be carried under this entry without first applying the classification criteria of Class 4.1, provided there is no free liquid visible at the time the substance is loaded or at the time the packaging or cargo transport unit is closed. Sealed packets and articles containing less than 10 ml of a packing group II or III flammable liquid absorbed into a solid material are not subject to ADR provided there is no free liquid in the packet or article.

- 217 Mixtures of solids which are not subject to the requirements of ADR and toxic liquids may be carried under this entry without first applying the classification criteria of Class 6.1, provided there is no free liquid visible at the time the substance is loaded or at the time the packaging or cargo transport unit is closed. This entry shall not be used for solids containing a packing group I liquid.
- 218 Mixtures of solids which are not subject to the requirements of ADR and corrosive liquids may be carried under this entry without first applying the classification criteria of Class 8, provided there is no free liquid visible at the time the substance is loaded or at the time the packaging or cargo transport unit is closed.
- 219 Genetically modified microorganisms (GMMOs) and genetically modified organisms (GMOs) packed and marked in accordance with packing instruction P904 of 4.1.4.1 are not subject to any other requirements of ADR.
- If GMMOs or GMOs meet the criteria for inclusion in Class 6.1 or 6.2 (see 2.2.61.1 and 2.2.62.1) the requirements in ADR for the carriage of toxic substances or infectious substances apply.
- 220 Only the technical name of the flammable liquid component of this solution or mixture shall be shown in parentheses immediately following the proper shipping name.
- 221 Substances included under this entry shall not be of packing group I.
- 224 Unless it can be demonstrated by testing that the sensitivity of the substance in its frozen state is no greater than in its liquid state, the substance shall remain liquid during normal transport conditions. It shall not freeze at temperatures above -15 °C.
- 225 Fire extinguishers under this entry may include installed actuating cartridges (cartridges, power device of classification code 1.4C or 1.4S), without changing the classification of Class 2, group A or O according to 2.2.2.1.3 provided the total quantity of deflagrating (propellant) explosives does not exceed 3.2 g per extinguishing unit. Fire extinguishers shall be manufactured, tested, approved and labelled according to the provisions applied in the country of manufacture.

NOTE: *"Provisions applied in the country of manufacture" means the provisions applicable in the country of manufacture or those applicable in the country of use.*

Fire extinguishers under this entry include:

- (a) portable fire extinguishers for manual handling and operation;

NOTE: *This entry applies to portable fire extinguishers, even if some components that are necessary for their proper functioning (e.g. hoses and nozzles) are temporarily detached, as long as the safety of the pressurized extinguishing agent containers is not compromised and the fire extinguishers continue to be identified as a portable fire extinguisher.*

- (b) fire extinguishers for installation in aircraft;
- (c) fire extinguishers mounted on wheels for manual handling;
- (d) fire extinguishing equipment or machinery mounted on wheels or wheeled platforms or units carried similar to (small) trailers, and
- (e) fire extinguishers composed of a non-rollable pressure drum and equipment, and handled e.g. by fork lift or crane when loaded or unloaded.

NOTE: *Pressure receptacles which contain gases for use in the above-mentioned fire extinguishers or for use in stationary fire-fighting installations shall meet the requirements of Chapter 6.2 and all requirements applicable to the relevant dangerous goods when these pressure receptacles are carried separately.*

- 226 Formulations of this substance containing not less than 30 % non-volatile, non-flammable phlegmatizer are not subject to the requirements of ADR.

- 227 When phlegmatized with water and inorganic inert material the content of urea nitrate may not exceed 75 % by mass and the mixture shall not be capable of being detonated by the Series 1, type (a), test in the *Manual of Tests and Criteria*, Part 1.
- 228 Mixtures not meeting the criteria for flammable gases (see 2.2.2.1.5) shall be carried under UN No. 3163.
- 230 Lithium cells and batteries may be carried under this entry if they meet the provisions of 2.2.9.1.7.
- 235 This entry applies to articles which contain Class 1 explosive substances and which may also contain dangerous goods of other classes. These articles are used to enhance safety in vehicles, vessels or aircraft – e.g. air bag inflators, air bag modules, seat-belt pretensioners, and pyromechanical devices.
- 236 Polyester resin kits consist of two components: a base material (either Class 3 or Class 4.1, packing group II or III) and an activator (organic peroxide). The organic peroxide shall be type D, E, or F, not requiring temperature control. The packing group shall be II or III, according to the criteria of either Class 3 or Class 4.1, as appropriate, applied to the base material. The quantity limit shown in column (7a) of Table A of Chapter 3.2 applies to the base material.
- 237 The membrane filters, including paper separators, coating or backing materials, etc., that are present in carriage, shall not be liable to propagate a detonation as tested by one of the tests described in the *Manual of Tests and Criteria*, Part I, Test series 1 (a).

In addition the competent authority may determine, on the basis of the results of suitable burning rate tests taking account of the standard tests in the *Manual of Tests and Criteria*, Part III, subsection 33.2, that nitrocellulose membrane filters in the form in which they are to be carried are not subject to the requirements applicable to flammable solids in Class 4.1.

- 238 (a) Batteries can be considered as non-spillable provided that they are capable of withstanding the vibration and pressure differential tests given below, without leakage of battery fluid.

Vibration test: The battery is rigidly clamped to the platform of a vibration machine and a simple harmonic motion having an amplitude of 0.8 mm (1.6 mm maximum total excursion) is applied. The frequency is varied at the rate of 1 Hz/min between the limits of 10 Hz and 55 Hz. The entire range of frequencies and return is traversed in 95 ± 5 minutes for each mounting position (direction of vibration) of the battery. The battery is tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for equal time periods.

Pressure differential test: Following the vibration test, the battery is stored for six hours at $24 \text{ }^\circ\text{C} \pm 4 \text{ }^\circ\text{C}$ while subjected to a pressure differential of at least 88 kPa. The battery is tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for at least six hours in each position.

- (b) Non-spillable batteries are not subject to the requirements of ADR if, at a temperature of $55 \text{ }^\circ\text{C}$, the electrolyte will not flow from a ruptured or cracked case and there is no free liquid to flow and if, as packaged for carriage, the terminals are protected from short circuit.
- 239 Batteries or cells shall not contain dangerous substances other than sodium, sulphur or sodium compounds (e.g. sodium polysulphides and sodium tetrachloroaluminate). Batteries or cells shall not be offered for carriage at a temperature such that liquid elemental sodium is present in the battery or cell unless approved and under the conditions established by the competent authority of the country of origin. If the country of origin is not a Contracting Party to ADR, the approval and conditions of carriage shall be recognized by the competent authority of the first country Contracting Party to ADR reached by the consignment.

Cells shall consist of hermetically sealed metal casings which fully enclose the dangerous substances and which are so constructed and closed as to prevent the release of the dangerous substances under normal conditions of carriage.

Batteries shall consist of cells secured within and fully enclosed by a metal casing so constructed and closed as to prevent the release of the dangerous substances under normal conditions of carriage.

- 240 *(Deleted)*
- 241 The formulation shall be prepared so that it remains homogeneous and does not separate during carriage. Formulations with low nitrocellulose contents and not showing dangerous properties when tested for their liability to detonate, deflagrate or explode when heated under defined confinement by tests of Test series 1 (a), 2 (b) and 2 (c) respectively in the *Manual of Tests and Criteria*, Part I and not being a flammable solid when tested in accordance with test N.1 in the *Manual of Tests and Criteria*, Part III, sub-section 33.2.4 (chips, if necessary, crushed and sieved to a particle size of less than 1.25 mm) are not subject to the requirements of ADR.
- 242 Sulphur is not subject to the requirements of ADR when it has been formed to a specific shape (e.g. prills, granules, pellets, pastilles or flakes).
- 243 Gasoline, motor spirit and petrol for use in spark-ignition engines (e.g. in automobiles, stationary engines and other engines) shall be assigned to this entry regardless of variations in volatility.
- 244 This entry includes e.g. aluminium dross, aluminium skimmings, spent cathodes, spent potliner, and aluminium salt slags.
- 247 Alcoholic beverages containing more than 24 % alcohol but not more than 70 % by volume, when carried as part of the manufacturing process, may be carried in wooden barrels with a capacity of more than 250 litres and not more than 500 litres meeting the general requirements of 4.1.1, as appropriate, on the following conditions:
- (a) The wooden barrels shall be checked and tightened before filling;
 - (b) Sufficient ullage (not less than 3 %) shall be left to allow for the expansion of the liquid;
 - (c) The wooden barrels shall be carried with the bungholes pointing upwards;
 - (d) The wooden barrels shall be carried in containers meeting the requirements of the CSC. Each wooden barrel shall be secured in custom-made cradles and be wedged by appropriate means to prevent it from being displaced in any way during carriage.
- 249 Ferrocium, stabilized against corrosion, with a minimum iron content of 10 % is not subject to the requirements of ADR.
- 250 This entry may only be used for samples of chemicals taken for analysis in connection with the implementation of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction. The carriage of substances under this entry shall be in accordance with the chain of custody and security procedures specified by the Organisation for the Prohibition of Chemical Weapons.
- The chemical sample may only be carried providing prior approval has been granted by the competent authority or the Director General of the Organisation for the Prohibition of Chemical Weapons and providing the sample complies with the following provisions:
- (a) It shall be packed according to packing instruction 623 in the ICAO Technical Instructions; and
 - (b) During carriage, a copy of the document of approval for transport, showing the quantity limitations and the packing provisions shall be attached to the transport document.
- 251 The entry CHEMICAL KIT or FIRST AID KIT is intended to apply to boxes, cases etc. containing small quantities of various dangerous goods which are used for example for medical, analytical or testing or repair purposes. Such kits shall only contain dangerous goods that are permitted as:
- (a) Excepted quantities not exceeding the quantity indicated by the code in column (7b) of Table A of Chapter 3.2, provided that the net quantity per inner packaging and net quantity per package are as prescribed in 3.5.1.2 and 3.5.1.3; or

- (b) Limited quantities as indicated in column (7a) of Table A of Chapter 3.2, provided that the net quantity per inner packaging does not exceed 250 ml or 250 g.

Components shall not react dangerously (see "dangerous reaction" in 1.2.1). The total quantity of dangerous goods in any one kit shall not exceed either 1 l or 1 kg.

For the purposes of completion of the transport document as set out in 5.4.1.1.1, the packing group shown on the document shall be the most stringent packing group assigned to any individual substance in the kit. Where the kit contains only dangerous goods to which no packing group is assigned, no packing group need be indicated on the dangerous goods transport document.

Kits which are carried on board vehicles for first-aid or operating purposes are not subject to the requirements of ADR.

Chemical kits and first aid kits containing dangerous goods in inner packagings which do not exceed the quantity limits for limited quantities applicable to individual substances as specified in Column (7a) of Table A of Chapter 3.2 may be carried in accordance with Chapter 3.4.

- 252 Provided the ammonium nitrate remains in solution under all conditions of carriage, aqueous solutions of ammonium nitrate, with not more than 0.2 % combustible material, in a concentration not exceeding 80 %, are not subject to the requirements of ADR.
- 266 This substance, when containing less alcohol, water or phlegmatizer than specified, shall not be carried unless specifically authorized by the competent authority (see 2.2.1.1).
- 267 Any explosives, blasting, type C containing chlorates shall be segregated from explosives containing ammonium nitrate or other ammonium salts.
- 270 Aqueous solutions of Class 5.1 inorganic solid nitrate substances are considered as not meeting the criteria of Class 5.1 if the concentration of the substances in solution at the minimum temperature encountered during carriage is not greater than 80 % of the saturation limit.
- 271 Lactose or glucose or similar materials, may be used as a phlegmatizer provided that the substance contains not less than 90 %, by mass, of phlegmatizer. The competent authority may authorize these mixtures to be classified in Class 4.1 on the basis of a test Series 6(c) of Section 16 of Part I of the *Manual of Tests and Criteria* on at least three packages as prepared for carriage. Mixtures containing at least 98 %, by mass, of phlegmatizer are not subject to the requirements of ADR. Packages containing mixtures with not less than 90 %, by mass, of phlegmatizer need not bear a label conforming to model No. 6.1.
- 272 This substance shall not be carried under the provisions of Class 4.1 unless specifically authorized by the competent authority (see UN No. 0143 or UN No. 0150 as appropriate).
- 273 Maneb and maneb preparations stabilized against self-heating need not be classified in Class 4.2 when it can be demonstrated by testing that a cubic volume of 1 m³ of substance does not self-ignite and that the temperature at the centre of the sample does not exceed 200 °C, when the sample is maintained at a temperature of not less than 75 °C ± 2 °C for a period of 24 hours.
- 274 The provisions of 3.1.2.8 apply.
- 278 These substances shall not be classified and carried unless authorized by the competent authority on the basis of results from Series 2 tests and a Series 6(c) test of Part I of the *Manual of Tests and Criteria* on packages as prepared for carriage (see 2.2.1.1). The competent authority shall assign the packing group on the basis of 2.2.3 criteria and the package type used for the Series 6(c) test.
- 279 The substance is assigned to this classification or packing group based on human experience rather than the strict application of classification criteria set out in ADR.
- 280 This entry applies to safety devices for vehicles, vessels or aircraft, e.g. air bag inflators, air bag modules, seat-belt pretensioners, and pyromechanical devices, which contain dangerous goods of Class 1 or of other classes, when carried as component parts and if these articles as presented for carriage have been tested in accordance with Test Series 6(c) of Part I of the *Manual of Tests and Criteria*, with no explosion of the device, no fragmentation of device casing or pressure

receptacle, and no projection hazard nor thermal effect which would significantly hinder fire-fighting or emergency response efforts in the immediate vicinity. This entry does not apply to life saving appliances described in special provision 296 (UN Nos. 2990 and 3072).

- 282 *(Deleted)*
- 283 Articles, containing gas, intended to function as shock absorbers, including impact energy-absorbing devices, or pneumatic springs are not subject to the requirements of ADR provided:
- (a) Each article has a gas space capacity not exceeding 1.6 litres and a charge pressure not exceeding 280 bar where the product of the capacity (litres) and charge pressure (bars) does not exceed 80 (i.e. 0.5 litres gas space and 160 bar charge pressure, 1 litre gas space and 80 bar charge pressure, 1.6 litres gas space and 50 bar charge pressure, 0.28 litres gas space and 280 bar charge pressure);
 - (b) Each article has a minimum burst pressure of 4 times the charge pressure at 20 °C for products not exceeding 0.5 litres gas space capacity and 5 times charge pressure for products greater than 0.5 litres gas space capacity;
 - (c) Each article is manufactured from material which will not fragment upon rupture;
 - (d) Each article is manufactured in accordance with a quality assurance standard acceptable to the competent authority; and
 - (e) The design type has been subjected to a fire test demonstrating that the article relieves its pressure by means of a fire degradable seal or other pressure relief device, such that the article will not fragment and that the article does not rocket.

See also 1.1.3.2 (d) for equipment used for the operation of the vehicle.

- 284 An oxygen generator, chemical, containing oxidizing substances shall meet the following conditions:
- (a) The generator when containing an explosive actuating device shall only be carried under this entry when excluded from Class 1 in accordance with the NOTE under paragraph 2.2.1.1.1 (b);
 - (b) The generator, without its packaging, shall be capable of withstanding a 1.8 m drop test onto a rigid, non-resilient, flat and horizontal surface, in the position most likely to cause damage, without loss of its contents and without actuation;
 - (c) When a generator is equipped with an actuating device, it shall have at least two positive means of preventing unintentional actuation.
- 286 Nitrocellulose membrane filters covered by this entry, each with a mass not exceeding 0.5 g, are not subject to the requirements of ADR when contained individually in an article or a sealed packet.
- 288 These substances shall not be classified and carried unless authorized by the competent authority on the basis of results from Series 2 tests and a Series 6(c) test of Part I of the *Manual of tests and Criteria* on packages as prepared for carriage (see 2.2.1.1).
- 289 Safety devices, electrically initiated and safety devices, pyrotechnic installed in vehicles, wagons, vessels or aircraft or in completed components such as steering columns, door panels, seats, etc. are not subject to ADR.
- 290 When this radioactive material meets the definitions and criteria of other classes as defined in Part 2, it shall be classified in accordance with the following:
- (a) Where the substance meets the criteria for dangerous goods in excepted quantities as set out in Chapter 3.5, the packagings shall be in accordance with 3.5.2 and meet the testing requirements of 3.5.3. All other requirements applicable to radioactive material, excepted packages as set out in 1.7.1.5 shall apply without reference to the other class;
 - (b) Where the quantity exceeds the limits specified in 3.5.1.2 the substance shall be classified in accordance with the predominant subsidiary hazard. The transport document shall

describe the substance with the UN number and proper shipping name applicable to the other class supplemented with the name applicable to the radioactive excepted package according to Column (2) of Table A of Chapter 3.2, and the substance shall be carried in accordance with the provisions applicable to that UN number. An example of the information shown on the transport document is:

"UN 1993, Flammable liquid, n.o.s. (ethanol and toluene mixture), Radioactive material, excepted package – limited quantity of material, 3, PG II".

In addition, the requirements of 2.2.7.2.4.1 shall apply;

- (c) The provisions of Chapter 3.4 for the carriage of dangerous goods packed in limited quantities shall not apply to substances classified in accordance with sub-paragraph (b);
- (d) When the substance meets a special provision that exempts this substance from all dangerous goods provisions of the other classes it shall be classified in accordance with the applicable UN number of Class 7 and all requirements specified in 1.7.1.5 shall apply.

291 Flammable liquefied gases shall be contained within refrigerating machine components. These components shall be designed and tested to at least three times the working pressure of the machinery. The refrigerating machines shall be designed and constructed to contain the liquefied gas and preclude the risk of bursting or cracking of the pressure retaining components during normal conditions of carriage. Refrigerating machines and refrigerating-machine components are not subject to the requirements of ADR if they contain less than 12 kg of gas.

NOTE: For the purposes of carriage, heat pumps may be considered as refrigerating machines.

292 *(Deleted)*

293 The following definitions apply to matches:

- (a) Fusee matches are matches the heads of which are prepared with a friction-sensitive igniter composition and a pyrotechnic composition which burns with little or no flame, but with intense heat;
- (b) Safety matches are matches that are combined with or attached to the box, book or card that can be ignited by friction only on a prepared surface;
- (c) Strike anywhere matches are matches that can be ignited by friction on a solid surface;
- (d) Wax Vesta matches are matches that can be ignited by friction either on a prepared surface or on a solid surface.

295 Batteries need not be individually marked and labelled if the pallet bears the appropriate mark and label.

296 These entries apply to life-saving appliances such as life rafts, personal flotation devices and self-inflating slides. UN No. 2990 applies to self-inflating appliances and UN No. 3072 applies to life-saving appliances that are not self-inflating. Life-saving appliances may contain:

- (a) Signal devices (Class 1) which may include smoke and illumination signal flares packed in packagings that prevent them from being inadvertently activated;
- (b) For UN No. 2990 only, cartridges, power device of Division 1.4, compatibility group S, may be contained for purposes of the self-inflating mechanism and provided that the quantity of explosives per appliance does not exceed 3.2 g;
- (c) Class 2 compressed or liquefied gases, group A or O, according to 2.2.2.1.3;
- (d) Electric storage batteries (Class 8) and lithium batteries (Class 9);
- (e) First aid kits or repair kits containing small quantities of dangerous goods (e.g.: substances of Class 3, 4.1, 5.2, 8 or 9); or

- (f) "Strike anywhere" matches packed in packagings that prevent them from being inadvertently activated.

Life-saving appliances packed in strong rigid outer packagings with a total maximum gross mass of 40 kg, containing no dangerous goods other than compressed or liquefied gases of Class 2, group A or group O, in receptacles with a capacity not exceeding 120 ml, installed solely for the purpose of the activation of the appliance, are not subject to the requirements of ADR.

298 *(Deleted)*

300 Fish meal, fish scrap and krill meal shall not be loaded if the temperature at the time of loading exceeds 35 °C or 5 °C above the ambient temperature whichever is higher.

301 This entry only applies to articles such as machinery, apparatus or devices containing dangerous goods as a residue or an integral element of the articles. It shall not be used for articles for which a proper shipping name already exists in Table A of Chapter 3.2. Articles carried under this entry shall only contain dangerous goods which are authorized to be carried in accordance with the provisions of Chapter 3.4 (Limited quantities). The quantity of dangerous goods in articles shall not exceed the quantity specified in Column (7a) of Table A of Chapter 3.2 for each item of dangerous goods contained. If the articles contain more than one item of dangerous goods, the individual dangerous goods shall be enclosed to prevent them reacting dangerously with one another during carriage (see 4.1.1.6). When it is required to ensure liquid dangerous goods remain in their intended orientation, orientation arrows shall be displayed on at least two opposite vertical sides with the arrows pointing in the correct direction in accordance with 5.2.1.10.

302 Fumigated cargo transport units containing no other dangerous goods are only subject to the provisions of 5.5.2.

303 Receptacles shall be assigned to the classification code of the gas or mixture of gases contained therein determined in accordance with the provisions of section 2.2.2.

304 This entry may only be used for the transport of non-activated batteries which contain dry potassium hydroxide and which are intended to be activated prior to use by addition of an appropriate amount of water to the individual cells.

305 These substances are not subject to the requirements of ADR when in concentrations of not more than 50 mg/kg.

306 This entry may only be used for substances that are too insensitive for acceptance into Class 1 when tested in accordance with Test Series 2 (see *Manual of Tests and Criteria*, Part I).

307 This entry may only be used for ammonium nitrate based fertilizers. They shall be classified in accordance with the procedure as set out in the Manual of Tests and Criteria, Part III, Section 39 subject to the restrictions of 2.2.51.2.2, thirteenth and fourteenth indents. When used in the said Section 39, the term "competent authority" means the competent authority of the country of origin. If the country of origin is not a Contracting Party to ADR, the classification and conditions of carriage shall be recognized by the competent authority of the first country Contracting Party to ADR reached by the consignment.

309 This entry applies to non sensitized emulsions, suspensions and gels consisting primarily of a mixture of ammonium nitrate and fuel, intended to produce a Type E blasting explosive only after further processing prior to use.

The mixture for emulsions typically has the following composition: 60-85 % ammonium nitrate, 5-30 % water, 2-8 % fuel, 0.5-4 % emulsifier agent, 0-10 % soluble flame suppressants, and trace additives. Other inorganic nitrate salts may replace part of the ammonium nitrate.

The mixture for suspensions and gels typically has the following composition: 60-85 % ammonium nitrate, 0-5 % sodium or potassium perchlorate, 0-17 % hexamine nitrate or monomethylamine nitrate, 5-30 % water, 2-15 % fuel, 0.5-4 % thickening agent, 0-10 % soluble flame suppressants, and trace additives. Other inorganic nitrate salts may replace part of the ammonium nitrate.

Substances shall satisfy the criteria for classification as an ammonium nitrate emulsion, suspension or gel, intermediate for blasting explosives (ANE) of Test Series 8 of the *Manual of Tests and Criteria*, Part I, Section 18 and be approved by the competent authority.

- 310 The testing requirements in the Manual of Tests and Criteria, part III sub-section 38.3 do not apply to production runs, consisting of not more than 100 cells or batteries, or to pre-production prototypes of cells or batteries when these prototypes are carried for testing when packaged in accordance with packing instruction P910 of 4.1.4.1 or LP905 of 4.1.4.3, as applicable.

The transport document shall include the following statement: "Carriage in accordance with special provision 310".

Damaged or defective cells, batteries, or cells and batteries contained in equipment shall be carried in accordance with special provision 376.

Cells, batteries or cells and batteries contained in equipment carried for disposal or recycling may be packaged in accordance with special provision 377 and packing instruction P909 of 4.1.4.1.

- 311 Substances shall not be carried under this entry unless approved by the competent authority on the basis of the results of appropriate tests according to Part I of the *Manual of Tests and Criteria*. Packaging shall ensure that the percentage of diluent does not fall below that stated in the competent authority approval, at any time during carriage.

312 and 313 *(Deleted)*

- 314 (a) These substances are liable to exothermic decomposition at elevated temperatures. Decomposition can be initiated by heat or by impurities (e.g. powdered metals (iron, manganese, cobalt, magnesium) and their compounds);

(b) During the course of carriage, these substances shall be shaded from direct sunlight and all sources of heat and be placed in adequately ventilated areas.

- 315 This entry shall not be used for Class 6.1 substances which meet the inhalation toxicity criteria for packing group I described in 2.2.61.1.8.

316 This entry applies only to calcium hypochlorite, dry, when carried in non friable tablet form.

317 "Fissile-excepted" applies only to those fissile material and packages containing fissile material which are excepted in accordance with 2.2.7.2.3.5.

318 For the purposes of documentation, the proper shipping name shall be supplemented with the technical name (see 3.1.2.8). When the infectious substances to be carried are unknown, but suspected of meeting the criteria for inclusion in Category A and assignment to UN No. 2814 or 2900, the words "suspected Category A infectious substance" shall be shown, in parentheses, following the proper shipping name on the transport document.

319 Substances packed and packages which are marked in accordance with packing instruction P650 are not subject to any other requirements of ADR.

320 *(Deleted)*

321 These storage systems shall always be considered as containing hydrogen.

322 When carried in non-friable tablet form, these goods are assigned to packing group III.

323 *(Reserved)*

324 This substance needs to be stabilized when in concentrations of not more than 99 %.

325 In the case of non-fissile or fissile excepted uranium hexafluoride, the material shall be classified under UN No. 2978.

326 In the case of fissile uranium hexafluoride, the material shall be classified under UN No. 2977.

- 327 Waste aerosols and waste gas cartridges consigned in accordance with 5.4.1.1.3.1 may be carried under UN Nos. 1950 or 2037, as appropriate, for the purposes of reprocessing or disposal. They need not be protected against movement and inadvertent discharge provided that measures to prevent dangerous build-up of pressure and dangerous atmospheres are addressed. Waste aerosols, other than those leaking or severely deformed, shall be packed in accordance with packing instruction P207 and special provision PP87, or packing instruction LP200 and special packing provision L2. Waste gas cartridges, other than those leaking or severely deformed, shall be packed in accordance with packing instruction P003 and special packing provisions PP17 and PP96, or packing instruction LP200 and special packing provision L2. Leaking or severely deformed aerosols and gas cartridges shall be carried in salvage pressure receptacles or salvage packagings provided appropriate measures are taken to ensure there is no dangerous build-up of pressure.

NOTE: For maritime carriage, waste aerosols and waste gas cartridges shall not be carried in closed containers.

Waste gas cartridges that were filled with non-flammable, non-toxic gases of Class 2, group A or O and have been pierced are not subject to ADR.

- 328 This entry applies to fuel cell cartridges including when contained in equipment or packed with equipment. Fuel cell cartridges installed in or integral to a fuel cell system are regarded as contained in equipment. Fuel cell cartridge means an article that stores fuel for discharge into the fuel cell through (a) valve(s) that control(s) the discharge of fuel into the fuel cell. Fuel cell cartridges, including when contained in equipment, shall be designed and constructed to prevent fuel leakage under normal conditions of carriage.

Fuel cell cartridge design types using liquids as fuels shall pass an internal pressure test at a pressure of 100 kPa (gauge) without leakage.

Except for fuel cell cartridges containing hydrogen in metal hydride which shall be in compliance with special provision 339, each fuel cell cartridge design type shall be shown to pass a 1.2 meter drop test onto an unyielding surface in the orientation most likely to result in failure of the containment system with no loss of contents.

When lithium metal or lithium ion batteries are contained in the fuel cell system, the consignment shall be consigned under this entry and under the appropriate entries for UN 3091 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT.

329 *(Reserved)*

330 *(Deleted)*

331 *(Reserved)*

332 Magnesium nitrate hexahydrate is not subject to the requirements of ADR.

333 Ethanol and gasoline, motor spirit or petrol mixtures for use in spark-ignition engines (e.g. in automobiles, stationary engines and other engines) shall be assigned to this entry regardless of variations in volatility.

334 A fuel cell cartridge may contain an activator provided it is fitted with two independent means of preventing unintended mixing with the fuel during carriage.

335 Mixtures of solids which are not subject to the requirements of ADR and environmentally hazardous liquids or solids shall be classified as UN 3077 and may be carried under this entry provided there is no free liquid visible at the time the substance is loaded or at the time the packaging or cargo transport unit is closed. Each cargo transport unit shall be leakproof when used for carriage in bulk. If free liquid is visible at the time the mixture is loaded or at the time the packaging or cargo transport unit is closed, the mixture shall be classified as UN 3082. Sealed packets and articles containing less than 10 ml of an environmentally hazardous liquid, absorbed into a solid material but with no free liquid in the packet or article, or containing less than 10 g of an environmentally hazardous solid, are not subject to the requirements of ADR.

- 336 A single package of non-combustible solid LSA-II or LSA-III material, if carried by air, shall not contain an activity greater than 3 000 A₂.
- 337 Type B(U) and Type B(M) packages, if carried by air, shall not contain activities greater than the following:
- (a) For low dispersible radioactive material: as authorized for the package design as specified in the certificate of approval;
 - (b) For special form radioactive material: 3 000 A₁ or 100 000 A₂, whichever is the lower; or
 - (c) For all other radioactive material: 3 000 A₂.
- 338 Each fuel cell cartridge carried under this entry and designed to contain a liquefied flammable gas shall:
- (a) Be capable of withstanding, without leakage or bursting, a pressure of at least two times the equilibrium pressure of the contents at 55 °C;
 - (b) Not contain more than 200 ml liquefied flammable gas, the vapour pressure of which shall not exceed 1 000 kPa at 55 °C; and
 - (c) Pass the hot water bath test prescribed in 6.2.6.3.1.
- 339 Fuel cell cartridges containing hydrogen in a metal hydride carried under this entry shall have a water capacity less than or equal to 120 ml.

The pressure in the fuel cell cartridge shall not exceed 5 MPa at 55 °C. The design type shall withstand, without leaking or bursting, a pressure of twice the design pressure of the cartridge at 55 °C or 200 kPa more than the design pressure of the cartridge at 55 °C, whichever is greater. The pressure at which this test is conducted is referred to in the drop test and the hydrogen cycling test as the "minimum shell burst pressure".

Fuel cell cartridges shall be filled in accordance with procedures provided by the manufacturer. The manufacturer shall provide the following information with each fuel cell cartridge:

- (a) Inspection procedures to be carried out before initial filling and before refilling of the fuel cell cartridge;
- (b) Safety precautions and potential hazards to be aware of;
- (c) Method for determining when the rated capacity has been achieved;
- (d) Minimum and maximum pressure range;
- (e) Minimum and maximum temperature range; and
- (f) Any other requirements to be met for initial filling and refilling including the type of equipment to be used for initial filling and refilling.

The fuel cell cartridges shall be designed and constructed to prevent fuel leakage under normal conditions of carriage. Each cartridge design type, including cartridges integral to a fuel cell, shall be subjected to and shall pass the following tests:

Drop test

A 1.8 metre drop test onto an unyielding surface in four different orientations:

- (a) Vertically, on the end containing the shut-off valve assembly;
- (b) Vertically, on the end opposite to the shut-off valve assembly;
- (c) Horizontally, onto a steel apex with a diameter of 38 mm, with the steel apex in the upward position; and
- (d) At a 45° angle on the end containing the shut-off valve assembly.

There shall be no leakage, determined by using a soap bubble solution or other equivalent means on all possible leak locations, when the cartridge is charged to its rated charging pressure. The fuel cell cartridge shall then be hydrostatically pressurized to destruction. The recorded burst pressure shall exceed 85 % of the minimum shell burst pressure.

Fire test

A fuel cell cartridge filled to rated capacity with hydrogen shall be subjected to a fire engulfment test. The cartridge design, which may include a vent feature integral to it, is deemed to have passed the fire test if:

- (a) The internal pressure vents to zero gauge pressure without rupture of the cartridge; or
- (b) The cartridge withstands the fire for a minimum of 20 minutes without rupture.

Hydrogen cycling test

This test is intended to ensure that a fuel cell cartridge design stress limits are not exceeded during use.

The fuel cell cartridge shall be cycled from not more than 5 % rated hydrogen capacity to not less than 95 % rated hydrogen capacity and back to not more than 5 % rated hydrogen capacity. The rated charging pressure shall be used for charging and temperatures shall be held within the operating temperature range. The cycling shall be continued for at least 100 cycles.

Following the cycling test, the fuel cell cartridge shall be charged and the water volume displaced by the cartridge shall be measured. The cartridge design is deemed to have passed the hydrogen cycling test if the water volume displaced by the cycled cartridge does not exceed the water volume displaced by an uncycled cartridge charged to 95 % rated capacity and pressurized to 75 % of its minimum shell burst pressure.

Production leak test

Each fuel cell cartridge shall be tested for leaks at $15\text{ °C} \pm 5\text{ °C}$, while pressurized to its rated charging pressure. There shall be no leakage, determined by using a soap bubble solution or other equivalent means on all possible leak locations.

Each fuel cell cartridge shall be permanently marked with the following information:

- (a) The rated charging pressure in MPa;
- (b) The manufacturer's serial number of the fuel cell cartridges or unique identification number; and
- (c) The date of expiry based on the maximum service life (year in four digits; month in two digits).

340 Chemical kits, first aid kits and polyester resin kits containing dangerous substances in inner packagings which do not exceed the quantity limits for excepted quantities applicable to individual substances as specified in column (7b) of Table A of Chapter 3.2, may be carried in accordance with Chapter 3.5. Class 5.2 substances, although not individually authorized as excepted quantities in column (7b) of Table A of Chapter 3.2, are authorized in such kits and are assigned Code E2 (see 3.5.1.2).

341 *(Reserved)*

342 Glass inner receptacles (such as ampoules or capsules) intended only for use in sterilization devices, when containing less than 30 ml of ethylene oxide per inner packaging with not more than 300 ml per outer packaging, may be carried in accordance with the provisions in Chapter 3.5, irrespective of the indication of "E0" in column (7b) of Table A of Chapter 3.2 provided that:

- (a) After filling, each glass inner receptacle has been determined to be leak-tight by placing the glass inner receptacle in a hot water bath at a temperature, and for a period of time, sufficient to ensure that an internal pressure equal to the vapour pressure of ethylene oxide

- at 55 °C is achieved. Any glass inner receptacle showing evidence of leakage, distortion or other defect under this test shall not be carried under the terms of this special provision;
- (b) In addition to the packaging required by 3.5.2, each glass inner receptacle is placed in a sealed plastics bag compatible with ethylene oxide and capable of containing the contents in the event of breakage or leakage of the glass inner receptacle; and
 - (c) Each glass inner receptacle is protected by a means of preventing puncture of the plastics bag (e.g. sleeves or cushioning) in the event of damage to the packaging (e.g. by crushing).
- 343 This entry applies to crude oil containing hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard. The packing group assigned shall be determined by the flammability hazard and inhalation hazard, in accordance with the degree of danger presented.
- 344 The provisions of 6.2.6 shall be met.
- 345 This gas contained in open cryogenic receptacles with a maximum capacity of 1 litre constructed with glass double walls having the space between the inner and outer wall evacuated (vacuum insulated) is not subject to ADR provided each receptacle is carried in an outer packaging with suitable cushioning or absorbent materials to protect it from impact damage.
- 346 Open cryogenic receptacles conforming to the requirements of packing instruction P203 of 4.1.4.1 and containing no dangerous goods except for UN No. 1977 nitrogen, refrigerated liquid, which is fully absorbed in a porous material are not subject to any other requirements of ADR.
- 347 This entry shall only be used if the results of Test series 6 (d) of Part I of the Manual of Tests and Criteria have demonstrated that any hazardous effects arising from functioning are confined within the package.
- 348 Batteries manufactured after 31 December 2011 shall be marked with the Watt-hour rating on the outside case.
- 349 Mixtures of a hypochlorite with an ammonium salt are not to be accepted for carriage. UN No. 1791 hypochlorite solution is a substance of Class 8.
- 350 Ammonium bromate and its aqueous solutions and mixtures of a bromate with an ammonium salt are not to be accepted for carriage.
- 351 Ammonium chlorate and its aqueous solutions and mixtures of a chlorate with an ammonium salt are not to be accepted for carriage.
- 352 Ammonium chlorite and its aqueous solutions and mixtures of a chlorite with an ammonium salt are not to be accepted for carriage.
- 353 Ammonium permanganate and its aqueous solutions and mixtures of a permanganate with an ammonium salt are not to be accepted for carriage.
- 354 This substance is toxic by inhalation.
- 355 Oxygen cylinders for emergency use carried under this entry may include installed actuating cartridges (cartridges, power device of Division 1.4, Compatibility Group C or S), without changing the classification in Class 2 provided the total quantity of deflagrating (propellant) explosives does not exceed 3.2 g per oxygen cylinder. The cylinders with the installed actuating cartridges as prepared for carriage shall have an effective means of preventing inadvertent activation.
- 356 Metal hydride storage systems intended to be installed in vehicles, wagons, vessels, machinery, engines or aircraft shall be approved by the competent authority of the country of manufacture¹ before acceptance for carriage. The transport document shall include an indication that the

¹ *If the country of manufacture is not a Contracting Party to ADR, the approval shall be recognized by the competent authority of a Contracting Party to ADR.*

package was approved by the competent authority of the country of manufacture¹ or a copy of the competent authority of the country of manufacture¹ approval shall accompany each consignment.

- 357 Petroleum crude oil containing hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard shall be consigned under the entry UN 3494 PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC.
- 358 Nitroglycerin solution in alcohol with more than 1 % but not more than 5 % nitroglycerin may be classified in Class 3 and assigned to UN No. 3064 provided all the requirements of packing instruction P300 of 4.1.4.1 are complied with.
- 359 Nitroglycerin solution in alcohol with more than 1 % but not more than 5 % nitroglycerin shall be classified in Class 1 and assigned to UN No. 0144 if not all the requirements of packing instruction P300 of 4.1.4.1 are complied with.
- 360 Vehicles only powered by lithium metal batteries or lithium ion batteries shall be assigned to the entry UN 3171 BATTERY-POWERED VEHICLE. Lithium batteries installed in cargo transport units, designed only to provide power external to the transport unit shall be assigned to entry UN 3536 LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT lithium ion batteries or lithium metal batteries.
- 361 This entry applies to electric double layer capacitors with an energy storage capacity greater than 0.3 Wh. Capacitors with an energy storage capacity of 0.3 Wh or less are not subject to ADR. Energy storage capacity means the energy held by a capacitor, as calculated using the nominal voltage and capacitance. All capacitors to which this entry applies, including capacitors containing an electrolyte that does not meet the classification criteria of any class of dangerous goods, shall meet the following conditions:
- (a) Capacitors not installed in equipment shall be carried in an uncharged state. Capacitors installed in equipment shall be carried either in an uncharged state or protected against short circuit;
 - (b) Each capacitor shall be protected against a potential short circuit hazard in carriage as follows:
 - (i) When a capacitor's energy storage capacity is less than or equal to 10 Wh or when the energy storage capacity of each capacitor in a module is less than or equal to 10 Wh, the capacitor or module shall be protected against short circuit or be fitted with a metal strap connecting the terminals; and
 - (ii) When the energy storage capacity of a capacitor or a capacitor in a module is more than 10 Wh, the capacitor or module shall be fitted with a metal strap connecting the terminals;
 - (c) Capacitors containing dangerous goods shall be designed to withstand a 95 kPa pressure differential;
 - (d) Capacitors shall be designed and constructed to safely relieve pressure that may build up in use, through a vent or a weak point in the capacitor casing. Any liquid which is released upon venting shall be contained by the packaging or by the equipment in which a capacitor is installed; and
 - (e) Capacitors shall be marked with the energy storage capacity in Wh.

Capacitors containing an electrolyte not meeting the classification criteria of any class of dangerous goods, including when installed in equipment, are not subject to other provisions of ADR.

Capacitors containing an electrolyte meeting the classification criteria of any class of dangerous goods, with an energy storage capacity of 10 Wh or less are not subject to other provisions of ADR when they are capable of withstanding a 1.2 metre drop test unpackaged on an unyielding surface without loss of contents.

Capacitors containing an electrolyte meeting the classification criteria of any class of dangerous goods that are not installed in equipment and with an energy storage capacity of more than 10 Wh are subject to ADR.

Capacitors installed in equipment and containing an electrolyte meeting the classification criteria of any class of dangerous goods, are not subject to other provisions of ADR provided the equipment is packaged in a strong outer packaging constructed of suitable material, and of adequate strength and design in relation to the packaging's intended use and in such a manner as to prevent accidental functioning of capacitors during carriage. Large robust equipment containing capacitors may be offered for carriage unpackaged or on pallets when capacitors are afforded equivalent protection by the equipment in which they are contained.

NOTE: *Capacitors which by design maintain a terminal voltage (e.g. asymmetrical capacitors) do not belong to this entry.*

362 (Reserved)

363 This entry may only be used when the conditions of this special provision are met. No other requirements of ADR apply.

- (a) This entry applies to engines or machinery, powered by fuels classified as dangerous goods via internal combustion systems or fuel cells (e.g. combustion engines, generators, compressors, turbines, heating units, etc.), except vehicle equipment assigned to UN No. 3166 referred to in special provision 666.

NOTE: *This entry does not apply to equipment referred to in 1.1.3.2 (a), (d) and (e), 1.1.3.3 and 1.1.3.7.*

- (b) Engines or machinery which are empty of liquid or gaseous fuels and which do not contain other dangerous goods, are not subject to ADR.

NOTE 1: *An engine or machinery is considered to be empty of liquid fuel when the liquid fuel tank has been drained and the engine or machinery cannot be operated due to a lack of fuel. Engine or machinery components such as fuel lines, fuel filters and injectors do not need to be cleaned, drained or purged to be considered empty of liquid fuels. In addition, the liquid fuel tank does not need to be cleaned or purged.*

NOTE 2: *An engine or machinery is considered to be empty of gaseous fuels when the gaseous fuel tanks are empty of liquid (for liquefied gases), the pressure in the tanks does not exceed 2 bar and the fuel shut-off or isolation valve is closed and secured.*

- (c) Engines and machinery containing fuels meeting the classification criteria of Class 3, shall be assigned to the entries UN No. 3528 ENGINE, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED or UN No. 3528 ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or UN No. 3528 MACHINERY, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED or UN No. 3528 MACHINERY, FUEL CELL, FLAMMABLE LIQUID POWERED, as appropriate.
- (d) Engines and machinery containing fuels meeting the classification criteria of flammable gases of Class 2, shall be assigned to the entries UN No. 3529 ENGINE, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or UN No. 3529 ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or UN No. 3529 MACHINERY, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or UN No. 3529 MACHINERY, FUEL CELL, FLAMMABLE GAS POWERED, as appropriate.

Engines and machinery powered by both a flammable gas and a flammable liquid shall be assigned to the appropriate UN No. 3529 entry.

- (e) Engines and machinery containing liquid fuels meeting the classification criteria of 2.2.9.1.10 for environmentally hazardous substances and not meeting the classification criteria of any other class shall be assigned to the entries UN No. 3530 ENGINE, INTERNAL COMBUSTION or UN No. 3530 MACHINERY, INTERNAL COMBUSTION, as appropriate.

- (f) Engines or machinery may contain other dangerous goods than fuels (e.g. batteries, fire extinguishers, compressed gas accumulators or safety devices) required for their functioning or safe operation without being subject to any additional requirements for these other dangerous goods, unless otherwise specified in ADR. However, lithium batteries shall meet the provisions of 2.2.9.1.7, except as provided for in special provision 667.
- (g) The engine or machinery, including the means of containment containing dangerous goods, shall be in compliance with the construction requirements specified by the competent authority of the country of manufacture²;
- (h) Any valves or openings (e.g. venting devices) shall be closed during carriage;
- (i) The engines or machinery shall be oriented to prevent inadvertent leakage of dangerous goods and secured by means capable of restraining the engines or machinery to prevent any movement during carriage which would change the orientation or cause them to be damaged;
- (j) For UN No. 3528 and UN No. 3530:

Where the engine or machinery contains more than 60 l of liquid fuel and has a capacity of more than 450 l but not more than 3 000 l, it shall be labelled on two opposite sides in accordance with 5.2.2.

Where the engine or machinery contains more than 60 l of liquid fuel and has a capacity of more than 3 000 l, it shall be placarded on two opposite sides. Placards shall correspond to the labels required in Column (5) of Table A of Chapter 3.2 and shall conform to the specifications given in 5.3.1.7. Placards shall be displayed on a background of contrasting colour, or shall have either a dotted or solid outer boundary line.

NOTE: On engines and machinery with a capacity of more than 450 l but containing 60 l of liquid fuel or less, labelling and placarding compliant with the above requirements are permitted.

- (k) For UN No. 3529:

Where the fuel tank of the engine or machinery has a water capacity of more than 450 l but not more than 1 000 l, it shall be labelled on two opposite sides in accordance with 5.2.2.

Where the fuel tank of the engine or machinery has a water capacity of more than 1 000 l, it shall be placarded on two opposite sides. Placards shall correspond to the labels required in Column (5) of Table A of Chapter 3.2 and shall conform to the specifications given in 5.3.1.7. Placards shall be displayed on a background of contrasting colour, or shall have either a dotted or solid outer boundary line.

- (l) When the engine or machinery contains more than 1 000 l of liquid fuels, for UN No. 3528 and UN No. 3530, or the fuel tank has a water capacity of more than 1 000 l, for UN No. 3529:
- A transport document in accordance with 5.4.1 is required. This transport document shall contain the following additional statement "Transport in accordance with special provision 363";
 - For carriage that includes passage through restricted tunnels, the transport unit shall display orange-coloured plates according to 5.3.2 and the tunnel restrictions according to 8.6.4 apply;
- (m) The requirements specified in packing instruction P005 of 4.1.4.1 shall be met.

² For example, compliance with the relevant provisions of Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (Official Journal of the European Union No. L 157 of 9 June 2006, pp. 0024-0086).

364 This article may only be carried under the provisions of Chapter 3.4 if, as presented for carriage, the package is capable of passing the test in accordance with Test Series 6(d) of Part I of the Manual of Tests and Criteria as determined by the competent authority.

365 For manufactured instruments and articles containing mercury, see UN No. 3506.

366 Manufactured instruments and articles containing not more than 1 kg of mercury are not subject to ADR.

367 For the purposes of documentation:

The proper shipping name "Paint related material" may be used for consignments of packages containing "Paint" and "Paint related material" in the same package;

The proper shipping name "Paint related material, corrosive, flammable" may be used for consignments of packages containing "Paint, corrosive, flammable" and "Paint related material, corrosive, flammable" in the same package;

The proper shipping name "Paint related material, flammable, corrosive" may be used for consignments of packages containing "Paint, flammable, corrosive" and "Paint related material, flammable, corrosive" in the same package; and

The proper shipping name "Printing ink related material" may be used for consignments of packages containing "Printing ink" and "Printing ink related material" in the same package.

368 In the case of non-fissile or fissile-excepted uranium hexafluoride, the material shall be classified under UN No. 3507 or UN No. 2978.

369 In accordance with 2.1.3.5.3 (a), this radioactive material in an excepted package possessing toxic and corrosive properties is classified in Class 6.1 with radioactivity and corrosivity subsidiary hazards.

Uranium hexafluoride may be classified under this entry only if the conditions of 2.2.7.2.4.1.2, 2.2.7.2.4.1.5, 2.2.7.2.4.5.2 and, for fissile-excepted material, of 2.2.7.2.3.5 are met.

In addition to the provisions applicable to the carriage of Class 6.1 substances with a corrosivity subsidiary hazard, the provisions of 5.1.3.2, 5.1.5.2.2, 5.1.5.4.1 (b), 7.5.11 CV33 (3.1), (5.1) to (5.4) and (6) shall apply.

No Class 7 label is required to be displayed.

370 This entry only applies to ammonium nitrate that meets one of the following criteria:

(a) ammonium nitrate with more than 0.2 % combustible substances, including any organic substance calculated as carbon, to the exclusion of any added substance; or

(b) ammonium nitrate with not more than 0.2 % combustible substances, including any organic substance calculated as carbon, to the exclusion of any added substance, that gives a positive result when tested in accordance with Test Series 2 (see Manual of Tests and Criteria, Part I). See also UN No. 1942.

This entry shall not be used for ammonium nitrate for which a proper shipping name already exists in Table A of Chapter 3.2 including ammonium nitrate mixed with fuel oil (ANFO) or any of the commercial grades of ammonium nitrate.

371 (1) This entry also applies to articles, containing a small pressure receptacle with a release device. Such articles shall comply with the following requirements:

(a) The water capacity of the pressure receptacle shall not exceed 0.5 litres and the working pressure shall not exceed 25 bar at 15 °C;

(b) The minimum burst pressure of the pressure receptacle shall be at least four times the pressure of the gas at 15 °C;

- (c) Each article shall be manufactured in such a way that unintentional firing or release is avoided under normal conditions of handling, packing, carriage and use. This may be fulfilled by an additional locking device linked to the activator;
 - (d) Each article shall be manufactured in such a way as to prevent hazardous projections of the pressure receptacle or parts of the pressure receptacle;
 - (e) Each pressure receptacle shall be manufactured from material which will not fragment upon rupture;
 - (f) The design type of the article shall be subjected to a fire test. For this test, the provisions of paragraphs 16.6.1.2 except letter g, 16.6.1.3.1 to 16.6.1.3.6, 16.6.1.3.7 (b) and 16.6.1.3.8 of the Manual of Tests and Criteria shall be applied. It shall be demonstrated that the article relieves its pressure by means of a fire degradable seal or other pressure relief device, in such a way that the pressure receptacle will not fragment and that the article or fragments of the article do not rocket more than 10 metres;
 - (g) The design type of the article shall be subjected to the following test. A stimulating mechanism shall be used to initiate one article in the middle of the packaging. There shall be no hazardous effects outside the package such as disruption of the package, metal fragments or a receptacle which passes through the packaging.
- (2) The manufacturer shall produce technical documentation of the design type, manufacture as well as the tests and their results. The manufacturer shall apply procedures to ensure that articles produced in series are made of good quality, conform to the design type and are able to meet the requirements in (1). The manufacturer shall provide such information to the competent authority on request.

372 This entry applies to asymmetric capacitors with an energy storage capacity greater than 0.3 Wh. Capacitors with an energy storage capacity of 0.3 Wh or less are not subject to ADR.

Energy storage capacity means the energy stored in a capacitor, as calculated according to the following equation,

$$Wh = 1/2C_N(U_R^2 - U_L^2) \times (1/3600),$$

using the nominal capacitance (C_N), rated voltage (U_R) and rated lower limit voltage (U_L).

All asymmetric capacitors to which this entry applies shall meet the following conditions:

- (a) Capacitors or modules shall be protected against short circuit;
- (b) Capacitors shall be designed and constructed to safely relieve pressure that may build up in use, through a vent or a weak point in the capacitor casing. Any liquid which is released upon venting shall be contained by packaging or by equipment in which a capacitor is installed;
- (c) Capacitors shall be marked with the energy storage capacity in Wh; and
- (d) Capacitors containing an electrolyte meeting the classification criteria of any class of dangerous goods shall be designed to withstand a 95 kPa pressure differential;

Capacitors containing an electrolyte not meeting the classification criteria of any class of dangerous goods, including when configured in a module or when installed in equipment are not subject to other provisions of ADR.

Capacitors containing an electrolyte meeting the classification criteria of any class of dangerous goods, with an energy storage capacity of 20 Wh or less, including when configured in a module, are not subject to other provisions of ADR when the capacitors are capable of withstanding a 1.2 metre drop test unpackaged on an unyielding surface without loss of contents.

Capacitors containing an electrolyte meeting the classification criteria of any class of dangerous goods that are not installed in equipment and with an energy storage capacity of more than 20 Wh are subject to ADR.

Capacitors installed in equipment and containing an electrolyte meeting the classification criteria of any class of dangerous goods, are not subject to other provisions of ADR provided that the equipment is packaged in a strong outer packaging constructed of suitable material, and of adequate strength and design, in relation to the packaging's intended use and in such a manner as to prevent accidental functioning of capacitors during carriage. Large robust equipment containing capacitors may be offered for carriage unpackaged or on pallets when capacitors are afforded equivalent protection by the equipment in which they are contained.

NOTE: Notwithstanding the provisions of this special provision, nickel-carbon asymmetric capacitors containing Class 8 alkaline electrolytes shall be carried as UN 2795 BATTERIES, WET, FILLED WITH ALKALI, electric storage.

373 Neutron radiation detectors containing non-pressurized boron trifluoride gas may be carried under this entry provided that the following conditions are met:

- (a) Each radiation detector shall meet the following conditions.
 - (i) The pressure in each detector shall not exceed 105 kPa absolute at 20 °C;
 - (ii) The amount of gas shall not exceed 13 g per detector;
 - (iii) Each detector shall be manufactured under a registered quality assurance programme;

NOTE: ISO 9001 may be used for this purpose.

- (iv) Each neutron radiation detector shall be of welded metal construction with brazed metal to ceramic feed through assemblies. These detectors shall have a minimum burst pressure of 1800 kPa as demonstrated by design type qualification testing; and
 - (v) Each detector shall be tested to a 1×10^{-10} cm³/s leaktightness standard before filling.
- (b) Radiation detectors carried as individual components shall be carried as follows:
 - (i) Detectors shall be packed in a sealed intermediate plastics liner with sufficient absorbent or adsorbent material to absorb or adsorb the entire gas contents;
 - (ii) They shall be packed in strong outer packaging. The completed package shall be capable of withstanding a 1.8 m drop test without leakage of gas contents from detectors;
 - (iii) The total amount of gas from all detectors per outer packaging shall not exceed 52 g.
- (c) Completed neutron radiation detection systems containing detectors meeting the conditions of paragraph (a) shall be carried as follows:
 - (i) The detectors shall be contained in a strong sealed outer casing;
 - (ii) The casing shall contain sufficient absorbent or adsorbent material to absorb or adsorb the entire gas contents;
 - (iii) The completed systems shall be packed in strong outer packagings capable of withstanding a 1.8 m drop test without leakage unless a system's outer casing affords equivalent protection.

Packing instruction P200 of 4.1.4.1 is not applicable.

The transport document shall include the following statement "Transport in accordance with special provision 373".

Neutron radiation detectors containing not more than 1 g of boron trifluoride, including those with solder glass joints, are not subject to ADR provided they meet the requirements in paragraph

(a) and are packed in accordance with paragraph (b). Radiation detection systems containing such detectors are not subject to ADR provided they are packed in accordance with paragraph (c).

374 *(Reserved)*

375 These substances when carried in single or combination packagings containing a net quantity per single or inner packaging of 5 l or less for liquids or having a net mass per single or inner packaging of 5 kg or less for solids, are not subject to any other provisions of ADR provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

376 Lithium ion cells or batteries and lithium metal cells or batteries identified as being damaged or defective such that they do not conform to the type tested according to the applicable provisions of the Manual of Tests and Criteria shall comply with the requirements of this special provision.

For the purposes of this special provision, these may include, but are not limited to:

- Cells or batteries identified as being defective for safety reasons;
- Cells or batteries that have leaked or vented;
- Cells or batteries that cannot be diagnosed prior to carriage; or
- Cells or batteries that have sustained physical or mechanical damage.

NOTE: In assessing a cell or battery as damaged or defective, an assessment or evaluation shall be performed based on safety criteria from the cell, battery or product manufacturer or by a technical expert with knowledge of the cell's or battery's safety features. An assessment or evaluation may include, but is not limited to, the following criteria:

- (a) Acute hazard, such as gas, fire, or electrolyte leaking;*
- (b) The use or misuse of the cell or battery;*
- (c) Signs of physical damage, such as deformation to cell or battery casing, or colours on the casing;*
- (d) External and internal short circuit protection, such as voltage or isolation measures;*
- (e) The condition of the cell or battery safety features; or*
- (f) Damage to any internal safety components, such as the battery management system.*

Cells and batteries shall be carried according to the provisions applicable to UN No. 3090, UN No. 3091, UN No. 3480 and No. UN 3481, except special provision 230 and as otherwise stated in this special provision.

Cells and batteries shall be packed in accordance with packing instructions P908 of 4.1.4.1 or LP904 of 4.1.4.3, as applicable.

Cells and batteries identified as damaged or defective and liable to rapidly disassemble, dangerously react, produce a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours under normal conditions of carriage shall be packed and carried in accordance with packing instruction P911 of 4.1.4.1 or LP906 of 4.1.4.3, as applicable. Alternative packing and/or carriage conditions may be authorized by the competent authority of any ADR Contracting Party who may also recognize an approval granted by the competent authority of a country which is not an ADR Contracting Party provided that this approval has been granted in accordance with the procedures applicable according to RID, ADR, ADN, the IMDG Code or the ICAO Technical Instructions. In both cases the cells and batteries are assigned to transport category 0.

Packages shall be marked "DAMAGED/DEFECTIVE LITHIUM ION BATTERIES" or "DAMAGED/DEFECTIVE LITHIUM METAL BATTERIES", as applicable.

The transport document shall include the following statement "Transport in accordance with special provision 376".

If applicable, a copy of the competent authority approval shall accompany the carriage.

- 377 Lithium ion and lithium metal cells and batteries and equipment containing such cells and batteries carried for disposal or recycling, either packed together with or packed without non-lithium batteries, may be packaged in accordance with packing instruction P909 of 4.1.4.1.

These cells and batteries are not subject to the provisions of 2.2.9.1.7 (a) to (g).

Packages shall be marked "LITHIUM BATTERIES FOR DISPOSAL" or "LITHIUM BATTERIES FOR RECYCLING".

Identified damaged or defective batteries shall be carried in accordance with special provision 376.

- 378 Radiation detectors containing this gas in non-refillable pressure receptacles not meeting the requirements of Chapter 6.2 and packing instruction P200 of 4.1.4.1 may be carried under this entry provided:

- (a) The working pressure in each receptacle does not exceed 50 bar;
- (b) The receptacle capacity does not exceed 12 litres;
- (c) Each receptacle has a minimum burst pressure of at least 3 times the working pressure when a relief device is fitted and at least 4 times the working pressure when no relief device is fitted;
- (d) Each receptacle is manufactured from material which will not fragment upon rupture;
- (e) Each detector is manufactured under a registered quality assurance programme;

NOTE: ISO 9001 may be used for this purpose.

- (f) Detectors are carried in strong outer packagings. The complete package shall be capable of withstanding a 1.2 metre drop test without breakage of the detector or rupture of the outer packaging. Equipment that includes a detector shall be packed in strong outer packaging unless the detector is afforded equivalent protection by the equipment in which it is contained; and
- (g) The transport document includes the following statement "Transport in accordance with special provision 378".

Radiation detectors, including detectors in radiation detection systems, are not subject to any other requirements of ADR if the detectors meet the requirements in (a) to (f) above and the capacity of detector receptacles does not exceed 50 ml.

- 379 Anhydrous ammonia adsorbed or absorbed on a solid contained in ammonia dispensing systems or receptacles intended to form part of such systems are not subject to the other provisions of ADR if the following conditions are observed:

- (a) The adsorption or absorption presents the following properties:
 - (i) The pressure at a temperature of 20 °C in the receptacle is less than 0.6 bar;
 - (ii) The pressure at a temperature of 35 °C in the receptacle is less than 1 bar;
 - (iii) The pressure at a temperature of 85 °C in the receptacle is less than 12 bar.
- (b) The adsorbent or absorbent material shall not have dangerous properties listed in classes 1 to 8;
- (c) The maximum contents of a receptacle shall be 10 kg of ammonia; and

- (d) Receptacles containing adsorbed or absorbed ammonia shall meet the following conditions:
- (i) Receptacles shall be made of a material compatible with ammonia as specified in ISO 11114-1:2012 + A1:2017;
 - (ii) Receptacles and their means of closure shall be hermetically sealed and able to contain the generated ammonia;
 - (iii) Each receptacle shall be able to withstand the pressure generated at 85 °C with a volumetric expansion no greater than 0.1 %;
 - (iv) Each receptacle shall be fitted with a device that allows for gas evacuation once pressure exceeds 15 bar without violent rupture, explosion or projection; and
 - (v) Each receptacle shall be able to withstand a pressure of 20 bar without leakage when the pressure relief device is deactivated.

When carried in an ammonia dispenser, the receptacles shall be connected to the dispenser in such a way that the assembly is guaranteed to have the same strength as a single receptacle.

The properties of mechanical strength mentioned in this special provision shall be tested using a prototype of a receptacle and/or dispenser filled to nominal capacity, by increasing the temperature until the specified pressures are reached.

The test results shall be documented, shall be traceable and shall be communicated to the relevant authorities upon request.

380 and 381 (*Reserved*)

382 Polymeric beads may be made from polystyrene, poly (methyl methacrylate) or other polymeric material. When it can be demonstrated that no flammable vapour, resulting in a flammable atmosphere, is evolved according to test U1 (Test method for substances liable to evolve flammable vapours) of Part III, sub-section 38.4.4 of the Manual of Tests and Criteria, polymeric beads, expandable need not be classified under this UN number. This test should only be performed when de-classification of a substance is considered.

383 Table tennis balls manufactured from celluloid are not subject to ADR where the net mass of each table tennis ball does not exceed 3.0 g and the total net mass of table tennis balls does not exceed 500 g per package.

384 (*Reserved*)

385 (*Deleted*)

386 When substances are stabilized by temperature control, the provisions of 2.2.41.1.21, 7.1.7, special provision V8 of Chapter 7.2, special provision S4 of Chapter 8.5 and the requirements of Chapter 9.6 apply. When chemical stabilization is employed, the person offering the packaging, IBC or tank for carriage shall ensure that the level of stabilization is sufficient to prevent the substance in the packaging, IBC or tank from dangerous polymerization at a bulk mean temperature of 50 °C, or, in the case of a portable tank, 45 °C. Where chemical stabilization becomes ineffective at lower temperatures within the anticipated duration of carriage, temperature control is required. In making this determination factors to be taken into consideration include, but are not limited to, the capacity and geometry of the packaging, IBC or tank and the effect of any insulation present, the temperature of the substance when offered for carriage, the duration of the journey and the ambient temperature conditions typically encountered in the journey (considering also the season of year), the effectiveness and other properties of the stabilizer employed, applicable operational controls imposed by regulation (e.g. requirements to protect from sources of heat, including other cargo carried at a temperature above ambient) and any other relevant factors.

387 Lithium batteries in conformity with 2.2.9.1.7 (f) containing both primary lithium metal cells and rechargeable lithium ion cells shall be assigned to UN Nos. 3090 or 3091 as appropriate. When such batteries are carried in accordance with special provision 188, the total lithium

content of all lithium metal cells contained in the battery shall not exceed 1.5 g and the total capacity of all lithium ion cells contained in the battery shall not exceed 10 Wh.

- 388 UN No. 3166 entries apply to vehicles powered by flammable liquid or gas internal combustion engines or fuel cells.

Vehicles powered by a fuel cell engine shall be assigned to the entries UN 3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED, as appropriate. These entries include hybrid electric vehicles powered by both a fuel cell and an internal combustion engine with wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, carried with the battery(ies) installed.

Other vehicles which contain an internal combustion engine shall be assigned to the entries UN 3166 VEHICLE, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FLAMMABLE LIQUID POWERED, as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, carried with the battery(ies) installed.

If a vehicle is powered by a flammable liquid and a flammable gas internal combustion engine, it shall be assigned to UN 3166 VEHICLE, FLAMMABLE GAS POWERED.

Entry UN 3171 only applies to vehicles powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries and equipment powered by wet batteries or sodium batteries carried with these batteries installed.

For the purpose of this special provision, vehicles are self-propelled apparatus designed to carry one or more persons or goods. Examples of such vehicles are cars, motorcycles, scooters, three- and four-wheeled vehicles or motorcycles, trucks, locomotives, bicycles (pedal cycles with a motor) and other vehicles of this type (e.g. self-balancing vehicles or vehicles not equipped with at least one seating position), wheelchairs, lawn tractors, self-propelled farming and construction equipment, boats and aircraft. This includes vehicles carried in a packaging. In this case some parts of the vehicle may be detached from its frame to fit into the packaging.

Examples of equipment are lawnmowers, cleaning machines or model boats and model aircraft. Equipment powered by lithium metal batteries or lithium ion batteries shall be assigned to the entries UN 3091 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or UN 3091 LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT or UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or UN 3481 LITHIUM ION BATTERIES PACKED WITH EQUIPMENT, as appropriate. Lithium ion batteries or lithium metal batteries installed in a cargo transport unit and designed only to provide power external to the cargo transport unit shall be assigned to the entry UN 3536 LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT lithium ion batteries or lithium metal batteries.

Dangerous goods, such as batteries, airbags, fire extinguishers, compressed gas accumulators, safety devices and other integral components of the vehicle that are necessary for the operation of the vehicle or for the safety of its operator or passengers, shall be securely installed in the vehicle and are not otherwise subject to ADR. However, lithium batteries shall meet the provisions of 2.2.9.1.7, except as otherwise provided for in special provision 667.

Where a lithium battery installed in a vehicle or equipment is damaged or defective, the vehicle or equipment shall be carried in accordance with the conditions defined in special provision 667 (c).

- 389 This entry only applies to ~~cargo transport units in which~~ lithium ion batteries or lithium metal batteries ~~are~~ installed ~~in a cargo transport unit~~ and ~~which are~~ designed only to provide power external to the unit. The lithium batteries shall meet the provisions of 2.2.9.1.7 (a) to (g) and contain the necessary systems to prevent overcharge and over discharge between the batteries.

The batteries shall be securely attached to the interior structure of the cargo transport unit (e.g., by means of placement in racks, cabinets, etc.) in such a manner as to prevent short circuits, accidental operation, and significant movement relative to the cargo transport unit under the shocks, loadings and vibrations normally incident to carriage. Dangerous goods necessary for the safe and proper operation of the cargo transport unit (e.g., fire extinguishing systems and air

conditioning systems), shall be properly secured to or installed in the cargo transport unit and are not otherwise subject to ADR. Dangerous goods not necessary for the safe and proper operation of the cargo transport unit shall not be carried within the cargo transport unit.

The batteries inside the cargo transport unit are not subject to marking or labelling requirements. Except as provided in 1.1.3.6, the cargo transport unit shall bear orange-coloured plates in accordance with 5.3.2.2 and placards in accordance with 5.3.1.1 on two opposing sides.

- 390 When a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment, the following requirements apply for the purposes of package marking and documentation:
- (a) the package shall be marked "UN 3091" or "UN 3481", as appropriate. If a package contains both lithium ion batteries and lithium metal batteries packed with and contained in equipment, the package shall be marked as required for both battery types. However, button cell batteries installed in equipment (including circuit boards) need not be considered;
 - (b) the transport document shall indicate "UN 3091 LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT" or "UN 3481 LITHIUM ION BATTERIES PACKED WITH EQUIPMENT", as appropriate. If a package contains both lithium metal batteries and lithium ion batteries packed with and contained in equipment, then the transport document shall indicate both "UN 3091 LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT" and "UN 3481 LITHIUM ION BATTERIES PACKED WITH EQUIPMENT".
- 391 *(Reserved)*
- 392 For the carriage of fuel gas containment systems designed and approved to be fitted in motor vehicles containing this gas the provisions of 4.1.4.1 and Chapter 6.2 need not be applied when carried for disposal, recycling, repair, inspection, maintenance or from where they are manufactured to a vehicle assembly plant, provided the following conditions are met:
- (a) The fuel gas containment systems shall meet the requirements of the standards or regulations for fuel tanks for vehicles, as applicable. Examples of applicable standards and regulations are:

LPG tanks	
UN Regulation No. 67 Revision 2	Uniform provisions concerning: <ol style="list-style-type: none"> I. Approval of specific equipment of vehicles of category M and N using liquefied petroleum gases in their propulsion system; II. Approval of vehicles of category M and N fitted with specific equipment for the use of liquefied petroleum gases in their propulsion system with regard to the installation of such equipment
UN Regulation No. 115	Uniform provisions concerning the approval of: <ol style="list-style-type: none"> I. Specific LPG (liquefied petroleum gases) retrofit systems to be installed in motor vehicles for the use of LPG in their propulsion systems; II. Specific CNG (compressed natural gas) retrofit systems to be installed in motor vehicles for the use of CNG in their propulsion system
CNG and LNG tanks	
UN Regulation No. 110	Uniform provisions concerning the approval of: <ol style="list-style-type: none"> I. Specific components of motor vehicles using compressed natural gas (CNG) and/or liquefied natural gas (LNG) in their propulsion system II. Vehicles with regard to the installation of specific components of an approved type for the use of compressed natural gas (CNG) and/or liquefied natural gas (LNG) in their propulsion system

UN Regulation No. 115	Uniform provisions concerning the approval of: I. Specific LPG (liquefied petroleum gases) retrofit systems to be installed in motor vehicles for the use of LPG in their propulsion systems; II. Specific CNG (compressed natural gas) retrofit systems to be installed in motor vehicles for the use of CNG in their propulsion system
ISO 11439:2013	Gas cylinders — High pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles
ISO 15500-Series	Road vehicles -- Compressed natural gas (CNG) fuel system components – several parts as applicable
ANSI NGV 2	Compressed natural gas vehicle fuel containers
CSA B51 Part 2:2014	Boiler, pressure vessel, and pressure piping code Part 2 Requirements for high-pressure cylinders for on-board storage of fuels for automotive vehicles
Hydrogen pressure tanks	
Global Technical Regulation (GTR) No. 13	Global technical regulation on hydrogen and fuel cell vehicles (ECE/TRANS/180/Add.13).
ISO/TS 15869:2009	Gaseous hydrogen and hydrogen blends - Land vehicle fuel tanks
Regulation (EC) No.79/2009	Regulation (EC) No. 79/2009 of the European Parliament and of the Council of 14 January 2009 on type approval of hydrogen-powered motor vehicles, and amending Directive 2007/46/EC
Regulation (EU) No. 406/2010	Commission Regulation (EU) No 406/2010 of 26 April 2010 implementing Regulation (EC) No 79/2009 of the European Parliament and of the Council on type-approval of hydrogen-powered motor vehicles
UN Regulation No. 134	Uniform provisions concerning the approval of motor vehicles and their components with regard to the safety-related performance of hydrogen-fuelled vehicles (HFCV)
CSA B51 Part 2: 2014	Boiler, pressure vessel, and pressure piping code - Part 2: Requirements for high-pressure cylinders for on-board storage of fuels for automotive vehicles

Gas tanks designed and constructed in accordance with previous versions of relevant standards or regulations for gas tanks for motor vehicles, which were applicable at the time of the certification of the vehicles for which the gas tanks were designed and constructed may continue to be carried;

- (b) The fuel gas containment systems shall be leakproof and shall not exhibit any signs of external damage which may affect their safety;

NOTE 1: Criteria may be found in standard ISO 11623:2015 Gas cylinders – Composite construction – Periodic inspection and testing (or ISO 19078:2013 Gas cylinders – Inspection of the cylinder installation, and requalification of high pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles).

NOTE 2: If the fuel gas containment systems are not leakproof or are overfilled or if they exhibit damage that could affect their safety (e.g. in case of a safety related recall), they shall only be carried in salvage pressure receptacles in conformity with ADR.

- (c) If a fuel gas containment system is equipped with two valves or more integrated in line, the two valves shall be closed as to be gastight under normal conditions of carriage. If only one valve exists or only one valve works, all openings with the exception of the opening of the pressure relief device shall be closed as to be gastight under normal conditions of carriage;
- (d) Fuel gas containment systems shall be carried in such a way as to prevent obstruction of the pressure relief device or any damage to the valves and any other pressurised part of the fuel gas containment systems and unintentional release of the gas under normal conditions of carriage. The fuel gas containment system shall be secured in order to prevent slipping, rolling or vertical movement;

- (e) Valves shall be protected by one of the methods described in 4.1.6.8 (a) to (e);
- (f) Except for the case of fuel gas containment systems removed for disposal, recycling, repair, inspection or maintenance, they shall be filled with not more than 20 % of their nominal filling ratio or nominal working pressure, as applicable;
- (g) Notwithstanding the provisions of Chapter 5.2, when fuel gas containment systems are consigned in a handling device, marks and labels may be affixed to the handling device; and
- (h) Notwithstanding the provisions of 5.4.1.1.1 (f) the information on the total quantity of dangerous goods may be replaced by the following information:
 - (i) The number of fuel gas containment systems; and
 - (ii) In the case of liquefied gases the total net mass (kg) of gas of each fuel gas containment system and, in the case of compressed gases, the total water capacity (*I*) of each fuel gas containment system followed by the nominal working pressure.

Examples for information in the transport document:

Example 1: “UN 1971 natural gas, compressed, 2.1, 1 fuel gas containment system of 50 l in total, 200 bar”.

Example 2: “UN 1965 hydrocarbon gas mixture, liquefied, n.o.s., 2.1, 3 fuel gas containment systems, each of 15 kg net mass of gas”.

- 393 The nitrocellulose shall meet the criteria of the Bergmann-Junk test or methyl violet paper test in the Manual of Tests and Criteria Appendix 10. Tests of type 3 (c) need not be applied.
- 394 The nitrocellulose shall meet the criteria of the Bergmann-Junk test or methyl violet paper test in the Manual of Tests and Criteria Appendix 10.
- 395 This entry shall only be used for solid medical waste of Category A carried for disposal.

396 Large and robust articles may be carried with connected gas cylinders with the valves open regardless of 4.1.6.5 provided:

- (a) The gas cylinders contain nitrogen of UN No. 1066 or compressed gas of UN No. 1956 or compressed air of UN No. 1002;
- (b) The gas cylinders are connected with the article through pressure regulators and fixed piping in such a way that the pressure of the gas (gauge pressure) in the article does not exceed 35 kPa (0.35 bar);
- (c) The gas cylinders are properly secured so that they cannot move in relation to the article and are fitted with strong and pressure resistant hoses and pipes;
- (d) The gas cylinders, pressure regulators, piping and other components are protected from damage and impacts during carriage by wooden crates or other suitable means;
- (e) The transport document includes the following statement “Transport in accordance with special provision 396”;
- (f) Cargo transport units containing articles carried with cylinders with open valves containing a gas presenting a risk of asphyxiation are well ventilated and marked in accordance with 5.5.3.6.”

397 Mixtures of nitrogen and oxygen containing not less than 19.5 % and not more than 23.5 % oxygen by volume may be carried under this entry when no other oxidizing gases are present. A Class 5.1 subsidiary hazard label (model No. 5.1, see 5.2.2.2.2) is not required for any concentrations within this limit.

398 This entry applies to mixtures of butylenes, 1-butylene, cis-2-butylene and trans-2-butylene. For isobutylene, see UN No. 1055.

NOTE: *For additional information to be added in the transport document, see 5.4.1.2.2 (e).*

- 3996-499 (Reserved)
- 500 (Deleted)
- 501 For naphthalene, molten, see UN No. 2304.
- 502 UN No. 2006 plastics, nitrocellulose-based, self-heating, n.o.s., and 2002 celluloid scrap are substances of Class 4.2.
- 503 For phosphorus, white, molten, see UN No. 2447.
- 504 UN No. 1847 potassium sulphide, hydrated with not less than 30 % water of crystallization, UN No. 1849 sodium sulphide, hydrated with not less than 30 % water of crystallization and UN No. 2949 sodium hydrosulphide hydrated with not less than 25 % water of crystallization are substances of Class 8.
- 505 UN No. 2004 magnesium diamide is a substance of Class 4.2.
- 506 Alkaline earth metals and alkaline earth metal alloys in pyrophoric form are substances of Class 4.2.
- UN No. 1869 magnesium or magnesium alloys containing more than 50 % magnesium as pellets, turnings or ribbons, are substances of Class 4.1.
- 507 UN No. 3048 aluminium phosphide pesticides, with additives inhibiting the emission of toxic flammable gases are substances of Class 6.1.
- 508 UN No. 1871 titanium hydride and UN No. 1437 zirconium hydride are substances of Class 4.1. UN No. 2870 aluminium borohydride is a substance of Class 4.2.
- 509 UN No. 1908 chlorite solution is a substance of Class 8.
- 510 UN No. 1755 chromic acid solution is a substance of Class 8.
- 511 UN No. 1625 mercuric nitrate, UN No. 1627 mercurous nitrate and UN No. 2727 thallium nitrate are substances of Class 6.1. Thorium nitrate, solid, uranyl nitrate hexahydrate solution and uranyl nitrate, solid are substances of Class 7.
- 512 UN No. 1730 antimony pentachloride, liquid, UN No. 1731 antimony pentachloride solution, UN No. 1732 antimony pentafluoride and UN No. 1733 antimony trichloride are substances of Class 8.
- 513 UN No. 0224 barium azide, dry or wetted with less than 50 % water, by mass, is a substance of Class 1. UN No. 1571 barium azide, wetted with not less than 50 % water, by mass, is a substance of Class 4.1. UN No. 1854 barium alloys, pyrophoric, are substances of Class 4.2. UN No. 1445 barium chlorate, solid, UN No. 1446 barium nitrate, UN No. 1447 barium perchlorate, solid, UN No. 1448 barium permanganate, UN No. 1449 barium peroxide, UN No. 2719 barium bromate, UN No. 2741 barium hypochlorite with more than 22 % available chlorine, UN No. 3405 barium chlorate, solution and UN No. 3406 barium perchlorate, solution, are substances of Class 5.1. UN No. 1565 barium cyanide and UN No. 1884 barium oxide are substances of Class 6.1.
- 514 UN No. 2464 beryllium nitrate is a substance of Class 5.1.
- 515 UN No. 1581 chloropicrin and methyl bromide mixture and UN No. 1582 chloropicrin and methyl chloride mixture are substances of Class 2.
- 516 UN No. 1912 methyl chloride and methylene chloride mixture is a substance of Class 2.
- 517 UN No. 1690 sodium fluoride, solid, UN No. 1812 potassium fluoride, solid, UN No. 2505 ammonium fluoride, UN No. 2674 sodium fluorosilicate, UN No. 2856 fluorosilicates, n.o.s., UN No. 3415 sodium fluoride, solution and UN No. 3422 potassium fluoride, solution, are substances of Class 6.1.
- 518 UN No. 1463 chromium trioxide, anhydrous (chromic acid, solid) is a substance of Class 5.1.

- 519 UN No. 1048 hydrogen bromide, anhydrous, is a substance of Class 2.
- 520 UN No. 1050 hydrogen chloride, anhydrous, is a substance of Class 2.
- 521 Solid chlorites and hypochlorites are substances of Class 5.1.
- 522 UN No. 1873 perchloric acid aqueous solution with more than 50 % but not more than 72 % pure acid, by mass are substances of Class 5.1. Perchloric acid solutions containing more than 72 % pure acid, by mass, or mixtures of perchloric acid with any liquid other than water, are not to be accepted for carriage.
- 523 UN No. 1382 anhydrous potassium sulphide and UN No. 1385 anhydrous sodium sulphide and their hydrates with less than 30 % water of crystallization, and UN No. 2318 sodium hydrosulphide with less than 25 % water of crystallization are substances of Class 4.2.
- 524 UN No. 2858 finished zirconium products of a thickness of 18 µm or more are substances of Class 4.1.
- 525 Solutions of inorganic cyanides with a total cyanide ion content of more than 30 % shall be classified in packing group I, solutions with a total cyanide ion content of more than 3 % and not more than 30 % in packing group II and solutions with a cyanide ion content of more than 0.3 % and not more than 3 % in packing group III.
- 526 UN No. 2000 celluloid is assigned to Class 4.1.
- 528 UN No. 1353 fibres or fabrics impregnated with weakly nitrated cellulose, non-self heating are substances of Class 4.1.
- 529 UN No. 0135 mercury fulminate, wetted with not less than 20 % water, or mixture of alcohol and water, by mass, is a substance of Class 1. Mercurous chloride (calomel) is a substance of Class 6.1 (UN No. 2025).
- 530 UN No. 3293 hydrazine, aqueous solution with not more than 37 % hydrazine, by mass, is a substance of Class 6.1.
- 531 Mixtures having a flash-point below 23 °C and containing more than 55 % nitrocellulose, whatever its nitrogen content or containing not more than 55 % nitrocellulose with a nitrogen content above 12.6 % (by dry mass), are substances of Class 1 (see UN Nos. 0340 or 0342) or of Class 4.1 (UN Nos. 2555, 2556 or 2557).
- 532 UN No. 2672 ammonia solution containing not less than 10 % but not more than 35 % ammonia is a substance of Class 8.
- 533 UN No. 1198 formaldehyde solutions, flammable are substances of Class 3. Formaldehyde solutions, non-flammable, with less than 25 % formaldehyde are not subject to the requirements of ADR.
- 534 While in some climatic conditions, petrol (gasoline) may have a vapour pressure at 50 °C of more than 110 kPa (1.10 bar) but not more than 150 kPa (1.50 bar) it is to continue to be considered as a substance having a vapour pressure at 50 °C of not more than 110 kPa (1.10 bar).
- 535 UN No. 1469 lead nitrate, UN No. 1470 lead perchlorate, solid and UN No. 3408 lead perchlorate, solution, are substances of Class 5.1.
- 536 For naphthalene, solid, see UN No. 1334.
- 537 UN No. 2869 titanium trichloride mixture, not pyrophoric, is a substance of Class 8.
- 538 For sulphur (in the solid state), see UN No. 1350.
- 539 Solutions of isocyanates having a flash-point of not less than 23 °C are substances of Class 6.1.
- 540 UN No. 1326 hafnium powder, wetted, UN No. 1352 titanium powder, wetted or UN No. 1358 zirconium powder, wetted, with not less than 25 % water, are substances of Class 4.1.

- 541 Nitrocellulose mixtures with a water content, alcohol content or plasticizer content lower than the stated limits are substances of Class 1.
- 542 Talc containing tremolite and/or actinolite is covered by this entry.
- 543 UN No. 1005 ammonia, anhydrous, UN No. 3318 ammonia solution with more than 50 % ammonia and UN No. 2073 ammonia solution, with more than 35 % but not more than 50 % ammonia, are substances of Class 2. Ammonia solutions with not more than 10 % ammonia are not subject to the requirements of ADR.
- 544 UN No. 1032 dimethylamine, anhydrous, UN No. 1036 ethylamine, UN No. 1061 methylamine, anhydrous and UN No. 1083 trimethylamine, anhydrous, are substances of Class 2.
- 545 UN No. 0401 dipicryl sulphide, wetted with less than 10 % water by mass is a substance of Class 1.
- 546 UN No. 2009 zirconium, dry, finished sheets, strip or coiled wire, in thicknesses of less than 18 µm, is a substance of Class 4.2. Zirconium, dry, finished sheets, strip or coiled wire, in thicknesses of 254 µm or more, is not subject to the requirements of ADR.
- 547 UN No. 2210 maneb or UN No. 2210 maneb preparations in self-heating form are substances of Class 4.2.
- 548 Chlorosilanes which, in contact with water, emit flammable gases, are substances of Class 4.3.
- 549 Chlorosilanes having a flash-point of less than 23 °C and which, in contact with water, do not emit flammable gases are substances of Class 3. Chlorosilanes having a flash-point equal to or greater than 23 °C and which, in contact with water, do not emit flammable gases are substances of Class 8.
- 550 UN No. 1333 cerium in slabs, rods or ingots is a substance of Class 4.1.
- 551 Solutions of these isocyanates having a flash-point below 23 °C are substances of Class 3.
- 552 Metals and metal alloys in powdered or other flammable form, liable to spontaneous combustion, are substances of Class 4.2. Metals and metal alloys in powdered or other flammable form which, in contact with water, emit flammable gases are substances of Class 4.3.
- 553 This mixture of hydrogen peroxide and peroxyacetic acid shall, in laboratory testing (see *Manual of Tests and Criteria*, Part II, section 20), neither detonate in the cavitated state nor deflagrate at all and shall show no effect when heated under confinement nor any explosive power. The formulation shall be thermally stable (self-accelerating decomposition temperature 60 °C or higher for a 50 kg package), and a liquid compatible with peroxyacetic acid shall be used for desensitization. Formulations not meeting these criteria are to be regarded as substances of Class 5.2 (see *Manual of Tests and Criteria*, Part II, paragraph 20.4.3(g)).
- 554 Metal hydrides which, in contact with water, emit flammable gases are substances of Class 4.3. UN No. 2870 aluminium borohydride or UN No. 2870 aluminium borohydride in devices is a substance of Class 4.2.
- 555 Dust and powder of metals in non-spontaneously combustible form, non-toxic which nevertheless, in contact with water, emit flammable gases, are substances of Class 4.3.
- 556 *(Deleted)*
- 557 Dust and powder of metals in pyrophoric form are substances of Class 4.2.
- 558 Metals and metal alloys in pyrophoric form are substances of Class 4.2. Metals and metal alloys which, in contact with water, do not emit flammable gases and are not pyrophoric or self-heating, but which are easily ignited, are substances of Class 4.1.
- 559 *(Deleted)*

- 560 An elevated temperature liquid, n.o.s. at or above 100 °C (including molten metals and molten salts) and, for a substance having a flashpoint, at a temperature below its flashpoint, is a substance of Class 9 (UN No. 3257).
- 561 Chloroformates having predominantly corrosive properties are substances of Class 8.
- 562 Spontaneously combustible organometallic compounds are substances of Class 4.2. Water-reactive organometallic compounds, flammable, are substances of Class 4.3.
- 563 UN No. 1905 selenic acid is a substance of Class 8.
- 564 UN No. 2443 vanadium oxytrichloride, UN No. 2444 vanadium tetrachloride and UN No. 2475 vanadium trichloride are substances of Class 8.
- 565 Unspecified wastes resulting from medical/veterinary treatment of humans/animals or from biological research, and which are unlikely to contain substances of Class 6.2 shall be assigned to this entry. Decontaminated clinical wastes or wastes resulting from biological research which previously contained infectious substances are not subject to the requirements of Class 6.2.
- 566 UN No. 2030 hydrazine aqueous solution, with more than 37 % hydrazine, by mass, is a substance of Class 8.
- 567 *(Deleted)*
- 568 Barium azide with a water content lower than the stated limit is a substance of Class 1, UN No. 0224.
- 569-579 *(Reserved)*
- 580 *(Deleted)*
- 581 This entry covers mixtures of propadiene with 1 to 4 % methylacetylene as well as the following mixtures:

Mixture	Content, % by volume			Permitted technical name for purposes of 5.4.1.1
	Methylacetylene and propadiene, not more than	Propane and propylene, not more than	C4-saturated hydrocarbons, not less than	
P1	63	24	14	"Mixture P1"
P2	48	50	5	"Mixture P2"

- 582 This entry covers, inter alia, mixtures of gases indicated by the letter "R ...", with the following properties:

Mixture	Maximum vapour pressure at 70 °C (MPa)	Minimum density at 50 °C (kg/l)	Permitted technical name for purposes of 5.4.1.1
F1	1.3	1.30	"Mixture F1"
F2	1.9	1.21	"Mixture F2"
F3	3.0	1.09	"Mixture F3"

NOTE 1: Trichlorofluoromethane (refrigerant R 11), 1,1,2-trichloro-1,2,2-trifluoroethane (refrigerant R 113), 1,1,1-trichloro-2,2,2-trifluoroethane (refrigerant R 113a), 1-chloro-1,2,2-trifluoroethane (refrigerant R 133) and 1-chloro-1,1,2-trifluoroethane (refrigerant R 133b) are not substances of Class 2. They may, however, enter into the composition of mixtures F1 to F3.

NOTE 2: The reference densities correspond to the densities of dichlorofluoromethane (1.30 kg/l), dichlorodifluoromethane (1.21 kg/l) and chlorodifluoromethane (1.09 kg/l).

- 583 This entry covers, inter alia, mixtures of gases with the following properties:

Mixture	Maximum vapour pressure at 70 °C (MPa)	Minimum density at 50 °C (kg/l)	Permitted technical name ^a for purposes of 5.4.1.1
A	1.1	0.525	"Mixture A" or "Butane"
A01	1.6	0.516	"Mixture A01" or "Butane"
A02	1.6	0.505	"Mixture A02" or "Butane"
A0	1.6	0.495	"Mixture A0" or "Butane"
A1	2.1	0.485	"Mixture A1"
B1	2.6	0.474	"Mixture B1"
B2	2.6	0.463	"Mixture B2"
B	2.6	0.450	"Mixture B"
C	3.1	0.440	"Mixture C" or "Propane"

^a For carriage in tanks, the trade names "Butane" or "Propane" may be used only as a complement

584 This gas is not subject to the requirements of ADR when:

- It contains not more than 0.5 % air in the gaseous state;
- It is contained in metal capsules (sodors, sparklets) free from defects which may impair their strength;
- The leakproofness of the closure of the capsule is ensured;
- A capsule contains not more than 25 g of this gas;
- A capsule contains not more than 0.75 g of this gas per cm³ of capacity.

585 *(Deleted)*

586 Hafnium, titanium and zirconium powders shall contain a visible excess of water. Hafnium, titanium and zirconium powders, wetted, mechanically produced, of a particle size of 53 µm and over, or chemically produced, of a particle size of 840 µm and over, are not subject to the requirements of ADR.

587 Barium stearate and barium titanate are not subject to the requirements of ADR.

588 Solid hydrated forms of aluminium bromide and aluminium chloride are not subject to the requirements of ADR.

589 *(Deleted)*

590 Ferric chloride hexahydrate is not subject to the requirements of ADR.

591 Lead sulphate with not more than 3 % free acid is not subject to the requirements [of Class 8](#) of ADR.

592 Uncleaned empty packagings (including empty IBCs and large packagings), empty tank-vehicles, empty demountable tanks, empty portable tanks, empty tank-containers and empty small containers which have contained this substance are not subject to the requirements of ADR.

593 ~~This gas, when used for cooling goods not fulfilling the criteria of any class, e.g. medical or biological specimens, if contained in double wall receptacles which comply with the provisions of packing instruction P203, paragraph (6) for open cryogenic receptacles of 4.1.4.1, is not subject to the requirements of ADR except as specified in 5.5.3. This gas, intended for the cooling of e.g. medical or biological specimens, if contained in double wall receptacles which comply with the provisions of packing instruction P203, paragraph (6) for open cryogenic receptacles of 4.1.4.1 is not subject to the requirements of ADR except as specified in 5.5.3.~~

594 The following articles, manufactured and filled according to the provisions applied in the country of manufacture, are not subject to the requirements of ADR:

- (a) UN No. 1044 fire extinguishers provided with protection against inadvertent discharge, when:
- they are packaged in a strong outer packaging; or
 - they are large fire extinguishers which meet the requirements of special packing provision PP91 of packing instruction P003 in 4.1.4.1;
- (b) UN No. 3164 articles, pressurized pneumatic or hydraulic, designed to withstand stresses greater than the internal gas pressure by virtue of transmission of force, intrinsic strength or construction, when they are packaged in a strong outer packaging.

NOTE: *"Provisions applied in the country of manufacture" means the provisions applicable in the country of manufacture or those applicable in the country of use.*

596 Cadmium pigments, such as cadmium sulphides, cadmium sulphoselenides and cadmium salts of higher fatty acids (e.g. cadmium stearate), are not subject to the requirements of ADR.

597 Acetic acid solutions with not more than 10 % pure acid by mass, are not subject to the requirements of ADR.

598 The following are not subject to the requirements of ADR:

- (a) New storage batteries when:
- they are secured in such a way that they cannot slip, fall or be damaged;
 - they are provided with carrying devices, unless they are suitably stacked, e.g. on pallets;
 - there are no dangerous traces of alkalis or acids on the outside;
 - they are protected against short circuits;
- (b) Used storage batteries when:
- their cases are undamaged;
 - they are secured in such a way that they cannot leak, slip, fall or be damaged, e.g. by stacking on pallets;
 - there are no dangerous traces of alkalis or acids on the outside of the articles;
 - they are protected against short circuits.

"Used storage batteries" means storage batteries carried for recycling at the end of their normal service life.

599 *(Deleted)*

600 Vanadium pentoxide, fused and solidified, is not subject to the requirements of ADR.

601 Pharmaceutical products (medicines) ready for use, which are substances manufactured and packaged for retail sale or distribution for personal or household consumption are not subject to the requirements of ADR.

602 Phosphorus sulphides which are not free from yellow and white phosphorus are not to be accepted for carriage.

603 Anhydrous hydrogen cyanide not meeting the description for UN No. 1051 or UN No. 1614 is not to be accepted for carriage. Hydrogen cyanide (hydrocyanic acid) containing less than 3 % water is stable, if the pH-value is 2.5 ± 0.5 and the liquid is clear and colourless.

604-606 *(Deleted)*

- 607 Mixtures of potassium nitrate and sodium nitrite with an ammonium salt are not to be accepted for carriage.
- 608 *(Deleted)*
- 609 Tetranitromethane not free from combustible impurities is not to be accepted for carriage.
- 610 The carriage of this substance, when it contains more than 45 % hydrogen cyanide is prohibited.
- 611 Ammonium nitrate containing more than 0.2 % combustible substances (including any organic substance calculated as carbon) is not to be accepted for carriage unless it is a constituent of a substance or article of Class 1.
- 612 *(Reserved)*
- 613 Chloric acid solution containing more than 10 % chloric acid and mixtures of chloric acid with any liquid other than water is not to be accepted for carriage.
- 614 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) in concentrations considered highly toxic according to the criteria in 2.2.61.1 is not to be accepted for carriage.
- 615 *(Reserved)*
- 616 Substances containing more than 40 % liquid nitric esters shall satisfy the exudation test specified in 2.3.1.
- 617 In addition to the type of explosive, the commercial name of the particular explosive shall be marked on the package.
- 618 In receptacles containing 1,2-butadiene, the oxygen concentration in the gaseous phase shall not exceed 50 ml/m³.
- 619-622 *(Reserved)*
- 623 UN No. 1829 sulphur trioxide shall be inhibited. Sulphur trioxide, 99.95 % pure or above, may be carried without inhibitor in tanks provided that its temperature is maintained at or above 32.5 °C. For the carriage of this substance without inhibitor in tanks at a minimum temperature of 32.5 °C, the specification "**Transport under minimum temperature of the product of 32.5 °C**" shall appear in the transport document.
- 625 Packages containing these articles shall be clearly marked as follows: "**UN 1950 AEROSOLS**".
- 626-627 *(Reserved)*
- 632 Considered to be spontaneously flammable (pyrophoric).
- 633 Packages and small containers containing this substance shall bear the following mark: "**Keep away from any source of ignition**". This mark shall be in an official language of the forwarding country, and also, if that language is not English, French or German, in English, French or German, unless any agreements concluded between the countries concerned in the transport operation provide otherwise.
- 634 *(Deleted)*
- 635 Packages containing these articles need not bear a label conforming to model No. 9 unless the article is fully enclosed by packaging, crates or other means that prevent the ready identification of the article.
- 636 Up to the intermediate processing facility, lithium cells and batteries with a gross mass of not more than 500 g each, lithium ion cells with a Watt-hour rating of not more than 20 Wh, lithium ion batteries with a Watt-hour rating of not more than 100 Wh, lithium metal cells with a lithium content of not more than 1 g and lithium metal batteries with an aggregate lithium content of not more than 2 g, not contained in equipment, collected and handed over for carriage for sorting, disposal or recycling, together with or without other non-lithium cells or batteries, are not subject

to the other provisions of ADR including special provision 376 and 2.2.9.1.7, if the following conditions are met:

- (a) The cells and batteries are packed according to packing instruction P909 of 4.1.4.1 except for the additional requirements 1 and 2;
- (b) A quality assurance system is in place to ensure that the total amount of lithium cells and batteries per transport unit does not exceed 333 kg;

NOTE: The total quantity of lithium cells and batteries in the mix may be assessed by means of a statistical method included in the quality assurance system. A copy of the quality assurance records shall be made available to the competent authority upon request.

- (c) Packages are marked "LITHIUM BATTERIES FOR DISPOSAL" or "LITHIUM BATTERIES FOR RECYCLING" as appropriate.

637 Genetically modified microorganisms and genetically modified organisms are those which are not dangerous for humans and animals, but which could alter animals, plants, microbiological substances and ecosystems in such a way as cannot occur naturally. Genetically modified microorganisms and genetically modified organisms are not subject to the requirements of ADR when authorized for use by the competent authorities of the countries of origin, transit and destination³.

Live vertebrate or invertebrate animals shall not be used to carry these substances classified under this UN number unless the substance can be carried in no other way.

For the carriage of easily perishable substances under this UN number appropriate information shall be given, e.g.: "**Cool at +2/+4 °C**" or "**Carry in frozen state**" or "**Do not freeze**".

638 Substances related to self-reactive substances (see 2.2.41.1.19).

639 See 2.2.2.3, classification code 2F, UN No. 1965, Note 2.

640 The physical and technical characteristics mentioned in column (2) of Table A of Chapter 3.2 determine different tank codes for the carriage of substances of the same packing group in ADR tanks.

In order to identify these physical and technical characteristics of the product carried in the tank, the following shall be added, to the particulars required in the transport document, only in case of carriage in ADR tanks:

"Special provision 640X" where "X" is the applicable capital letter appearing after the reference to special provision 640 in column (6) of Table A of Chapter 3.2.

These particulars may, however, be dispensed with in the case of carriage in the type of tank which, for substances of a specific packing group of a specific UN number, meets at least the most stringent requirements.

642 Except as authorized under 1.1.4.2, this entry of the UN Model Regulations shall not be used for the carriage of fertilizer ammoniating solutions with free ammonia. [Otherwise, for carriage of ammonia solution, see UN Nos. 2073, 2672 and 3318.](#)

643 Stone or aggregate asphalt mixture is not subject to the requirements for Class 9.

644 This substance is admitted for carriage provided that:

- The pH is between 5 and 7 measured in an aqueous solution of 10 % of the substance carried;

³ See in particular Part C of Directive 2001/18/EC of the European Parliament and of the Council on the deliberate release into the environment of genetically modified organisms and repealing Council Directive 90/220/EEC (Official Journal of the European Communities, No. L 106, of 17 April 2001, pp. 8-14), which sets out the authorization procedures for the European Community.

- The solution does not contain more than 93 % ammonium nitrate;

- The solution does not contain more than 0.2 % combustible material or chlorine compounds in quantities such that the chlorine level exceeds 0.02 %.

- 645 The classification code as mentioned in Column (3b) of Table A of Chapter 3.2 shall be used only with the approval of the competent authority of a Contracting Party to ADR prior to carriage. The approval shall be given in writing as a classification approval certificate (see 5.4.1.2.1 (g)) and shall be provided with a unique reference. When assignment to a division is made in accordance with the procedure in 2.2.1.1.7.2, the competent authority may require the default classification to be verified on the basis of test data derived from Test Series 6 of the Manual of Tests and Criteria, Part I, Section 16.
- 646 Carbon made by steam activation process is not subject to the requirements of ADR.
- 647 The carriage of vinegar and acetic acid food grade with not more than 25 % pure acid by mass is subject only to the following requirements:
- (a) Packagings, including IBCs and large packagings, and tanks shall be manufactured from stainless steel or plastic material which is permanently resistant to corrosion of vinegar/acetic acid food grade;
 - (b) Packagings, including IBCs and large packagings, and tanks shall be subjected to a visual inspection by the owner at least once a year. The results of the inspections shall be recorded and the records kept for at least one year. Damaged packagings, including IBCs and large packagings, and tanks shall not be filled;
 - (c) Packagings, including IBCs and large packagings, and tanks shall be filled in a way that no product is spilled or adheres to the outer surface;
 - (d) Seals and closures shall be resistant to vinegar/acetic acid food grade. Packagings, including IBCs and large packagings, and tanks shall be hermetically sealed by the packer or the filler so that under normal conditions of carriage there will be no leakage;
 - (e) Combination packagings with inner packaging made of glass or plastic (see packing instruction P001 in 4.1.4.1) which fulfil the general packing requirements of 4.1.1.1, 4.1.1.2, 4.1.1.4, 4.1.1.5, 4.1.1.6, 4.1.1.7 and 4.1.1.8 may be used;

The other provisions of ADR do not apply.

- 648 Articles impregnated with this pesticide, such as fibreboard plates, paper strips, cotton-wool balls, sheets of plastics material, in hermetically closed wrappings, are not subject to the provisions of ADR.
- 649 *(Deleted)*
- 650 Waste consisting of packaging residues, solidified residues and liquid residues of paint may be carried under the conditions of packing group II. In addition to the provisions of UN No. 1263 packing group II, the waste may also be packed and carried as follows:
- (a) The waste may be packed in accordance with packing instruction P002 of 4.1.4.1 or ~~to~~ packing instruction IBC06 of 4.1.4.2;
 - (b) The waste may be packed in flexible IBCs of types 13H3, 13H4 and 13H5 in overpacks with complete walls;
 - (c) Testing of packagings and IBCs indicated under (a) or (b) may be carried out in accordance with the requirements of Chapters 6.1 or 6.5, as appropriate, in relation to solids, at the packing group II performance level.

The tests shall be carried out on packagings and IBCs, filled with a representative sample of the waste, as prepared for carriage;

- (d) Carriage in bulk in sheeted vehicles, closed containers or sheeted large containers, all with complete walls is allowed. The body of vehicles or containers shall be leakproof or rendered leakproof, for example by means of a suitable and sufficiently stout inner lining;
 - (e) If the waste is carried under the conditions of this special provision, the goods shall be declared in accordance with 5.4.1.1.3.1 in the transport document, as follows:
"UN 1263 WASTE PAINT, 3, II, (D/E)", or
"UN 1263 WASTE PAINT, 3, PG II, (D/E)".
- 651 Special provision V2 (1) does not apply if the net explosive mass per transport unit does not exceed 4 000 kg, provided that the net explosive mass per vehicle does not exceed 3 000 kg.
- 652 Austenitic stainless steel, ferritic and austenitic steel (Duplex steel) and welded titanium receptacles which do not meet the requirements of Chapter 6.2 but have been constructed and approved in accordance with national aviation provisions for use as hot air balloon or hot air airship fuel receptacles, brought into service (date of initial inspection) before 1 July 2004, may be carried by road provided they meet the following conditions:
- (a) The general provisions of 6.2.1 shall be complied with;
 - (b) The design and construction of the receptacles shall have been approved for aviation use by a national air transport authority;
 - (c) As an exemption from 6.2.3.1.2, the calculation pressure shall be derived from a reduced maximum ambient temperature of +40 °C; in this case:
 - (i) as an exemption from 6.2.5.1, cylinders may be manufactured from rolled and annealed commercially pure titanium with the minimum requirements of $R_m > 450$ MPa, $\epsilon_A > 20$ % (ϵ_A = elongation after fracture);
 - (ii) austenitic stainless steel and ferritic and austenitic steel (Duplex steel) cylinders may be used with a stress level up to 85 % of the minimum guaranteed yield strength (R_e) at a calculation pressure derived from a reduced maximum ambient temperature of +40 °C;
 - (iii) the receptacles shall be equipped with a pressure relief device having a nominal set pressure of 26 bar; the test pressure of these receptacles shall be not less than 30 bar;
 - (d) When the exemptions from (c) are not applied, the receptacles shall be designed for a reference temperature of 65 °C and shall be equipped with pressure relief devices with a nominal set pressure specified by the competent authority of the country of use;
 - (e) The main body of the receptacles shall be covered by an outer, water-resistant protective layer at least 25 mm thick made from structural cellular foam or similar material;
 - (f) During carriage, the receptacle shall be firmly secured in a crate or an additional safety device;
 - (g) The receptacles shall be marked with a clear, visible label stating that the receptacles are for use only in hot air balloons and hot air airships;
 - (h) The duration of service (from the date of initial inspection) shall not exceed 25 years.
- 653 The carriage of this gas in cylinders having a test pressure capacity product of maximum 15.2 MPa.litre (152 bar.litre) is not subject to the other provisions of ADR if the following conditions are met:
- The provisions for construction, testing and filling of cylinders are observed;
 - The cylinders are contained in outer packagings which at least meet the requirements of Part 4 for combination packagings. The general provisions of packing of 4.1.1.1, 4.1.1.2 and 4.1.1.5 to 4.1.1.7 shall be observed;
 - The cylinders are not packed together with other dangerous goods;

- The total gross mass of a package does not exceed 30 kg; and
- Each package is clearly and durably marked with "UN 1006" for argon compressed, "UN 1013" for carbon dioxide, "UN 1046" for helium compressed or "UN 1066" for nitrogen compressed. This mark is displayed within a diamond-shaped area surrounded by a line that measures at least 100 mm by 100 mm.

654 Waste lighters collected separately and consigned in accordance with 5.4.1.1.3.1 may be carried under this entry for the purposes of disposal. They need not be protected against inadvertent discharge provided that measures are taken to prevent the dangerous build-up of pressure and dangerous atmospheres.

Waste lighters, other than those leaking or severely deformed, shall be packed in accordance with packing instruction P003. In addition the following provisions shall apply:

- Only rigid packagings of a maximum capacity of 60 litres shall be used;
- The packagings shall be filled with water or any other appropriate protection material to avoid any ignition;
- Under normal conditions of carriage all ignition devices of the lighters shall fully be covered by the protection material;
- The packagings shall be adequately vented to prevent the creation of flammable atmosphere and the build-up of pressure;
- The packages shall only be carried in ventilated or open vehicles or containers.

Leaking or severely deformed lighters shall be carried in salvage packagings, provided appropriate measures are taken to ensure there is no dangerous build-up of pressure.

NOTE: Special provision 201 and special packing provisions PP84 and RR5 of packing instruction P002 in 4.1.4.1 do not apply to waste lighters.

655 Cylinders ~~and their closures~~ designed, constructed, approved and marked in accordance with Directive 97/23/EC⁴ or Directive 2014/68 EU⁵ and used for breathing apparatus may be carried without conforming to Chapter 6.2, provided that they are subject to inspections and tests specified in 6.2.1.6.1 and the interval between tests specified in packing instruction P200 in 4.1.4.1 is not exceeded. The pressure used for the hydraulic pressure test is the pressure marked on the cylinder in accordance with Directive 97/23/EC⁴ or Directive 2014/68 EU⁵.

656 *(Deleted)*

657 This entry shall be used for the technically pure substance only; for mixtures of LPG components, see UN No. 1965 or see UN No. 1075 in conjunction with NOTE 2 in 2.2.2.3.

658 UN No. 1057 LIGHTERS complying with standard EN ISO 9994:2019 "Lighters – Safety Specification" and UN No. 1057 LIGHTER REFILLS, may be carried subject only to the provisions of 3.4.1 (a) to (h), 3.4.2 (except for the total gross mass of 30 kg), 3.4.3 (except for the total gross mass of 20 kg), 3.4.11 and 3.4.12, provided the following conditions are met:

- (a) The total gross mass of each package is not more than 10 kg;
- (b) Not more than 100 kg gross mass of such packages is carried in a vehicle or large container; and
- (c) Each outer packaging is clearly and durably marked with "UN 1057 LIGHTERS" or "UN

⁴ Directive 97/23/EC of the European Parliament and of the Council of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment (PED) (Official Journal of the European Communities No. L 181 of 9 July 1997, p. 1 - 55).

⁵ Directive 2014/68/EU of the European Parliament and of the Council of 15 May 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of pressure equipment (PED) (Official Journal of the European Union No. L 189 of 27 June 2014, p. 164 - 259).

1057 LIGHTER REFILLS", as appropriate.

- 659 Substances to which PP86 or TP7 are assigned in Column (9a) and Column (11) of Table A in Chapter 3.2 and therefore require air to be eliminated from the vapour space, shall not be used for carriage under this UN number but shall be carried under their respective UN numbers as listed in Table A of Chapter 3.2.

NOTE: See also 2.2.2.1.7.

660 and 661 (Deleted)

- 662 Cylinders not conforming to the provisions of Chapter 6.2 which are used exclusively on board a ship or aircraft, may be carried for the purpose of filling or inspection and subsequent return, provided the cylinders are designed and constructed in accordance with a standard recognized by the competent authority of the country of approval and all the other relevant requirements of ADR are met including:

- (a) The cylinders shall be carried with valve protection in conformity with 4.1.6.8;
- (b) The cylinders shall be marked and labelled in conformity with 5.2.1 and 5.2.2; and
- (c) All the relevant filling requirements of packing instruction P200 of 4.1.4.1 shall be complied with.

The transport document shall include the following statement: "Carriage in accordance with special provision 662".

- 663 This entry may only be used for packagings, large packagings or IBCs, or parts thereof, which have contained dangerous goods which are carried for disposal, recycling or recovery of their material, other than reconditioning, repair, routine maintenance, remanufacturing or reuse, and which have been emptied to the extent that only residues of dangerous goods adhering to the packaging parts are present when they are handed over for carriage.

Scope:

Residues present in the packagings, discarded, empty, uncleaned shall only be of dangerous goods of classes 3, 4.1, 5.1, 6.1, 8 or 9. In addition, they shall not be:

- Substances assigned to packing group I or that have "0" assigned in Column (7a) of Table A of Chapter 3.2; nor
- Substances classified as desensitized explosive substances of Class 3 or Class 4.1; nor
- Substances classified as self-reactive substances of Class 4.1; nor
- Radioactive material; nor
- Asbestos (UN 2212 and UN 2590), polychlorinated biphenyls (UN 2315 and UN 3432) and polyhalogenated biphenyls, halogenated monomethyldiphenylmethanes or polyhalogenated terphenyls (UN 3151 and UN 3152).

General provisions:

Packagings, discarded, empty, uncleaned with residues presenting a primary or subsidiary hazard of Class 5.1 shall not be loaded in bulk together with packagings, discarded, empty, uncleaned with residues presenting a hazard of other classes. Packagings, discarded, empty, uncleaned with residues presenting a primary or subsidiary hazard of Class 5.1 shall not be packed with other packagings, discarded, empty, uncleaned with residues presenting hazards of other classes in the same outer packaging.~~Packagings, discarded, empty, uncleaned with residues presenting a hazard or a subsidiary hazard of Class 5.1 shall not be packed together with other packagings, discarded, empty, uncleaned, or loaded together with other packagings, discarded, empty, uncleaned in the same container, vehicle or bulk container.~~

Documented sorting procedures shall be implemented on the loading site to ensure compliance with the provisions applicable to this entry.

NOTE: *All the other provisions of ADR apply.*

- 664 When substances under this entry are carried in fixed tanks (tank-vehicles) or demountable tanks, these tanks may be equipped with additive devices.

Additive devices:

- are part of the service equipment for dispensing additives of UN 1202, UN 1993 packing group III, UN 3082 or non-dangerous substances during discharge of the tank;
- consist of elements such as connecting pipes and hoses, closing devices, pumps and dosing devices which are permanently connected to the discharge device of the tank's service equipment;
- include means of containment which are an integral part of the shell, or permanently fixed to the exterior of the tank or tank-vehicle.

Alternatively, additive devices may have connectors for connecting packagings. In this latter case, the packaging itself is not considered part of the additive device.

The following requirements shall apply depending on the configuration:

- (a) Construction of the means of containment:
- (i) As an integral part of the shell (e.g. a tank compartment), they shall meet the relevant provisions of Chapter 6.8.
 - (ii) When permanently fixed to the exterior of the tank or to the tank-vehicle, they are not subject to the construction provisions of ADR provided they comply with the following provisions:

They shall be made of a metallic material and comply with the following minimum wall thickness requirements:

<i>Material</i>	<i>Minimum wall thickness^a</i>
Austenitic stainless steels	2.5 mm
Other steels	3 mm
Aluminium alloys	4 mm
Pure aluminium of 99.80 %	6 mm

^a *For means of containment made with double walls, the aggregate thickness of the outer metal wall and the inner metal wall shall correspond to the wall thickness prescribed.*

Welding shall be carried out in accordance with the first paragraph of 6.8.2.1.23, except that other suitable methods may be applied to confirm the quality of the welding.

- (iii) Packagings which are connectable to the additive device shall be metal packagings and meet the relevant construction requirements of Chapter 6.1, as applicable for the additive concerned.
- (b) Tank approval
- For tanks equipped or intended to be equipped with additive devices, where the additive device is not included in the original type approval of the tank, the provisions of 6.8.2.3.4 shall apply.
- (c) Use of means of containment and additive devices
- (i) In case of (a) (i) above, no additional requirements.
 - (ii) In case of (a) (ii) above, the total capacity of the means of containment shall not exceed 400 litres per vehicle.

(iii) In case of (a) (iii) above, 7.5.7.5 and 8.3.3 shall not apply. The packagings may only be connected to the additive device during discharge of the tank. During carriage, the closures and connectors shall be closed so as to be leaktight.

(d) Testing for additive devices

The provisions of 6.8.2.4 shall apply to the additive device. However, in case of (a) (ii) above, at the time of the initial, intermediate or periodic inspection of the tank, the means of containment of the additive device shall only be subject to an external visual inspection and a leakproofness test. The leakproofness test shall be carried out at a test pressure of at least 0.2 bar.

NOTE: For the packagings described in (a) (iii) above, the relevant provisions of ADR shall apply.

(e) Transport document

Only the information required in accordance with 5.4.1.1.1 (a) to (d) needs to be added to the transport document for the additive concerned. In this case, the remark "additive device" shall be added to the transport document.

(f) Training of drivers

Drivers who have been trained in accordance with 8.2.1 for carriage of this substance in tanks need no additional training for the carriage of the additives.

(g) Placarding or marking

Placarding or marking of the fixed tank (tank-vehicle) or demountable tank for the carriage of substances under this entry in accordance with Chapter 5.3 is not affected by the presence of an additive device or the additives contained therein.

665 Unground hard coal, coke and anthracite, meeting the classification criteria of Class 4.2, packing group III, are not subject to the requirements of ADR.

666 Vehicles and battery powered equipment, referred to by special provision 388, when carried as a load, as well as any dangerous goods they contain that are necessary for their operation or the operation of their equipment, are not subject to any other provisions of ADR, provided the following conditions are met:

(a) For liquid fuels, any valves between the engine or equipment and the fuel tank shall be closed during carriage unless it is essential for the equipment to remain operational. Where appropriate, the vehicles shall be loaded upright and secured against falling;

(b) For gaseous fuels, the valve between the gas tank and engine shall be closed and the electric contact open unless it is essential for the equipment to remain operational;

(c) Metal hydride storage systems shall be approved by the competent authority of the country of manufacture. If the country of manufacture is not a contracting party to ADR the approval shall be recognized by the competent authority of a contracting party to ADR;

(d) The provisions of (a) and (b) do not apply to vehicles which are empty of liquid or gaseous fuels,

NOTE 1: A vehicle is considered to be empty of liquid fuel when the liquid fuel tank has been drained and the vehicle cannot be operated due to a lack of fuel. Vehicle components such as fuel lines, fuel filters and injectors do not need to be cleaned, drained or purged to be considered empty of liquid fuels. In addition, the liquid fuel tank does not need to be cleaned or purged.

NOTE 2: A vehicle is considered to be empty of gaseous fuels when the gaseous fuel tanks are empty of liquid (for liquefied gases), the pressure in the tanks does not exceed 2 bar and the fuel shut-off or isolation valve is closed and secured.

- 667 (a) The provisions of 2.2.9.1.7 (a) do not apply when pre-production prototype lithium cells or batteries or lithium cells or batteries of a small production run, consisting of not more than 100 cells or batteries, are installed in the vehicle, engine or machinery;
- (b) The provisions of 2.2.9.1.7 do not apply to lithium cells or batteries in damaged or defective vehicles, engine or machinery. In such cases the following conditions shall be met:
- (i) If the damage or defect has no significant impact on the safety of the cell or battery, damaged and defective vehicles, engines or machinery, may be carried under the conditions defined in special provisions 363 or 666, as appropriate;
- (ii) If the damage or defect has a significant impact on the safety of the cell or battery, the lithium cell or battery shall be removed and carried according to special provision 376;
- However, if it is not possible to safely remove the cell or battery or it is not possible to verify the status of the cell or battery, the vehicle, engine or machinery may be towed or carried as specified in (i).
- (c) The procedures described in (b) also apply to damaged lithium cells or batteries in vehicles, engines or machinery.
- 668 Elevated temperature substances for the purpose of applying road markings are not subject to the requirements of ADR, provided that the following conditions are met:
- (a) They do not fulfil the criteria of any class other than Class 9;
- (b) The temperature of the outer surface of the boiler does not exceed 70 °C;
- (c) The boiler is closed in such a way that any loss of product is prevented during carriage;
- (d) The maximum capacity of the boiler is limited to 3 000 l.
- 669 A trailer fitted with equipment, powered by a liquid or gaseous fuel or an electric energy storage and production system, that is intended for use during carriage operated by this trailer as a part of a transport unit, shall be assigned to UN numbers 3166 or 3171 and be subject to the same conditions as specified for these UN numbers, when carried as a load on a vehicle, provided that the total capacity of the tanks containing liquid fuel does not exceed 500 litres.
- 670 (a) Lithium cells and batteries installed in equipment from private households collected and handed over for carriage for depollution, dismantling, recycling or disposal are not subject to the other provisions of ADR including special provision 376 and 2.2.9.1.7 when:
- (i) They are not the main power source for the operation of the equipment in which they are contained;
- (ii) The equipment in which they are contained does not contain any other lithium cell or battery used as the main power source; and
- (iii) They are afforded protection by the equipment in which they are contained.

Examples for cells and batteries covered by this paragraph are button cells used for data integrity in household appliances (e.g. refrigerators, washing machines, dishwashers) or in other electrical or electronic equipment;

- (b) Up to the intermediate processing facility lithium cells and batteries contained in equipment from private households not meeting the requirements of (a) collected and handed over for carriage for depollution, dismantling, recycling or disposal are not subject to the other provisions of ADR including special provision 376 and 2.2.9.1.7, if the following conditions are met:
- (i) The equipment is packed in accordance with packing instruction P909 of 4.1.4.1 except for the additional requirements 1 and 2; or it is packed in strong outer

packagings, e.g. specially designed collection receptacles, which meet the following requirements:

- The packagings shall be constructed of suitable material and be of adequate strength and design in relation to the packaging capacity and its intended use. The packagings need not meet the requirements of 4.1.1.3;
- Appropriate measures shall be taken to minimize the damage of the equipment when filling and handling the packaging, e.g. use of rubber mats; and
- The packagings shall be constructed and closed so as to prevent any loss of contents during carriage, e.g. by lids, strong inner liners, covers for transport. Openings designed for filling are acceptable if they are constructed so as to prevent loss of content;

- (ii) A quality assurance system is in place to ensure that the total amount of lithium cells and batteries per transport unit does not exceed 333 kg;

***NOTE:** The total quantity of lithium cells and batteries in the equipment from private households may be assessed by means of a statistical method included in the quality assurance system. A copy of the quality assurance records shall be made available to the competent authority upon request.*

- (iii) Packages are marked "LITHIUM BATTERIES FOR DISPOSAL" or "LITHIUM BATTERIES FOR RECYCLING" as appropriate. If equipment containing lithium cells or batteries is carried unpackaged or on pallets in accordance with packing instruction P909 (3) of 4.1.4.1, this mark may alternatively be affixed to the external surface of the vehicles or containers).

***NOTE:** "Equipment from private households" means equipment which comes from private households and equipment which comes from commercial, industrial, institutional and other sources which, because of its nature and quantity, is similar to that from private households. Equipment likely to be used by both private households and users other than private households shall in any event be considered to be equipment from private households.*

- 671 For the purposes of the exemption related to quantities carried per transport unit (see 1.1.3.6), the transport category shall be determined in relation to the packing group (see paragraph 3 of special provision 251):

- Transport category 3 for kits assigned to packing group III;
- Transport category 2 for kits assigned to packing group II;
- Transport category 1 for kits assigned to packing group I.

Kits containing only dangerous goods to which no packing group is assigned shall be allocated to transport category 2 for completion of transport documents and the exemption related to quantities carried per transport unit (see 1.1.3.6).

- 672 Articles, such as machinery, apparatus or devices carried under this entry and in conformity with special provision 301 are not subject to any other provision of ADR provided they are either:

- packed in a strong outer packaging constructed of suitable material, and of adequate strength and design in relation to the packaging's capacity and its intended use, and meeting the applicable requirements of 4.1.1.1; or
- carried without outer packaging if the article is constructed and designed so that the receptacles containing the dangerous goods are afforded adequate protection.

- 673 *(Reserved)*

- 674 This special provision applies to periodic inspection and test of over-moulded cylinders as defined in 1.2.1.

Over-moulded cylinders subject to 6.2.3.5.3.1 shall be subject to periodic inspection and test in accordance with 6.2.1.6.1, adapted by the following alternative method:

- Substitute test required in 6.2.1.6.1 d) by alternative destructive tests;
- Perform specific additional destructive tests related to the characteristics of over-moulded cylinders.

The procedures and requirements of this alternative method are described below.

Alternative method:

(a) General

The following provisions apply to over-moulded cylinders produced serially and based on welded steel cylinder shells in accordance with EN 1442:2017, EN 14140:2014 + AC:2015 or annex I, parts 1 to 3 to Council Directive 84/527/EEC. The design of the over-moulding shall prevent water from penetrating on to the inner steel cylinder shell. The conversion of the steel cylinder shell to an over-moulded cylinder shall comply with the relevant requirements of EN 1442:2017 and EN 14140:2014 + AC:2015.

Over-moulded cylinders shall be equipped with self-closing valves.

(b) Basic population

A basic population of over-moulded cylinders is defined as the production of cylinders from only one over-moulding manufacturer using new inner steel cylinder shells manufactured by only one manufacturer within one calendar year, based on the same design type, the same materials and production processes.

(c) Sub-groups of a basic population

Within the above defined basic population, over-moulded cylinders belonging to different owners shall be separated into specific sub-groups, one per owner.

If the whole basic population is owned by one owner, the sub-group equals the basic population.

(d) Traceability

Inner steel cylinder shell marks in accordance with 6.2.3.9 shall be repeated on the over-moulding. In addition, each over-moulded cylinder shall be fitted with an individual resilient electronic identification device. The detailed characteristics of the over-moulded cylinders shall be recorded by the owner in a central database. The database shall be used to:

- Identify the specific sub-group;
- Make available to inspection bodies, filling centres and competent authorities the specific technical characteristics of the cylinders consisting of at least the following: serial number, steel cylinder shell production batch, over-moulding production batch, date of over-moulding;
- Identify the cylinder by linking the electronic device to the database with the serial number;
- Check individual cylinder history and determine measures (e.g. filling, sampling, retesting, withdrawal);
- Record performed measures including the date and the address of where it was done.

The recorded data shall be kept available by the owner of the over-moulded cylinders for the entire life of the sub-group.

(e) Sampling for statistical assessment

The sampling shall be random among a sub-group as defined in sub-paragraph (c). The size of each sample per sub-group shall be in accordance with the table in sub-paragraph (g).

(f) Test procedure for destructive testing

The inspection and test required by 6.2.1.6.1 shall be carried out except (d) which shall be substituted by the following test procedure:

- Burst test (according to EN 1442:2017 or EN 14140:2014 + AC:2015).

In addition, the following tests shall be performed:

- Adhesion test (according to EN 1442:2017 or EN 14140:2014 + AC:2015);
- Peeling and Corrosion tests (according to EN ISO 4628-3:2016).

Adhesion test, peeling and corrosion tests, and burst test shall be performed on each related sample according to the table in sub-paragraph (g) and shall be conducted after the first 3 years in service and every 5 years thereafter.

(g) Statistical evaluation of test results – Method and minimum requirements

The procedure for statistical evaluation according to the related rejection criteria is described in the following.

Test interval (years)	Type of test	Standard	Rejection criteria	Sampling out of a sub-group
After 3 years in service (see (f))	Burst test	EN 1442:2017	Burst pressure point of the representative sample must be above the lower limit of tolerance interval on the Sample Performance Chart $\Omega_m \geq 1 + \Omega_s \times k3(n;p;1-\alpha)^a$ No individual test result shall be less than the test pressure	$\sqrt[3]{Q}$ or Q/200 whichever is lower, and with a minimum of 20 per sub-group (Q)
	Peeling and corrosion	EN ISO 4628-3:2016	Max corrosion grade: Ri2	Q/1 000
	Adhesion of Polyurethane	ISO 2859-1:1999 + A1:2011 EN 1442:2017 EN 14140:2014 + AC:2015	Adhesion value > 0.5 N/mm ²	See ISO 2859-1:1999 + A1:2011 applied to Q/1000
Every 5 years thereafter (see (f))	Burst test	EN 1442:2017	Burst pressure point of the representative sample must be above the lower limit of tolerance interval on the Sample Performance Chart $\Omega_m \geq 1 + \Omega_s \times k3(n;p;1-\alpha)^a$ No individual test result shall be less than the test pressure	$\sqrt[3]{Q}$ or Q/100 whichever is lower, and with a minimum of 40 per sub-group (Q)
	Peeling and corrosion	EN ISO 4628-3:2016	Max corrosion grade: Ri2	Q/1 000
	Adhesion of Polyurethane	ISO 2859-1:1999 + A1:2011 EN 1442:2017 EN 14140:2014 + AC:2015	Adhesion value > 0.5 N/mm ²	See ISO 2859-1:1999 + A1:2011 applied to Q/1000

^a *Burst pressure point (BPP) of the representative sample is used for the evaluation of test results by using a Sample Performance Chart:*

Step 1: Determination of the burst pressure point (BPP) of a representative sample

Each sample is represented by a point whose coordinates are the mean value of burst test results and the standard deviation of burst test results, each normalised to the relevant test pressure.

$$BPP: (\Omega_s = \frac{s}{PH}; \Omega_m = \frac{x}{PH})$$

with

x: sample mean value;

s: sample standard deviation;

PH: test pressure

Step 2: Plotting on a Sample Performance Chart

Each BPP is plotted on a Sample Performance Chart with following axis:

- *Abscissa : Standard Deviation normalised to test pressure (Ω_s)*
- *Ordinate : Mean value normalised to test pressure (Ω_m)*

Step 3: Determination of the relevant lower limit of tolerance interval in the Sample Performance Chart

Results for burst pressure shall first be checked according to the Joint Test (multidirectional test) using a significance level of $\alpha=0.05$ (see paragraph 7 of ISO 5479:1997) to determine whether the distribution of results for each sample is normal or non-normal.

- For a normal distribution, the determination of the relevant lower limit of tolerance is given in step 3.1.
- For a non-normal distribution, the determination of the relevant lower limit of tolerance is given in step 3.2.

Step 3.1: Lower limit of tolerance interval for results following a normal distribution

In accordance with the standard ISO 16269-6:2014, and considering that the variance is unknown, the unilateral statistical tolerance interval shall be considered for a confidence level of 95 % and a fraction of population equal to 99.9999 %.

By application in the Sample Performance Chart, the lower limit of tolerance interval is represented by a line of constant survival rate defined by the formula:

$$\Omega_m = 1 + \Omega_s \times k3(n;p;1-\alpha)$$

with

$k3$: factor function of n , p and $1-\alpha$;

p : proportion of the population selected for the tolerance interval (99.9999 %);

$1-\alpha$: confidence level (95 %);

n : sample size.

The value for $k3$ dedicated to Normal Distributions shall be taken from the table at end of Step 3.

Step 3.2: Lower limit of tolerance interval for results following a non-normal distribution

The unilateral statistical tolerance interval shall be calculated for a confidence level of 95 % and a fraction of population equal to 99.9999 %.

The lower limit of tolerance is represented by a line of constant survival rate defined by the formula given in previous step 3.1, with factors $k3$ based and calculated on the properties of a Weibull Distribution.

The value for $k3$ dedicated to Weibull Distributions shall be taken from the table below at end of Step 3.

Table for $k3$ $p=99.9999\%$ and $(1-\alpha)=0.95$		
Sample size n	Normal distribution $k3$	Weibull distribution $k3$
20	6.901	16.021
22	6.765	15.722
24	6.651	15.472
26	6.553	15.258
28	6.468	15.072
30	6.393	14.909
35	6.241	14.578
40	6.123	14.321
45	6.028	14.116
50	5.949	13.947
60	5.827	13.683

<i>Table for k3</i>		
<i>p=99.9999 % and (1- α)=0.95</i>		
<i>Sample size n</i>	<i>Normal distribution k3</i>	<i>Weibull distribution k3</i>
70	5.735	13.485
80	5.662	13.329
90	5.603	13.203
100	5.554	13.098
150	5.393	12.754
200	5.300	12.557
250	5.238	12.426
300	5.193	12.330
400	5.131	12.199
500	5.089	12.111
1000	4.988	11.897
∞	4.753	11.408

NOTE: If sample size is between two values, the closest lower sample size shall be selected.

(h) Measures if the acceptance criteria are not met

If a result of the burst test, peeling and corrosion test or adhesion test does not comply with the criteria detailed in the table in paragraph (g), the affected sub-group of over-moulded cylinders shall be segregated by the owner for further investigations and not be filled or made available for transport and use.

In agreement with the competent authority or the Xa-body which issued the design approval, additional tests shall be performed to determine the root cause of the failure.

If the root cause cannot be proved to be limited to the affected sub-group of the owner, the competent authority or the Xa-body shall take measures concerning the whole basic population and potentially other years of production.

If the root cause can be proved to be limited to a part of the affected sub-group, not affected parts may be authorized by the competent authority to return to service. It shall be proved that no individual over-moulded cylinder returning to service is affected.

(i) Filling centre requirements

The owner shall make available to the competent authority documentary evidence that the filling centres:

- Comply with the provisions of packing instruction P200 (7) of 4.1.4.1 and that the requirements of the standard on pre-fill inspections referenced in table P200 (11) of 4.1.4.1 are fulfilled and correctly applied;
- Have the appropriate means to identify over-moulded cylinders through the electronic identification device;
- Have access to the database as defined in (d);
- Have the capacity to update the database;
- Apply a quality system, according to the standard ISO 9000 (series) or equivalent, certified by an accredited independent body recognized by the competent authority.

675 For packages containing these dangerous goods, mixed loading with substances and articles of Class 1, with the exception of 1.4S, shall be prohibited.

676 For the carriage of packages containing polymerizing substances the provisions of special provision 386, in conjunction with 7.1.7.3, 7.1.7.4, 5.4.1.1.15 and 5.4.1.2.3.1, need not be applied, when carried for disposal or recycling provided the following conditions are met:

- (a) Before loading an examination has shown that there is no significant deviation between the outside temperature of the package and the ambient temperature;
- (b) The carriage is effected within a period of not more than 24 hours from that examination;
- (c) The packages are protected from direct sunlight and from the impact of other sources of heat (e.g. additional loads that are being carried above ambient temperature) during carriage;
- (d) The ambient temperatures during the carriage are below 45 °C;
- (e) Vehicles and containers are adequately ventilated;
- (f) The substances are packed in packages with a maximum capacity of 1000 litres.

In assessing the substances for carriage under the conditions of this special provision, additional measures to prevent dangerous polymerization may be considered, for example the addition of inhibitors.

CHAPTER 3.4

DANGEROUS GOODS PACKED IN LIMITED QUANTITIES

3.4.1 This Chapter provides the provisions applicable to the carriage of dangerous goods of certain classes packed in limited quantities. The applicable quantity limit for the inner packaging or article is specified for each substance in Column (7a) of Table A of Chapter 3.2. In addition, the quantity "0" has been indicated in this column for each entry not permitted to be carried in accordance with this Chapter.

Limited quantities of dangerous goods packed in such limited quantities, meeting the provisions of this Chapter are not subject to any other provisions of ADR except the relevant provisions of:

- (a) Part 1, Chapters 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.8, 1.9;
- (b) Part 2;
- (c) Part 3, Chapters 3.1, 3.2, 3.3 (except special provisions 61, 178, 181, 220, 274, 625, 633 and 650 (e));
- (d) Part 4, paragraphs 4.1.1.1, 4.1.1.2, 4.1.1.4 to 4.1.1.8;
- (e) Part 5, 5.1.2.1(a) (i) and (b), 5.1.2.2, 5.1.2.3, 5.2.1.10, 5.4.2;
- (f) Part 6, construction requirements of 6.1.4 and paragraphs 6.2.5.1 and 6.2.6.1 to 6.2.6.3;
- (g) Part 7, Chapter 7.1 and 7.2.1, 7.2.2, 7.5.1 (except 7.5.1.4), 7.5.2.4, 7.5.7, 7.5.8 and 7.5.9;
- (h) 8.6.3.3 and 8.6.4.

3.4.2 Dangerous goods shall be packed only in inner packagings placed in suitable outer packagings. Intermediate packagings may be used. In addition, for articles of Division 1.4, Compatibility Group S, the provisions of section 4.1.5 shall be fully complied with. The use of inner packagings is not necessary for the carriage of articles such as aerosols or "receptacles, small, containing gas". The total gross mass of the package shall not exceed 30 kg.

3.4.3 Except for articles of Division 1.4, Compatibility Group S, shrink-wrapped or stretch-wrapped trays meeting the conditions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8 are acceptable as outer packagings for articles or inner packagings containing dangerous goods carried in accordance with this Chapter. Inner packagings that are liable to break or be easily punctured, such as those made of glass, porcelain, stoneware or certain plastics, shall be placed in suitable intermediate packagings meeting the provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8, and be so designed that they meet the construction requirements of 6.1.4. The total gross mass of the package shall not exceed 20 kg.

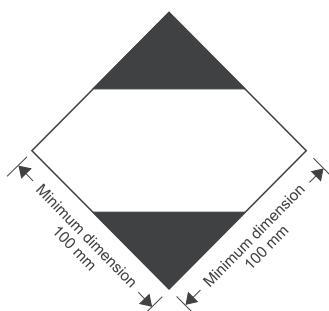
3.4.4 Liquid goods of Class 8, packing group II in glass, porcelain or stoneware inner packagings shall be enclosed in a compatible and rigid intermediate packaging.

3.4.5 and 3.4.6 *(Reserved)*

3.4.7 Marking of packages containing limited quantities

3.4.7.1 Except for air transport, packages containing dangerous goods in limited quantities shall bear the mark shown in Figure 3.4.7.1:

Figure 3.4.7.1



Mark for packages containing limited quantities

The mark shall be readily visible, legible and able to withstand open weather exposure without a substantial reduction in effectiveness.

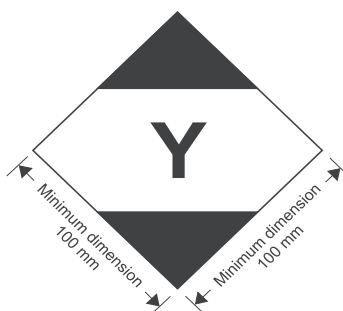
The mark shall be in the form of a square set at an angle of 45° (diamond-shaped). The top and bottom portions and the surrounding line shall be black. The centre area shall be white or a suitable contrasting background. The minimum dimensions shall be 100 mm × 100 mm and the minimum width of the line forming the diamond shall be 2 mm. Where dimensions are not specified, all features shall be in approximate proportion to those shown.

3.4.7.2 If the size of the package so requires, the minimum outer dimensions shown in Figure 3.4.7.1 may be reduced to be not less than 50 mm × 50 mm provided the mark remains clearly visible. The minimum width of the line forming the diamond may be reduced to a minimum of 1 mm.

3.4.8 Marking of packages containing limited quantities conforming to Part 3, Chapter 4 of the ICAO Technical Instructions

3.4.8.1 Packages containing dangerous goods packed in conformity with the provisions of Part 3, Chapter 4 of the ICAO Technical Instructions may bear the mark shown in Figure 3.4.8.1 to certify conformity with these provisions:

Figure 3.4.8.1



Mark for packages containing limited quantities conforming to Part 3, Chapter 4 of the ICAO Technical Instructions

The mark shall be readily visible, legible and able to withstand open weather exposure without a substantial reduction in effectiveness.

The mark shall be in the form of a square set at an angle of 45° (diamond-shaped). The top and bottom portions and the surrounding line shall be black. The centre area shall be white or a suitable contrasting background. The minimum dimensions shall be 100 mm × 100 mm and the minimum width of the line forming the diamond shall be 2 mm. The symbol "Y" shall be placed in the centre of the mark and shall be clearly visible. Where dimensions are not specified, all features shall be in approximate proportion to those shown.

- 3.4.8.2 If the size of the package so requires, the minimum outer dimensions shown in Figure 3.4.8.1 may be reduced to be not less than 50 mm × 50 mm provided the mark remains clearly visible. The minimum width of the line forming the diamond may be reduced to a minimum of 1 mm. The symbol "Y" shall remain in approximate proportion to that shown in Figure 3.4.8.1.
- 3.4.9 Packages containing dangerous goods bearing the mark shown in 3.4.8 with or without the additional labels and marks for air transport shall be deemed to meet the provisions of section 3.4.1 as appropriate and of sections 3.4.2 to 3.4.4 and need not bear the mark shown in 3.4.7.
- 3.4.10 Packages containing dangerous goods in limited quantities bearing the mark shown in 3.4.7 and conforming with the provisions of the ICAO Technical Instructions, including all necessary marks and labels specified in Parts 5 and 6, shall be deemed to meet the provisions of section 3.4.1 as appropriate and of sections 3.4.2 to 3.4.4.

3.4.11 Use of overpacks

For an overpack containing dangerous goods packed in limited quantities, the following applies:

Unless the marks representative of all dangerous goods in an overpack are visible, the overpack shall be:

- (a) marked with the word "OVERPACK". The lettering of the "OVERPACK" mark shall be at least 12 mm high. The mark shall be in an official language of the country of origin and also, if that language is not English, French or German, in English, French or German, unless agreements, if any, concluded between the countries concerned in the transport operation provide otherwise; and
- (b) marked with the marks required by this Chapter.

Except for air transport, the other provisions of 5.1.2.1 apply only if other dangerous goods which are not packed in limited quantities are contained in the overpack and only in relation to these other dangerous goods.

- 3.4.12 In advance of carriage, consignors of dangerous goods packed in limited quantities shall inform the carrier in a traceable form of the total gross mass of such goods to be consigned.
- 3.4.13 (a) Transport units with a maximum mass exceeding 12 tonnes carrying dangerous goods packed in limited quantities shall be marked in accordance with 3.4.15 at the front and at the rear except when the transport unit contains other dangerous goods for which orange-coloured plate marking in accordance with 5.3.2 is required. In this latter case, the transport unit may display the required orange-coloured plate marking only, or both the orange-coloured plate marking in accordance with 5.3.2 and the marks in accordance with 3.4.15.
- (b) Containers carrying dangerous goods packed in limited quantities, on transport units with a maximum mass exceeding 12 tonnes, shall be marked in accordance with 3.4.15 on all four sides except when the container contains other dangerous goods for which placarding in accordance with 5.3.1 is required. In this latter case, the container may display the required placards only, or both the placards in accordance with 5.3.1 and the marks in accordance with 3.4.15.
- The carrying transport unit need not be marked, except when the marks affixed to the containers are not visible from outside this carrying transport unit. In this latter case, the same marks shall be affixed at the front and at the rear of the transport unit.
- 3.4.14 The marks specified in 3.4.13 may be dispensed with, if the total gross mass of the packages containing dangerous goods packed in limited quantities carried does not exceed 8 tonnes per transport unit.
- 3.4.15 The marks specified in 3.4.13 shall be the same as the one required in 3.4.7, except that their minimum dimensions shall be 250 mm × 250 mm. These marks shall be removed or covered if no dangerous goods in limited quantities are carried.

CHAPTER 3.5

DANGEROUS GOODS PACKED IN EXCEPTED QUANTITIES

3.5.1 Excepted quantities

3.5.1.1 Excepted quantities of dangerous goods of certain classes, other than articles, meeting the provisions of this Chapter are not subject to any other provisions of ADR except for:

- (a) The training requirements in Chapter 1.3;
- (b) The classification procedures and packing group criteria in Part 2;
- (c) The packaging requirements of 4.1.1.1, 4.1.1.2, 4.1.1.4 and 4.1.1.6.

NOTE: *In the case of radioactive material, the requirements for radioactive material in excepted packages in 1.7.1.5 apply.*

3.5.1.2 Dangerous goods which may be carried as excepted quantities in accordance with the provisions of this Chapter are shown in column (7b) of Table A of Chapter 3.2 list by means of an alphanumeric code as follows:

Code	Maximum net quantity per inner packaging (in grams for solids and ml for liquids and gases)	Maximum net quantity per outer packaging (in grams for solids and ml for liquids and gases, or sum of grams and ml in the case of mixed packing)
E0	Not permitted as Excepted Quantity	
E1	30	1000
E2	30	500
E3	30	300
E4	1	500
E5	1	300

For gases, the volume indicated for inner packagings refers to the water capacity of the inner receptacle and the volume indicated for outer packagings refers to the combined water capacity of all inner packagings within a single outer packaging.

3.5.1.3 Where dangerous goods in excepted quantities for which different codes are assigned are packaged together the total quantity per outer packaging shall be limited to that corresponding to the most restrictive code.

3.5.1.4 Excepted quantities of dangerous goods assigned to codes E1, E2, E4 and E5 with a maximum net quantity of dangerous goods per inner packaging limited to 1 ml for liquids and gases and 1 g for solids and a maximum net quantity of dangerous goods per outer packaging which does not exceed 100 g for solids or 100 ml for liquids and gases are only subject to:

- (a) The provisions of 3.5.2, except that an intermediate packaging is not required if the inner packagings are securely packed in an outer packaging with cushioning material in such a way that, under normal conditions of carriage, they cannot break, be punctured, or leak their contents; and for liquids, the outer packaging contains sufficient absorbent material to absorb the entire contents of the inner packagings; and
- (b) The provisions of 3.5.3.

3.5.2 Packagings

Packagings used for the carriage of dangerous goods in excepted quantities shall be in compliance with the following:

- (a) There shall be an inner packaging and each inner packaging shall be constructed of plastic (with a minimum thickness of 0.2 mm when used for liquids), or of glass, porcelain, stoneware, earthenware or metal (see also 4.1.1.2) and the closure of each inner packaging shall be held securely in place with wire, tape or other positive means; any receptacle having a neck with moulded screw threads shall have a leak proof threaded type cap. The closure shall be resistant to the contents;
- (b) Each inner packaging shall be securely packed in an intermediate packaging with cushioning material in such a way that, under normal conditions of carriage, they cannot break, be punctured or leak their contents. For liquid dangerous goods, the intermediate or outer packaging shall contain sufficient absorbent material to absorb the entire contents of the inner packagings. When placed in the intermediate packaging, the absorbent material may be the cushioning material. Dangerous goods shall not react dangerously with cushioning, absorbent material and packaging material or reduce the integrity or function of the materials. Regardless of its orientation, the package shall completely contain the contents in case of breakage or leakage;
- (c) The intermediate packaging shall be securely packed in a strong, rigid outer packaging (wooden, fibreboard or other equally strong material);
- (d) Each package type shall be in compliance with the provisions in 3.5.3;
- (e) Each package shall be of such a size that there is adequate space to apply all necessary marks; and
- (f) Overpacks may be used and may also contain packages of dangerous goods or goods not subject to the requirements of ADR.

3.5.3 Tests for packages

3.5.3.1

The complete package as prepared for carriage, with inner packagings filled to not less than 95 % of their capacity for solids or 98 % for liquids, shall be capable of withstanding, as demonstrated by testing which is appropriately documented, without breakage or leakage of any inner packaging and without significant reduction in effectiveness:

- (a) Drops onto a rigid, non-resilient flat and horizontal surface from a height of 1.8 m:
 - (i) Where the sample is in the shape of a box, it shall be dropped in each of the following orientations:
 - flat on the base;
 - flat on the top;
 - flat on the longest side;
 - flat on the shortest side;
 - on a corner;
 - (ii) Where the sample is in the shape of a drum, it shall be dropped in each of the following orientations:
 - diagonally on the top chime, with the centre of gravity directly above the point of impact;
 - diagonally on the base chime;
 - flat on the side;

NOTE: Each of the above drops may be performed on different but identical packages.

- (b) A force applied to the top surface for a duration of 24 hours, equivalent to the total weight of identical packages if stacked to a height of 3 m (including the sample).

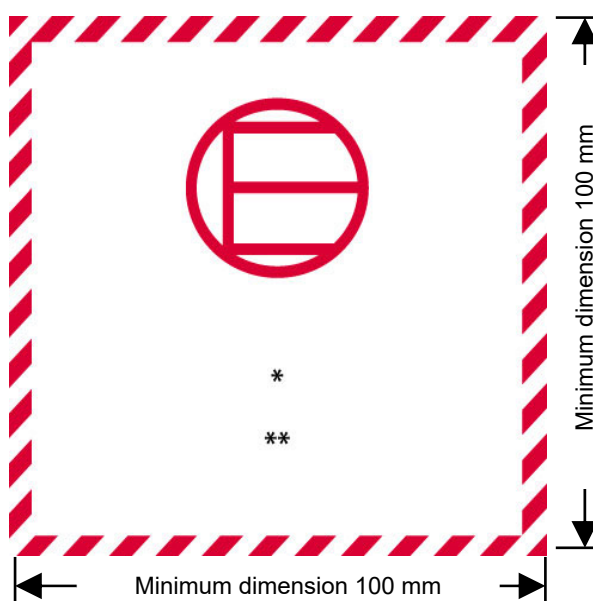
- 3.5.3.2 For the purposes of testing, the substances to be carried in the packaging may be replaced by other substances except where this would invalidate the results of the tests. For solids, when another substance is used, it must have the same physical characteristics (mass, grain size, etc.) as the substance to be carried. In the drop tests for liquids, when another substance is used, its relative density (specific gravity) and viscosity should be similar to those of the substance to be carried.

3.5.4 Marking of packages

- 3.5.4.1 Packages containing excepted quantities of dangerous goods prepared in accordance with this Chapter shall be durably and legibly marked with the mark shown in 3.5.4.2. The first or only label number indicated in column (5) of Table A of Chapter 3.2 for each of the dangerous goods contained in the package shall be shown in the mark. Where the name of the consignor or consignee is not shown elsewhere on the package this information shall be included within the mark.

3.5.4.2 *Excepted quantities mark*

Figure 3.5.4.2



Excepted quantities mark

- * The first or only label number indicated in column (5) of Table A of Chapter 3.2 shall be shown in this location.
- ** The name of the consignor or of the consignee shall be shown in this location if not shown elsewhere on the package.

The mark shall be in the form of a square. The hatching and symbol shall be of the same colour, black or red, on white or suitable contrasting background. The minimum dimensions shall be 100 mm × 100 mm. Where dimensions are not specified, all features shall be in approximate proportion to those shown.

3.5.4.3 *Use of overpacks*

For an overpack containing dangerous goods packed in excepted quantities, the following applies:

Unless the marks representative of all dangerous goods in an overpack are visible, the overpack shall be:

~~(a)~~ marked with the word “OVERPACK”. The lettering of the “OVERPACK” mark shall be at least 12 mm high. The mark shall be in an official language of the country of origin and also, if that language is not English, French or German, in English, French or German, unless agreements, if any, concluded between the countries concerned in the transport operation provide otherwise; and

~~(b)~~ marked with the marks required by this Chapter.

The other provisions of 5.1.2.1 apply only if other dangerous goods which are not packed in excepted quantities are contained in the overpack and only in relation to these other dangerous goods.

3.5.5 **Maximum number of packages in any vehicle or container**

The number of packages in any vehicle or container shall not exceed 1 000.

3.5.6 **Documentation**

If a document or documents (such as a bill of lading, air waybill or CMR/CIM consignment note) accompanies(y) dangerous goods in excepted quantities, at least one of these documents shall include the statement "Dangerous Goods in Excepted Quantities" and indicate the number of packages.