CHAPTER 3.2

LIST OF DANGEROUS GOODS

3.2.1 Table A: List of dangerous goods in numerical order

See Volume II

3.2.2 Table B: List of dangerous goods in alphabetical order

See Volume II

3.2.3 Table C: List of dangerous goods accepted for carriage in tank vessels in numerical order

3.2.3.1 ***Explanations concerning Table C:***

As a rule, each row of Table C of this Chapter deals with the substance(s) covered by a specific UN number or identification number. However, when substances belonging to the same UN number or identification number have different chemical properties, physical properties and/or carriage conditions, several consecutive rows may be used for that UN number or identification number.

Each column of Table C 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) of that row:

– The first four cells identify the substance(s) belonging to that row;

– 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 numbers 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.

The applicable general requirements are not referred to in the corresponding cells.

Explanatory notes for each column:

Column (1) "UN number/identification number"

Contains the UN number or identification number:

– of the dangerous substance if the substance has been assigned its own specific UN number or identification number, or

– of the generic or n.o.s. entry to which the dangerous substances not mentioned by name shall be assigned in accordance with the criteria ("decision trees") of Part 2.

Column (2) "Name and description"

Contains, in upper case characters, the name of the substance, if the substance has been assigned its own specific UN number or identification

number or of the generic or n.o.s. entry to which the dangerous substances have 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).

A descriptive text in lower case characters is added after the proper shipping name to clarify the scope of the entry if the classification or carriage conditions of the substance may be different under certain conditions.

Column (3a) "Class"

Contains the number of the Class, whose heading covers the dangerous substance. This Class number is assigned in accordance with the procedures and criteria of Part 2.

Column (3b) "Classification code"

Contains the classification code of the dangerous substance.

– For dangerous substances of Class 2, the code consists of a number and one or more letters representing the 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, 6.1, 8 and 9, the codes are explained in 2.2.x.1.2. [1]

Column (4) "Packing group"

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 substances are not assigned to packing groups.

Column (5) "Dangers"

This column contains information concerning the hazards inherent in the dangerous substance. These hazards are included on the basis of the danger labels of Table A, column (5).
In the case of a chemically unstable substance, the code 'unst.' is added to the information.

In the case of a substance or mixture hazardous to the aquatic environment, the code 'N1', 'N2' or 'N3' is added to the information.

In the case of a substance or mixture with CMR properties, the code 'CMR' is added to the information.

In the case of a substance or mixture that floats on the water surface, does not evaporate and is not readily soluble in water or that sinks to the bottom of the water and is not readily soluble, the code 'F' (standing for

[1] *x = the Class number of the dangerous substance or article, without dividing point if applicable.*

'Floater') or 'S' (standing for 'Sinker'), respectively, is added to the information.

Column (6) "Type of tank vessel"

Contains the type of tank vessel: G, C or N.

Column (7) "Cargo tank design"

Contains information concerning the design of the cargo tank:

1 Pressure cargo tank

2 Closed cargo tank

3 Open cargo tank with flame arrester

4 Open cargo tank

Column (8) "Cargo tank type"

Contains information concerning the cargo tank type.

1 Independent cargo tank

2 Integral cargo tank

3 Cargo tank with walls distinct from the outer hull

Column (9) "Cargo tank equipment"

Contains information concerning the cargo tank equipment.

1 Refrigeration system

2 Possibility of cargo heating

3 Water-spray system

4 Cargo heating system on board

Column (10) "Opening pressure of the high-velocity vent valve in kPa"

Contains information concerning the opening pressure of the high-velocity vent valve in kPa.

Column (11) "Maximum degree of filling (%)"

Contains information concerning the maximum degree of filling of cargo tanks as a percentage.

Column (12) "Relative density at 20 °C"

Contains information concerning the relative density of the substance at 20 °C. Data concerning the density are for information only.

Column (13) "Type of sampling device"

Contains information concerning the prescribed type of sampling device.

1 Closed sampling device

2 Partly closed sampling device

3 Open sampling device

Column (14) "Pump room below deck permitted"

Contains an indication of whether a pump room is permitted below deck.

Yes pump room below deck permitted

No pump room below deck not permitted

Column (15) "Temperature class"

Contains the temperature class of the substance.

Column (16) "Explosion group"

Contains the explosion group of the substance.

Column (17) "Anti-explosion protection required"

Contains a code referring to protection against explosions.

Yes anti-explosion protection required

No anti-explosion protection not required

Column (18) "Equipment required"

This column contains the alphanumeric codes for the equipment required for the carriage of the dangerous substance (see 8.1.5).

Column (19) "Number of cones/blue lights"

This column contains the number of cones/blue lights which should constitute the marking of the vessel during the carriage of this dangerous substance or article.

Column (20) "Additional requirements/Remarks"

This column contains the additional requirements or remarks applicable to the vessel.

These additional requirements or remarks are:

1. Anhydrous ammonia is liable to cause stress crack corrosion in cargo tanks and cooling systems constructed of carbon-manganese steel or nickel steel.

In order to minimize the risk of stress crack corrosion the following measures shall be taken:

(a) Where carbon-manganese steel is used, cargo tanks, pressure vessels of cargo refrigeration systems and cargo piping shall be constructed of fine-grained steel having a specified minimum yield stress of not more than 355 N/mm^2. The actual yield stress shall not exceed 440 N/mm^2. In addition, one of the following construction or operational measures shall be taken:

.1 Material with a low tensile strength ($R_m < 410$ N/mm^2) shall be used; or

.2 Cargo tanks, etc., shall undergo a post-weld heat treatment for the purpose of stress relieving; or

.3 The transport temperature shall preferably be maintained close to the evaporation temperature of the cargo of -33° C, but in no case above -20° C; or

.4 Ammonia shall contain not less than 0.1 % water, by mass.

(b) When carbon-manganese steel with yield stress values higher than those referred to in (a) above is used, the completed tanks, pipe sections, etc., shall undergo a post-weld heat treatment for the purpose of stress relieving.

(c) Pressure vessels of the cargo refrigeration systems and the piping systems of the condenser of the cargo refrigeration system constructed of carbon-manganese steel or nickel steel shall undergo a post-weld heat treatment for the purpose of stress relieving.

(d) The yield stress and the tensile strength of welding consumables may exceed only by the smallest value possible the corresponding values of the tank and piping material.

(e) Nickel steels containing more than 5 % nickel and carbon-manganese steel which are not in compliance with the requirements of (a) and (b) above may not be used for cargo tanks and piping systems intended for the transport of this substance.

(f) Nickel steels containing not more than 5 % nickel may be used if the transport temperature is within the limits referred to in (a) above.

(g) The concentration of oxygen dissolved in the ammonia shall not exceed the values given in the table below:

t in °C	O_2 in %
-30 and below	0.90
-20	0.50
-10	0.28
0	0.16
10	0.10
20	0.05
30	0.03

2. Before loading, air shall be removed and subsequently kept away to a sufficient extent from the cargo tanks and the accessory cargo piping by the means of inert gas (see also 7.2.4.18).

3. Arrangements shall be made to ensure that the cargo is sufficiently stabilized in order to prevent a reaction at any time during carriage. The transport document shall contain the following additional particulars:

(a) Name and amount of inhibitor added;

(b) Date on which inhibitor was added and expected duration of effectiveness under normal conditions;

(c) Any temperature limits having an effect on the inhibitor.

When stabilization is ensured solely by blanketing with an inert gas it is sufficient to mention the name of the inert gas used in the transport document.

When stabilization is ensured by another measurement, e.g. the special purity of the substance, this measurement shall be mentioned in the transport document.

4. The substance shall not be allowed to solidify; the transport temperature shall be maintained above the melting point. In instances where cargo heating installations are required, they must be so designed that polymerisation through heating is not possible in any part of the cargo tank. Where the temperature of steam-heated coils could give rise to overheating, lower-temperature indirect heating systems shall be provided.

5. This substance is liable to clog the vapour pipe and its fittings. Careful surveillance should be ensured. If a closed-type tank vessel is required for the carriage of this substance the vapour pipe shall conform to 9.3.2.22.5 (a) (i), (ii), (iv), (b), (c) or (d) or to 9.3.3.22.5 (a) (i), (ii), (iv), (b), (c) or (d). This requirement does not apply when the cargo tanks and the corresponding piping are inerted in accordance with 7.2.4.18 nor when protection against explosions is not required in column (17) and when flame-arresters have not been installed.

6. When external temperatures are below or equal to that indicated in column (20), the substance may only be carried in tank vessels equipped with a possibility of heating the cargo.

In addition, in the event of carriage in a closed-type vessel, if the tank vessel:

– is fitted out in accordance with 9.3.2.22.5 (a) (i) or (d) or 9.3.3.22.5 (a) (i) or (d), it shall be equipped with pressure/vacuum valves capable of being heated; or

– is fitted out in accordance with 9.3.2.22.5 (a) (ii), (v), (b) or (c) or 9.3.3.22.5 (a) (ii), (v), (b) or (c), it shall be equipped with heatable vapour pipes and heatable pressure/vacuum valves; or

– is fitted out in accordance with 9.3.2.22.5 (a) (iii) or (iv) or 9.3.3.22.5 (a) (iii) or (iv), it shall be equipped with heatable vapour pipes and with heatable pressure/vacuum valves and heatable flame-arresters.

The temperature of the vapour pipes, pressure/vacuum valves and flame-arresters shall be kept at least above the melting point of the substance.

7. If a closed-type tank vessel is required to carry this substance or if the substance is carried in a closed-type tank vessel, if this vessel:

– is fitted out in accordance with 9.3.2.22.5 (a) (i) or (d) or 9.3.3.22.5 (a) (i) or (d), it shall be equipped with heatable pressure/vacuum valves, or

– is fitted out in accordance with 9.3.2.22.5 (a) (ii), (v), (b) or (c) or 9.3.3.22.5 (a) (ii), (v), (b) or (c), it shall be equipped with heatable vapour pipes and heatable pressure/vacuum valves, or

– is fitted out in accordance with 9.3.2.22.5 (a) (iii) or (iv) or 9.3.3.22.5 (a) (iii) or (iv), it shall be equipped with heatable vapour pipes and with heatable pressure/vacuum valves and heatable flame-arresters.

The temperature of the vapour pipes, pressure/vacuum valves and flame-arresters shall be kept at least above the melting point of the substance.

8. Double-hull spaces, double bottoms and heating coils shall not contain any water.

9. (a) While the vessel is underway, an inert-gas pad shall be maintained in the ullage space above the liquid level.

(b) Cargo piping and vent lines shall be independent of the corresponding piping used for other cargoes.

(c) Safety valves shall be made of stainless steel.

10. *(Reserved)*

11. (a) Stainless steel of type 416 or 442 and cast iron shall not be used for cargo tanks and piping for loading and unloading.

(b) The cargo may be discharged only by deep-well pumps or pressure inert gas displacement. Each cargo pump shall be arranged to ensure that the substance does not heat significantly if the pressure discharge line from the pump is shut off or otherwise blocked.

(c) The cargo shall be cooled and maintained at temperatures below 30° C.

(d) The safety valves shall be set at a pressure of not less than 550 kPa (5.5 bar) gauge pressure. Special authorization is required for the maximum setting pressure.

(e) While the vessel is underway, a nitrogen pad shall be maintained in the ullage space above the cargo (see also 7.2.4.18). An automatic nitrogen supply system shall be installed to prevent the pressure from falling below 7 kPa (0.07 bar) gauge within the cargo tank in the event of a cargo temperature fall due to ambient temperature conditions or to some other reason. In order to satisfy the demand of the automatic pressure control a sufficient amount of nitrogen shall be available on board. Nitrogen of a commercially pure quality of 99.9 %, by volume, shall be used for padding. A battery of nitrogen cylinders connected to the cargo tanks through a pressure reduction valve satisfies the intention of the expression "automatic" in this context.

The required nitrogen pad shall be such that the nitrogen concentration in the vapour space of the cargo tank is not less than 45 % at any time.

(f) Before loading and while the cargo tank contains this substance in a liquid or gaseous form, it and the corresponding piping shall be inerted with nitrogen.

(g) The water-spray system shall be fitted with remote-control devices which can be operated from the wheelhouse or from the control station, if any.

(h) Transfer arrangements shall be provided for emergency transfer of ethylene oxide in the event of an uncontrollable self-reaction.

12. (a) The substance shall be acetylene free.

(b) Cargo tanks which have not undergone appropriate cleaning shall not be used for the carriage of these substances if one of the previous three cargoes consisted of a substance known to promote polymerisation, such as:

.1 mineral acids (e.g. sulphuric acid, hydrochloric acid, nitric acid);

.2 carboxylic acids and anhydrides (e.g. formic acid, acetic acid);

.3 halogenated carboxylic acids (e.g. chloroacetic acid);

.4 sulphonic acids (e.g. benzene sulphonic acid);

.5 caustic alkalis (e.g. sodium hydroxide, potassium hydroxide);

.6 ammonia and ammonia solutions;

.7 amines and amine solutions;

.8 oxidizing substances.

(c) Before loading, cargo tanks and their piping shall be efficiently and thoroughly cleaned so as to eliminate all traces of previous cargoes, except when the last cargo was constituted of propylene oxide or a mixture of ethylene oxide and propylene oxide. Special precautions shall be taken in the case of ammonia in cargo tanks built of steel other than stainless steel.

(d) In all cases the efficiency of the cleaning of cargo tanks and their piping shall be monitored by means of appropriate tests or inspections to check that no trace of acid or alkaline substance remains that could present a danger in the presence of these substances.

(e) The cargo tanks shall be entered and inspected prior to each loading of these substances to ensure freedom from contamination, heavy rust deposits or visible structural defects.

When these cargo tanks are in continuous service for these substances, such inspections shall be performed at intervals of not more than two and a half years.

(f) Cargo tanks which have contained these substances may be reused for other cargoes once they and their piping have been thoroughly cleaned by washing and flushing with an inert gas.

(g) Substances shall be loaded and unloaded in such a way that there is no release of gas into the atmosphere. If gas is returned to the shore installation during loading, the gas return system connected to the tank containing that substance shall be independent from all other cargo tanks.

(h) During discharge operations, the pressure in the cargo tanks shall be maintained above 7 kPa (0.07 bar) gauge.

(i) The cargo shall be discharged only by deep-well pumps, hydraulically operated submerged pumps or pressure inert gas displacement. Each cargo pump shall be arranged to ensure that the substance does not heat significantly if the pressure discharge line from the pump is shut off or otherwise blocked.

(j) Each cargo tank carrying these substances shall be ventilated by a system independent from the ventilation systems of other cargo tanks carrying other substances.

(k) Hose assemblies for loading and unloading shall be marked as follows:

"To be used only for the transfer of alkylene oxide."

(l) (*Reserved*)

(m) No air shall be allowed to enter the cargo pumps and cargo piping system while these substances are contained within the system.

(n) Before the shore connections are disconnected, piping containing liquids or gas shall be depressurised at the shore link by means of appropriate devices.

(o) The piping system for cargo tanks to be loaded with these substances shall be separate from the piping system for all other cargo tanks, including empty cargo tanks. If the piping system for the cargo tanks to be loaded is not independent, separation shall be accomplished by the removal of spool pieces, shut-off valves, other pipe sections and by fitting blank flanges at these locations. The required separation applies to all liquid pipes and vapour vent lines and any other connections which may exist such as common inert gas supply lines.

(p) These substances may be carried only in accordance with cargo handling plans that have been approved by a competent authority.

Each loading arrangement shall be shown on a separate cargo handling plan. Cargo handling plans shall show the entire cargo piping system and the locations for installations of blank flanges needed to meet the above piping separation requirements. A copy of each cargo handling plan shall be kept on board. Reference to the approved cargo handling plans shall be included in the certificate of approval.

(q) Before loading of these substances and before carriage is resumed a qualified person approved by the competent authority shall certify that the prescribed separation of the piping has been effected; this certificate shall be kept on board. Each connection between a blank flange and a shut-off valve in the piping shall be fitted with a sealed wire to prevent the flange from being disassembled inadvertently.

(r) During the voyage, the cargo shall be covered with nitrogen. An automatic nitrogen make-up system shall be installed to prevent the cargo tank pressure from falling below 7 kPa (0.07 bar) gauge in the event of a cargo temperature fall due to ambient temperature conditions or to some other reason. Sufficient nitrogen shall be available on board to satisfy the demand of automatic pressure control. Nitrogen of commercially pure quality of 99.9 %, by volume, shall be used for padding. A battery of nitrogen cylinders connected to the cargo tanks through a pressure reduction valve satisfies the intention of the expression "automatic" in this context.

(s) The vapour space of the cargo tanks shall be checked before and after each loading operation to ensure that the oxygen content is 2 %, by volume, or less.

(t) Loading flow

The loading flow (L_R) of cargo tank shall not exceed the following value:

$L_R = 3600 \times U/t$ (m^3/h)

In this formula:

U = the free volume (m^3) during loading for the activation of the overflow prevention system;

T = the time (s) required between the activation of the overflow prevention system and the complete stop of the flow of cargo into the cargo tank;

The time is the sum of the partial times needed for successive operations, e.g. reaction time of the service personnel, the time needed to stop the pumps and the time needed to close the shut-off valves;

The loading flow shall also take account of the design pressure of the piping system.

13. If no stabilizer is supplied or if the supply is inadequate, the oxygen content in the vapour phase shall not exceed 0.1 %. Overpressure must be constantly maintained in cargo tanks. This requirement applies also to voyages on ballast or empty with uncleaned cargo tanks between cargo transport operations.

14. The following substances may not be carried under these conditions:

– substances with self-ignition temperatures ≤ 200 °C;

– substances with a flash point < 23°C and an explosion range > 15 percentage points;

– mixtures containing halogenated hydrocarbons;

– mixtures containing more than 10 % benzene;

– substances and mixtures carried in a stabilized state.

15. Provision shall be made to ensure that alkaline or acidic substances such as sodium hydroxide solution or sulphuric acid do not contaminate this cargo.

16. If there is a possibility of a dangerous reaction such as polymerisation, decomposition, thermal instability or evolution of gases resulting from local overheating of the cargo in either the cargo tank or associated piping system, this cargo shall be loaded and carried adequately segregated from other substances the temperature of which is sufficiently high to initiate such reaction. Heating coils inside cargo tanks carrying this substance shall be blanked off or secured by equivalent means.

17. The melting point of the cargo shall be shown in the transport documents.

18. *(Reserved)*

19. Provision shall be made to ensure that the cargo does not come into contact with water. The following additional requirements apply:

Carriage of the cargo is not permitted in cargo tanks adjacent to slop tanks or cargo tanks containing ballast water, slops or any other cargo containing water. Pumps, piping and vent lines connected to such tanks shall be separated from similar equipment of tanks carrying these substances. Pipes from slop tanks or ballast water pipes shall not pass through cargo tanks containing this cargo unless they are encased in a tunnel.

20. The maximum permitted transport temperature given in column (20) shall not be exceeded.

21. *(Reserved)*

22. The relative density of the cargo shall be shown in the transport document.

23. The instrument for measuring the pressure of the vapour phase in the cargo tank shall activate the alarm when the internal pressure reaches 40 kPa (0.4 bar). The water-spray system shall immediately be activated and remain in operation until the internal pressure drops to 30 kPa (0.3 bar).

24. Substances having a flash-point above 61 °C which are handed over for carriage or which are carried heated within a limiting range of 15 K below their flash-point shall be carried under the conditions of substance number 9001.

25. Type 3 cargo tank may be used for the carriage of this substance provided that the construction of the cargo tank has been accepted

by a recognized classification society for the maximum permitted transport temperature.

26. Type 2 cargo tank may be used for the carriage of this substance provided that the construction of the cargo tank has been accepted by a recognized classification society for the maximum permitted transport temperature.

27. The requirements of 3.1.2.8.1 are applicable.

28. (a) When UN 2448 SULPHUR, MOLTEN is carried, the forced ventilation of the cargo tanks shall be brought into service at latest when the concentration of hydrogen sulphide reaches 1.0 %, by volume.

(b) When during the carriage of UN 2448 SULPHUR, MOLTEN, the concentration of hydrogen sulphide exceeds 1.85 %, the boat master shall immediately notify the nearest competent authority.

When a significant increase in the concentration of hydrogen sulphide in a hold space leads it to be supposed that the sulphur has leaked, the cargo tanks shall be unloaded as rapidly as possible. A new load may only be taken on board once the authority which issued the certificate of approval has carried out a further inspection.

(c) When UN 2448 SULPHUR, MOLTEN is carried, the concentration of hydrogen sulphide shall be measured in the vapour phase of the cargo tanks and concentrations of sulphur dioxide and hydrogen sulphide in the hold spaces.

(d) The measurements prescribed in (c) shall be made every eight hours. The results of the measurements shall be recorded in writing.

29. When particulars concerning the vapour pressure or the boiling point are given in column (2), the relevant information shall be added to the proper shipping name in the transport document, e.g.

UN 1224 KETONES, LIQUID, N.O.S.,
110 kPa < vp 50 ≤ 174 kPa or

UN 2929 TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S.,
boiling point ≤ 60°C

30. When these substances are carried, the hold spaces of open type N tank vessels may contain auxiliary equipment.

31. When these substances are carried, the vessel shall be equipped with a rapid blocking valve placed directly on the shore connection.

32. In the case of transport of this substance, the following additional requirements are applicable:

(a) The outside of the cargo tanks shall be equipped with insulation of low flammability. This insulation shall be strong enough to resist shocks and vibration. Above deck, the insulation shall be protected by a covering.

The outside temperature of this covering shall not exceed 70 °C.

(b) The spaces containing the cargo tanks shall be provided with ventilation. Connections for forced ventilation shall be fitted.

(c) The cargo tanks shall be equipped with forced ventilation installations which, in all transport conditions, will reliably keep the concentration of hydrogen sulphide above the liquid phase below 1.85 % by volume.

The ventilation installations shall be fitted in such a way as to prevent the deposit of the goods to be transported.

The exhaust line of the ventilation shall be fitted in such a way as not to present a risk to personnel.

(d) The cargo tank and the hold spaces shall be fitted with outlets and piping to allow gas sampling.

(e) The outlets of the cargo tanks shall be situated at a height such that for a trim of 2º and a list of 10º, no sulphur can escape. All the outlets shall be situated above the deck in the open air. Each outlet shall be equipped with a permanently fixed closing mechanism.

One of these mechanisms shall be capable of being opened for slight overpressure within the tank.

(f) The piping for loading and unloading shall be equipped with adequate insulation. They shall be capable of being heated.

(g) The heat transfer fluid shall be such that in the event of a leak into a tank, there is no risk of a dangerous reaction with the sulphur.

33. The following provisions are applicable to transport of this substance:

Construction requirements:

(a) Hydrogen peroxide solutions may be transported only in cargo tanks equipped with deep-well pumps.

(b) Cargo tanks and their equipment shall be constructed of solid stainless steel of a type appropriate to hydrogen peroxide solutions (for example, 304, 304L, 316, 316L or 316 Ti). None of the non-metallic materials used for the system of cargo tanks shall be attacked by hydrogen peroxide solutions or cause the decomposition of the substance.

(c) The temperature sensors shall be installed in the cargo tanks directly under the deck and at the bottom. Remote temperature read-outs and monitoring shall be provided for in the wheelhouse.

(d) Fixed oxygen monitors (or gas-sampling lines) shall be provided in the areas adjacent to the cargo tanks so that leaks in such areas can be detected. Account shall be taken of the increased flammability arising from the increased presence of oxygen. Remote read-outs, continuous monitoring (if the sampling lines are used, intermittent monitoring will suffice) and visible and audible alarms similar to those for the temperature sensors shall also be located in the wheelhouse. The visible and audible alarms shall be activated if the oxygen concentration in these void spaces exceeds 30 % by volume. Two additional oxygen monitors shall also be available.

(e) The cargo tank venting systems which are equipped with filters shall be fitted with pressure/vacuum relief valves appropriate to closed-circuit ventilation and with an extraction installation should cargo tank pressure rise rapidly as a result of an uncontrolled decomposition (see under m). These air supply and extraction systems shall be so designed that water cannot enter the cargo tanks. In designing the emergency extraction installation account shall be taken of the design pressure and the size of the cargo tanks.

(f) A fixed water-spray system shall be provided for diluting and washing away any hydrogen peroxide solutions spilled onto the deck. The area covered by the jet of water shall include the shore connections and the deck containing the cargo tanks designated for carrying hydrogen peroxide solutions.

The following minimum requirements shall be complied with:

.1 The substance shall be diluted from the original concentration to a 35 % concentration within five minutes from the spillage on the deck;

.2 The rate and estimated size of the spill shall be determined in the light of the maximum permissible loading or unloading rates, the time required to halt the spillage in the event of tank overfill or a pipe or hose assembly failure, and the time necessary to begin application of dilution water with actuation of the alarm at the cargo control location or in the wheelhouse.

(g) The outlets of the pressure valves shall be situated at least 2 metres above the walkways if they are less than 4 metres from the walkway.

(h) A temperature sensor shall be installed by each pump to make it possible to monitor the temperature of the cargo during unloading and detect any overheating due to defective operation of the pump.

Servicing requirements:

Carrier

(i) Hydrogen peroxide solutions may only be carried in cargo tanks which have been thoroughly cleaned and passivated, in accordance with the procedure described under (j), of all traces of previous cargoes, their vapours or their ballast waters. A certificate stating that the procedure described under (j) has been duly complied with must be carried on board.

Particular care in this respect is essential to ensure the safe carriage of hydrogen peroxide solutions:

.1 When a hydrogen peroxide solution is being carried, no other cargo may be carried simultaneously;

.2 Tanks which have contained hydrogen peroxide solutions may be reused for other cargoes after they have been cleaned by persons or companies approved for this purpose by the competent authority;

.3 In the design of the cargo tanks, efforts must be made to keep to a minimum any internal tank structure, to ensure free draining, no entrapment and ease of visual inspection.

(j) Procedures for inspection, cleaning, passivation and loading for the transport of hydrogen peroxide solutions with a concentration of 8 to 60 per cent in cargo tanks which have previously carried other cargoes.

Before their reuse for the transport of hydrogen peroxide solutions, cargo tanks which have previously carried cargoes other than hydrogen peroxide must be inspected, cleaned and passivated. The procedures described in paragraphs .1 to .7 below for inspection and cleaning apply to stainless steel cargo tanks. The procedure for passivating stainless steel is described in paragraph .8. Failing any other instructions, all the measures apply to cargo tanks and to all their structures which have been in contact with other cargoes.

.1 After unloading of the previous cargo, the cargo tank must be degassed and inspected for any remaining traces, carbon residues and rust.

.2 The cargo tanks and their equipment must be washed with clear filtered water. The water used must be at least of the same quality as drinking water and have a low chlorine content.

.3 Traces of the residues and vapours of the previous cargo must be removed by the steam cleaning of the cargo tanks and their equipment.

.4 The cargo tanks and their equipment must then be rewashed with clear water of the quality specified in paragraph 2 above and dried in filtered, oil-free air.

.5 Samples must be taken of the atmosphere in the cargo tanks and these must be analysed for their content of organic gases and oxygen.

.6 The cargo tank must be reinspected for any traces of the previous cargo, carbon residues or rust or odours of the previous cargo.

.7 If the inspection and the other measures point to the presence of traces of the previous cargo or of its gases, the measures described in paragraphs .2 to .4 above must be repeated.

.8 Stainless steel cargo tanks and their structures which have contained cargoes other than hydrogen peroxide solutions and which have been repaired must, regardless of whether or not they have previously been passivated, be cleaned and passivated in accordance with the following procedure:

.8.1 The new weld seams and other repaired parts must be cleaned and scrubbed with stainless steel brushes, graving tools, sandpaper and polishers. Rough surfaces must be made smooth and a final polishing must be carried out;

.8.2 Fatty and oily residues must be removed with the use of organic solvents or appropriate cleaning products diluted with water. The use of chlorinated products shall be avoided because these might seriously interfere with the passivation procedure;

.8.3 Any residues that have been removed must be eliminated and the tanks must then be washed.

(k) During the transfer of the hydrogen peroxide solutions, the related piping system must be separated from all other systems. Loading and unloading piping used for the transfer of hydrogen peroxide solutions must be marked as follows:

"For Hydrogen Peroxide
Solution Transfer only"

(l) If the temperature in the cargo tanks rises above 35 °C, visible and audible alarms shall activate in the wheelhouse.

Master

(m) If the temperature rise exceeds 4 °C for 2 hours or if the temperature in the cargo tanks exceeds 40 °C, the master must contact the consignor directly, with a view to taking any action that might be necessary.

Filler

(n) Hydrogen peroxide solutions must be stabilized to prevent decomposition. The manufacturer must provide a stabilization certificate which must be carried on board and must specify:

.1 The disintegration date of the stabilizer and the duration of its effectiveness;

.2 Actions to be taken should the product become unstable during the voyage.

(o) Only those hydrogen peroxide solutions which have a maximum decomposition rate of 1.0 per cent per year at 25 °C may be carried. A certificate from the filler stating that the product meets this standard must be presented to the master and kept on board. An authorized representative of the manufacturer must be on board to monitor the loading operations and to test the stability of the hydrogen peroxide solutions to be transported. He shall certify to the master that the cargo has been loaded in a stable condition.

34. For type N carriage, the flanges and stuffing boxes of the loading and unloading piping must be fitted with a protection device to protect against splashing.

35. A direct system for the cargo refrigerating system is not permitted for this substance.

36. Only an indirect system for the cargo refrigerating system is permitted for this substance.

37. For this substance, the cargo tank system shall be capable of resisting the vapour pressure of the cargo at higher ambient temperatures whatever the system that has been adopted for treating the boil-off gas.

38. When the initial melting point of these mixtures in accordance with standard ASTM D86-01 is above 60° C, the transport requirements for packing group II are applicable.

39. (a) The joints, outlets, closing devices and other technical equipment shall be of such a sort that there cannot be any leakage of carbon dioxide during normal transport operations (cold, fracturing of materials, freezing of fixtures, run-off outlets etc.).

(b) The loading temperature (at the loading station) shall be mentioned in the transport document.

(c) An oxygen meter shall be kept on board, together with instructions on its use which can be read by everyone on board. The oxygen meter shall be used as a testing device when entering holds, pump rooms, areas situated at depth and when work is being carried out on board.

(d) At the entry of accommodation and in other places where the crew may spend time there shall be a measuring device which lets off an alarm when the oxygen level is too low or when the CO_2 level is too high.

(e) The loading temperature (established after loading) and the maximum duration of the journey shall be mentioned in the transport document.

40. The closed tanker required for this substance must, if this tanker:
Is designed according to paragraph 9.3.2.22.5 a) i) or d) or paragraph 9.3.3.22.5 a) i) or d), be furnished with heatable pressure relief and vacuum valves and, or

Is designed according to paragraph 9.3.2.22.5 a) ii), v), b) or c) or paragraph 9.3.3.22.5 a) ii), v), b) or c), be furnished with heatable gas collection lines as well as heatable pressure relief and vacuum valves, or

Is designed according to paragraph 9.3.2.22.5 a) iii) or iv) or paragraph 9.3.3.22.5 a) iii) or iv), be furnished with heatable gas collection lines as well as heatable pressure relief and vacuum valves and heatable flame arresters.

NOTE: If the common vapour piping on board is not connected to a shore-based compensation or venting piping, then heating of the common vapour piping is not authorized.

3.2.3.2 Table C

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1005	AMMONIA, ANHYDROUS	2	2TC		2.3+8+N1	G	1	1	3		91		1	no	T1	II A	yes	PP, EP, EX, TOX, A	2	1; 31
1010	1,2-BUTADIENE, STABILIZED	2	2F		2.1+unst.	G	1	1			91		1	no	T2	II B[4)]	yes	PP, EX, A	1	2; 3; 31
1010	1,3-BUTADIENE, STABILIZED	2	2F		2.1+unst.+ CMR	G	1	1			91		1	no	T2	II B	yes	PP, EP, EX, TOX, A	1	2; 3; 31
1010	BUTADIENES STABILIZED or BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED, having 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 (contains less than 0.1% 1.3-butadiene)	2	2F		2.1+unst.	G	1	1			91		1	no	T2	II B[4)]	yes	PP, EX, A	1	2; 3; 31
1010	BUTADIENES, STABILIZED or BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED, having 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, (with 0.1% or more 1.3-butadiene)	2	2F		2.1+unst.+ CMR	G	1	1			91		1	no	T2	II B[4)]	yes	PP, EP, EX, TOX, A	1	2; 3; 31
1011	BUTANE (contains less than 0.1% 1.3-butadiene)	2	2F		2.1	G	1	1			91		1	no	T2	II A	yes	PP, EX, A	1	31
1011	BUTANE (with 0.1% or more 1.3-butadiene)	2	2F		2.1+CMR	G	1	1			91		1	no	T2	II A	yes	PP, EP, EX, TOX, A	1	31
1012	1-BUTYLENE	2	2F		2.1	G	1	1			91		1	no	T2	II A	yes	PP, EX, A	1	31
1020	CHLOROPENTAFLUORO-ETHANE (REFRIGERANT GAS R 115)	2	2A		2.2	G	1	1			91		1	no			no	PP	0	31
1030	1,1-DIFLUOROETHANE (REFRIGERANT GAS R 152a)	2	2F		2.1	G	1	1			91		1	no	T1	II A	yes	PP, EX, A	1	31

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1033	DIMETHYL ETHER	2	2F		2.1	G	1	1			91		1	no	T3	II B	yes	PP, EX, A	1	31
1038	ETHYLENE, REFRIGERATED LIQUID	2	3F		2.1	G	1	1	1		95		1	no	T1	II B	yes	PP, EX, A	1	31
1040	ETHYLENE OXIDE WITH NITROGEN up to a total pressure of 1 MPa (10 bar) at 50 °C	2	2TF		2.3+2.1	G	1	1			91		1	no	T2	II B	yes	PP, EP, EX, TOX, A	2	2: 3; 11; 31
1055	ISOBUTYLENE	2	2F		2.1	G	1	1			91		1	no	T2 [1)]	II A	yes	PP, EX, A	1	31
1063	METHYL CHLORIDE (REFRIGERANT GAS R 40)	2	2F		2.1	G	1	1			91		1	no	T1	II A	yes	PP, EX, A	1	31
1077	PROPYLENE	2	2F		2.1	G	1	1			91		1	no	T1	II A	yes	PP, EX, A	1	31
1083	TRIMETHYLAMINE, ANHYDROUS	2	2F		2.1	G	1	1			91		1	no	T4	II A	yes	PP, EX, A	1	31
1086	VINYL CHLORIDE, STABILIZED	2	2F		2.1+unst.	G	1	1			91		1	no	T2	II A	yes	PP, EX, A	1	2; 3; 13; 31
1088	ACETAL	3	F1	II	3	N	2	2		10	97	0.83	3	yes	T3	II B [4)]	yes	PP, EX, A	1	
1089	ACETALDEHYDE (ethanal)	3	F1	I	3+N3	C	1	1			95	0.78	1	yes	T4	II A	yes	PP, EX, A	1	
1090	ACETONE	3	F1	II	3	N	2	2		10	97	0.79	3	yes	T1	II A	yes	PP, EX, A	1	
1092	ACROLEINE, STABILIZED	6.1	TF1	I	6.1+3+unst.+ N1	C	2	2	3	50	95	0.84	1	no	T3 [2)]	II B	yes	PP, EP, EX, TOX, A	2	2; 3; 5; 23
1093	ACRYLONITRILE, STABILIZED	3	FT1	I	3+6.1+unst.+ N2+CMR	C	2	2	3	50	95	0.8	1	no	T1	II B	yes	PP, EP, EX, TOX, A	2	3; 5; 23
1098	ALLYL ALCOHOL	6.1	TF1	I	6.1+3+N1	C	2	2		40	95	0.85	1	no	T2	II B	yes	PP, EP, EX, TOX, A	2	
1100	ALLYL CHLORIDE	3	FT1	I	3+6.1+N1	C	2	2	3	50	95	0.94	1	no	T2	II A	yes	PP, EP, EX, TOX, A	2	23
1105	PENTANOLS (n- PENTANOL)	3	F1	III	3	N	3	2			97	0.81	3	yes	T2	II A	yes	PP, EX, A	0	
1106	AMYLAMINE (n-AMYLAMINE)	3	FC	II	3+8	C	2	2		40	95	0.76	2	yes	T4 [3)]	II A [7)]	yes	PP, EP, EX, A	1	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1107	AMYL CHLORIDES (l-CHLOROPENTANE)	3	F1	II	3	C	2	2		40	95	0.88	2	yes	T3	II A	yes	PP, EX, A	1	
1107	AMYL CHLORIDES (1-CHLORO-3-METHYLBUTANE)	3	F1	II	3	C	2	2		45	95	0.89	2	yes	T3	II A	yes	PP, EX, A	1	
1107	AMYL CHLORIDES (2-CHLORO-2-METHYLBUTANE)	3	F1	II	3	C	2	2		50	95	0.87	2	yes	T2	II A	yes	PP, EX, A	1	
1107	AMYL CHLORIDES (1-CHLORO-2,2-DIMETHYL-PROPANE)	3	F1	II	3	C	2	2		50	95	0.87	2	yes	T3 [2)]	II A	yes	PP, EX, A	1	
1107	AMYL CHLORIDES	3	F1	II	3	C	1	1			95	0.9	1	yes	T3 [2)]	II A	yes	PP, EX, A	1	27
1108	1-PENTENE (n-AMYLENE)	3	F1	I	3+N3	N	1	1			97	0.64	1	yes	T3	II B[4)]	yes	PP, EX, A	1	
1114	BENZENE	3	F1	II	3+N3+CMR	C	2	2	3	50	95	0.88	2	yes	T1	II A	yes	PP, EP, EX, TOX, A	1	6: +10 °C; 17; 23
1120	BUTANOLS (tert- BUTYLALCOHOL)	3	F1	II	3	N	2	2	2	10	97	0.79	3	yes	T1	II A [7)]	yes	PP, EX, A	1	7; 17
1120	BUTANOLS (sec-BUTYLALCOHOL)	3	F1	III	3	N	3	2			97	0.81	3	yes	T2	II B [7)]	yes	PP, EX, A	0	
1120	BUTANOLS (n- BUTYL ALCOHOL)	3	F1	III	3	N	3	2			97	0.81	3	yes	T2	II B	yes	PP, EX, A	0	
1123	BUTYL ACETATES (sec-BUTYLACETATE)	3	F1	II	3	N	2	2		10	97	0.86	3	yes	T2	II A [7)]	yes	PP, EX, A	1	
1123	BUTYL ACETATES (n-BUTYL ACETATE)	3	F1	III	3+N3	N	3	2			97	0.86	3	yes	T2	II A	yes	PP, EX, A	0	
1125	n-BUTYLAMINE	3	FC	II	3+8+N3	C	2	2	3	50	95	0.75	2	yes	T2	II A	yes	PP, EP, EX, A	1	23
1127	CHLOROBUTANES (1-CHLOROBUTANE)	3	F1	II	3	C	2	2	3	50	95	0.89	2	yes	T3	II A	yes	PP, EX, A	1	23
1127	CHLOROBUTANES (2-CHLOROBUTANE)	3	F1	II	3	C	2	2	3	50	95	0.87	2	yes	T3	II A	yes	PP, EX, A	1	23

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1127	CHLOROBUTANES (1-CHLORO-2-METHYLPROPANE)	3	F1	II	3	C	2	2	3	50	95	0.88	2	yes	T3	II A	yes	PP, EX, A	1	23
1127	CHLOROBUTANES (2-CHLORO-2-METHYLPROPANE)	3	F1	II	3	C	2	2	3	50	95	0.84	2	yes	T1	II A	yes	PP, EX, A	1	23
1127	CHLOROBUTANES	3	F1	II	3	C	1	1			95	0.89	1	yes	T4 [3)]	II A	yes	PP, EX, A	1	27
1129	BUTYRALDEHYDE (n-BUTYRALDEHYDE)	3	F1	II	3+N3	C	2	2	3	50	95	0.8	2	yes	T4	II A	yes	PP, EX, A	1	15; 23
1131	CARBON DISULPHIDE	3	FT1	I	3+6.1+N2	C	2	2	3	50	95	1.26	1	no	T6	II C	yes	PP, EP, EX, TOX, A	2	2; 9; 23
1134	CHLOROBENZENE (phenyl chloride)	3	F1	III	3+N2+S	C	2	2		30	95	1.11	2	yes	T1	II A [8)]	yes	PP, EX, A	0	
1135	ETHYLENE CHLOROHYDRIN (2-CHLOROETHANOL)	6.1	TF1	I	6.1+3+N3	C	2	2		30	95	1.21	1	no	T2	II A [8)]	yes	PP, EP, EX, TOX, A	2	
1143	CROTONALDEHYDE, STABILIZED	6.1	TF1	I	6.1+3+unst.+N1	C	2	2		40	95	0.85	1	no	T3	II B	yes	PP, EP, EX, TOX, A	2	3; 5; 15
1145	CYCLOHEXANE	3	F1	II	3+N1	C	2	2	3	50	95	0.78	2	yes	T3	II A	yes	PP, EX, A	1	6: +11 °C; 17
1146	CYCLOPENTANE	3	F1	II	3+N2	N	2	3		10	97	0.75	3	yes	T2	II A	yes	PP, EX, A	1	
1150	1,2-DICHLOROETHYLENE (cis-1,2-DICHLOROETHYLENE)	3	F1	II	3+N2	C	2	2	3	50	95	1.28	2	yes	T2 [1)]	II A	yes	PP, EX, A	1	23
1150	1,2-DICHLOROETHYLENE (trans-1,2-DICHLOROETHYLENE)	3	F1	II	3+N2	C	2	2	3	50	95	1.26	2	yes	T2	II A	yes	PP, EX, A	1	23
1153	ETHYLENE GLYCOL DIETHYL ETHER	3	F1	III	3	N	3	2			97	0.84	3	yes	T4	II B	yes	PP, EX, A	0	
1154	DIETHYLAMINE	3	FC	II	3+8+N3	C	2	2	3	50	95	0.7	2	yes	T2	II A	yes	PP, EP, EX, A	1	23
1155	DIETHYL ETHER	3	F1	I	3	C	1	1			95	0.71	1	yes	T4	II B	yes	PP, EX, A	1	
1157	DIISOBUTYL KETONE	3	F1	III	3+N3+F	N	3	3			97	0.81	3	yes	T2	II B [4)]	yes	PP, EX, A	0	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1159	DIISOPROPYL ETHER	3	F1	II	3+N2	C	2	2	3	50	95	0.72	2	yes	T2	II A	yes	PP, EX, A	1	
1160	DIMETHYLAMINE AQUEOUS SOLUTION	3	FC	II	3+8+N3	C	2	2	3	50	95	0.82	2	yes	T2	II A	yes	PP, EP, EX, A	1	23
1163	DIMETHYLHYDRAZINE, UNSYMMETRICAL	6.1	TFC	I	6.1+3+8+ N2+CMR	C	2	2	3	50	95	0.78	1	no	T3	II C	yes	PP, EP, EX, TOX, A	2	23
1165	DIOXANE	3	F1	II	3	N	2	2		10	97	1.03	3	yes	T2	II B	yes	PP, EX, A	1	6: +14 ºC; 17
1167	DIVINYL ETHER, STABILIZED	3	F1	I	3+unst.	C	1	1			95	0.77	1	yes	T2	II B	yes	PP, EX, A	1	2; 3
1170	ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), aqueous solution with more than 70 % alcohol by volume	3	F1	II	3	N	2	2		10	97	0,79 - 0,87	3	yes	T2	II B	yes	PP, EX, A	1	
1170	ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), aqueous solution with more than 24 % and not more than 70 % alcohol by volume	3	F1	III	3	N	3	2			97	0,87 - 0,96	3	yes	T2	II B	yes	PP, EX, A	0	
1171	ETHYLENE GLYCOL MONOETHYL ETHER	3	F1	III	3+CMR	N	2	3	3	10	97	0.93	3	yes	T3	II B	yes	PP, EP, EX, TOX, A	0	
1172	ETHYLENE GLYCOL MONOETHYL ETHER ACETATE	3	F1	III	3+N3+ CMR	N	2	3	3	10	97	0.98	3	yes	T2	II A	yes	PP, EP, EX, TOX, A	0	
1173	ETHYL ACETATE	3	F1	II	3	N	2	2		10	97	0.9	3	yes	T1	II A	yes	PP, EX, A	1	
1175	ETHYLBENZENE	3	F1	II	3+N3	N	2	2		10	97	0.87	3	yes	T2	II A	yes	PP, EX, A	1	
1177	2-ETHYLBUTYL ACETATE	3	F1	III	3	N	3	2			97	0.88	3	yes	T3	II A [7)]	yes	PP, EX, A	0	
1179	ETHYL BUTYL ETHER (ETHYL tert-BUTYL ETHER)	3	F1	II	3+N3	N	2	2		10	97	0.74	3	yes	T2	II B[4)]	yes	PP, EX, A	1	
1184	ETHYLENE DICHLORIDE (1,2-dichloroethane)	3	FT1	II	3+6.1+ CMR	C	2	2		50	95	1.25	2	no	T2	II A	yes	PP, EP, EX, TOX, A	2	
1188	ETHYLENE GLYCOL MONOMETHYL ETHER	3	F1	III	3+CMR	N	2	3	3	10	97	0.97	3	yes	T3	II B	yes	PP, EP, EX, TOX, A	0	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1191	OCTYL ALDEHYDES (2-ETHYLCAPRONALDEHYDE)	3	F1	III	3+N3+F	C	2	2		30	95	0.82	2	yes	T4	II A [7)]	yes	PP, EX, A	0	
1191	OCTYL ALDEHYDES (n-OCTALDEHYDE)	3	F1	III	3+N3+F	N	3	3			97	0.82	3	yes	T3	II B[4)]	yes	PP, EX, A	0	
1193	ETHYL METHYL KETONE (METHYL ETHYL KETONE)	3	F1	II	3	N	2	2		10	97	0.8	3	yes	T1	II A	yes	PP, EX, A	1	
1198	FORMALDEHYDE SOLUTION, FLAMMABLE	3	FC	III	3+8+N3	N	3	2			97	1.09	3	yes	T2	II B	yes	PP, EP, EX, A	0	34
1199	FURALDEHYDES (a-FURALDEHYDE) or FURFURALDEHYDES (a-FURFURYLALDEHYDE)	6.1	TF1	II	6.1+3	C	2	2		25	95	1.16	2	no	T3 [2)]	II B	yes	PP, EP, EX, TOX, A	2	15
1202	GAS OIL or DIESEL FUEL or HEATING OIL (LIGHT) (flash-point not more than 60 °C)	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*	< 0,85	*	yes			no	*	0	*see 3.2.3.3
1202	GAS OIL complying with standard EN 590: 2004 or DIESEL FUEL or HEATING OIL (LIGHT) with flash-point as specified in EN 590:2004	3	F1	III	3+N2+F	N	4	3			97	0,82 - 0,85	3	yes			no	PP	0	
1202	GAS OIL or DIESEL FUEL or HEATING OIL (LIGHT) (flash-point more than 60 °C but not more than 100 °C)	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*	< 1,1	*	yes			no	*	0	*see 3.2.3.3
1203	MOTOR SPIRIT or GASOLINE or PETROL	3	F1	II	3+N2+CMR+F	N	2	3	3	10	97	0,68 - 0,72 [10)]	3	yes	T3	II A	yes	PP, EP, EX, TOX, A	1	
1203	MOTOR SPIRIT or GASOLINE or PETROL, WITH MORE THAN 10 % BENZENE BOILING POINT ≤ 60 °C	3	F1	II	3+N2+CMR+F	C	1	1			95		1	yes	T3	II A	yes	PP, EP, EX, TOX, A	1	29

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1203	MOTOR SPIRIT or GASOLINE or PETROL WITH MORE THAN 10 % BENZENE 60 °C < BOILING POINT ≤ 85 °C	3	F1	II	3+N2+CMR+F	C	2	2	3	50	95		2	yes	T3	II A	yes	PP, EP, EX, TOX, A	1	23; 29
1203	MOTOR SPIRIT or GASOLINE or PETROL WITH MORE THAN 10 % BENZENE 85 °C < BOILING POINT ≤ 115 °C	3	F1	II	3+N2+CMR+F	C	2	2		50	95		2	yes	T3	II A	yes	PP, EP, EX, TOX, A	1	29
1203	MOTOR SPIRIT or GASOLINE or PETROL WITH MORE THAN 10 % BENZENE BOILING POINT > 115 °C	3	F1	II	3+N2+CMR+F	C	2	2		35	95		2	yes	T3	II A	yes	PP, EP, EX, TOX, A	1	29
1206	HEPTANES (n-HEPTANE)	3	F1	II	3+N1	C	2	2	3	50	95	0.68	2	yes	T3	II A	yes	PP, EX, A	1	
1208	HEXANES (n- HEXANE)	3	F1	II	3+N2	N	2	3	3	50	97	0.66	2	yes	T3	II A	yes	PP, EX, A	1	
1212	ISOBUTANOL or ISOBUTYL ALCOHOL	3	F1	III	3	N	3	2			97	0.8	3	yes	T2	II A	yes	PP, EX, A	0	
1213	ISOBUTYLACETATE	3	F1	II	3+N3	N	2	2		10	97	0.87	3	yes	T2	II A[7)]	yes	PP, EX, A	1	
1214	ISOBUTYLAMINE	3	FC	II	3+8+N3	C	2	2	3	50	95	0.73	2	yes	T2	II A[7)]	yes	PP, EP, EX, A	1	23
1216	ISOOCTENES	3	F1	II	3+N2	N	2	3		10	97	0.73	3	yes	T3	II B[4)]	yes	PP, EX, A	1	
1218	ISOPRENE, STABILIZED	3	F1	I	3+unst.+N2+CMR	N	1	1			95	0.68	1	yes	T3	II B	yes	PP, EP, EX, TOX, A	1	2; 3; 5;16
1219	ISOPROPANOL or ISOPROPYL ALCOHOL	3	F1	II	3	N	2	2		10	97	0.78	3	yes	T2	II A	yes	PP, EX, A	1	
1220	ISOPROPYLE ACETATE	3	F1	II	3	N	2	2		10	97	0.88	3	yes	T2	II A[7)]	yes	PP, EX, A	1	
1221	ISOPROPYLAMINE	3	FC	I	3+8+N3	C	1	1			95	0.69	1	yes	T2	II A[7)]	yes	PP, EP, EX, A	1	
1223	KEROSENE	3	F1	III	3+N2+F	N	3	3			97	≤ 0,83	3	yes	T3	II A[7)]	yes	PP, EX, A	0	14
1224	KETONES, LIQUID, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3)]	II B[4)]	yes	*	1	14; 27; 29 *see 3.2.3.3

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1224	KETONES, LIQUID, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	0	14; 27 *see 3.2.3.3
1229	MESITYL OXYDE	3	F1	III	3	N	3	2			97	0.85	3	yes	T2	II B[4]	yes	PP, EX, A	0	
1230	METHANOL	3	FT1	II	3+6.1	N	2	2	3	50	95	0.79	2	yes	T2	II A	yes	PP, EP, EX, TOX, A	1	23
1231	METHYL ACETATE	3	F1	II	3	N	2	2		10	97	0.93	3	yes	T1	II A	yes	PP, EX, A	1	
1235	METHYLAMINE, AQUEOUS SOLUTION	3	FC	II	3+8+N3	C	2	2		50	95		2	yes	T2	II A	yes	PP, EP, EX, A	1	
1243	METHYL FORMATE	3	F1	I	3	C	1	1			95	0.97	1	yes	T2	II A	yes	PP, EX, A	1	
1244	METHYLHYDRAZINE	6.1	TFC	I	6.1+3+8	C	2	2		45	95	0.88	1	no	T4	II C[5]	yes	PP, EP, EX, TOX, A	2	
1245	METHYL ISOBUTYL KETONE	3	F1	II	3	N	2	2		10	97	0.8	3	yes	T1	II A	yes	PP, EX, A	1	
1247	METHYL METHACRYLATE MONOMER, STABILIZED	3	F1	II	3+unst.+N3	C	2	2		40	95	0.94	1	yes	T2	II A	yes	PP, EX, A	1	3; 5; 16
1262	OCTANES (n-OCTANE)	3	F1	II	3+N1	C	2	2		45	95	0.7	2	yes	T3	II A	yes	PP, EX, A	1	
1264	PARALDEHYDE	3	F1	III	3	N	3	2			97	0.99	3	yes	T3	II A[7]	yes	PP, EX, A	0	6: +16 °C; 17
1265	PENTANES, liquid (2- METHYLBUTANE)	3	F1	I	3+N2	N	1	1			97	0.62	1	yes	T2	II A	yes	PP, EX, A	1	
1265	PENTANES, liquid (n-PENTANE)	3	F1	II	3+N2	N	2	3		50	97	0.63	3	yes	T3	II A	yes	PP, EX, A	1	
1265	PENTANES, liquid (n-PENTANE)	3	F1	II	3+N2	N	2	3	3	10	97	0.63	3	yes	T3	II A	yes	PP, EX, A	1	
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 > 175 kPa	3	F1	I	3+CMR+F	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	29
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE 110 kPa < vp50 ≤ 175 kPa	3	F1	II	3+CMR+F	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	29

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	I	3+CMR+F	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	29
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	I	3+CMR+F	C	2	2	3	50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	23; 29
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	II	3+CMR+F	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	29
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	II	3+CMR+F	C	2	2	3	50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	23; 29; 38
1267	PETROLEUM CRUDE OILWITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 60 °C < BOILING POINT ≤ 85 °C	3	F1	II	3+CMR+F	C	2	2	3	50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	23; 29
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 85 °C < BOILING POINT ≤ 115 °C	3	F1	II	3+CMR+F	C	2	2		50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	29
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT > 115 °C	3	F1	II	3+CMR+F	C	2	2		35	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	29
1267	PETROLEUM CRUDE OIL	3	F1	I	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	1	14; 29; *see 3.2.3.3
1267	PETROLEUM CRUDE OIL	3	F1	II	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	1	14; 29; *see 3.2.3.3

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1267	PETROLEUM CRUDE OIL	3	F1	III	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	0	14; *see 3.2.3.3
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 > 175 kPa	3	F1	I	3+CMR+F	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE 110 kPa < vp50 ≤ 175 kPa	3	F1	II	3+CMR+F	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60°C	3	F1	I	3+CMR+F	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60°C	3	F1	I	3+CMR+F	C	2	2	3	50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	23; 27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60°C	3	F1	II	3+CMR+F	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60°C	3	F1	II	3+CMR+F	C	2	2	3	50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	23; 27; 29; 38
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60°C	3	F1	II	3+CMR+F	C	2	2	3	50	95	0.765	2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	23; 27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 60°C < BOILING POINT ≤ 85 °C	3	F1	II	3+CMR+F	C	2	2	3	50	95		2	yes	T 3	II A	yes	PP, EP, EX, TOX, A	1	23; 27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S, WITH MORE THAN 10 % BENZENE, vp50 ≤ 110 kPa 85 °C < BOILING POINT ≤ 115 °C	3	F1	II	3+CMR+F	C	2	2		50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S, WITH MORE THAN 10 % BENZENE, vp50 ≤ 110 kPa BOILING POINT > 115 °C	3	F1	II	3+CMR+F	C	2	2		35	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1268	PETROLEUM DISTILLATES, N.O.S or PETROLEUM PRODUCTS, N.O.S. (NAPHTHA) 110 kPa < vp50 ≤ 175 kPa	3	F1	II	3+N2+CMR+F	N	2	3		50	97	0.735	3	yes	T3	II A	yes	PP, EP, EX, TOX, A	1	14; 29
1268	PETROLEUM DISTILLATES; N.O.S or PETROLEUM PRODUCTS, N.O.S. (NAPHTHA) 110 kPa < vp50 ≤ 150 kPa	3	F1	II	3+N2+CMR+F	N	2	3	3	10	97	0.735	3	yes	T3	II A	yes	PP, EP, EX, TOX, A	1	14; 29
1268	PETROLEUM DISTILLATES, N.O.S or PETROLEUM PRODUCTS, N.O.S. (NAPHTHA) vp50 ≤ 110 kPa	3	F1	II	3+N2+CMR+F	N	2	3		10	97	0.735	3	yes	T3	II A	yes	PP, EP, EX, TOX, A	1	14; 29
1268	PETROLEUM DISTILLATES, N.O.S, or PETROLEUM PRODUCTS, N.O.S. (BENZENE HEART CUT) vp50 ≤ 110 kPa	3	F1	II	3+N2+ CMR+F	N	2	3		10	97	0.765	3	yes	T3	II A	yes	PP, EP, EX, TOX, A	1	14; 29
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S.	3	F1	I	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	1	14; 27; 29 *see 3.2.3.3
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	1	14; 27; 29 *see 3.2.3.3
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	0	14; 27 *see 3.2.3.3
1274	n-PROPANOL or PROPYL ALCOHOL, NORMAL	3	F1	II	3	N	2	2		10	97	0.8	3	yes	T2	II B	yes	PP, EX, A	1	
1274	n-PROPANOL or PROPYL ALCOHOL, NORMAL	3	F1	III	3	N	3	2			97	0.8	3	yes	T2	II B	yes	PP, EX, A	0	
1275	PROPIONALDEHYDE	3	F1	II	3+N3	C	2	2	3	50	95	0.81	2	yes	T4	II B	yes	PP, EX, A	1	15; 23

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1276	n-PROPYL ACETATE	3	F1	II	3+N3	N	2	2		10	97	0.88	3	yes	T1	II A	yes	PP, EX, A	1	
1277	PROPYLAMINE (1-aminopropane)	3	FC	II	3+8	C	2	2	3	50	95	0.72	2	yes	T2	II A	yes	PP, EP, EX, A	1	23
1278	1-CHLOROPROPANE (propyl chloride)	3	F1	II	3	C	2	2	3	50	95	0.89	2	yes	T1	II A	yes	PP, EX, A	1	23
1279	1,2-DICHLOROPROPANE or PROPYL DICHLORIDE	3	F1	II	3+N2	C	2	2		45	95	1.16	2	yes	T1	II A [8)]	yes	PP, EX, A	1	
1280	PROPYLENE OXIDE	3	F1	I	3+unst.+N3+ CMR	C	1	1			95	0.83	1	yes	T2	II B	yes	PP, EP, EX, TOX, A	1	2; 12; 31
1282	PYRIDINE	3	F1	II	3+N3	N	2	2		10	97	0.98	3	yes	T1	II A [8)]	yes	PP, EX, A	1	
1289	SODIUM METHYLATE SOLUTION in alcohol	3	FC	III	3+8	N	3	2			97	0.969	3	yes	T2	II A	yes	PP, EP, EX, A	0	34
1294	TOLUENE	3	F1	II	3+N3	N	2	2		10	97	0.87	3	yes	T1	II A	yes	PP, EX, A	1	
1296	TRIETHYLAMINE	3	FC	II	3+8+N3	C	2	2		50	95	0.73	2	yes	T3	II A [8)]	yes	PP, EP, EX, A	1	
1300	TURPENTINE SUBSTITUTE	3	F1	III	3+N2+F	N	3	3			97	0.78	3	yes	T3	II B[4)]	yes	PP, EX, A	0	
1301	VINYL ACETATE, STABILIZED	3	F1	II	3+unst.+N3	N	2	2		10	97	0.93	2	yes	T2	II A	yes	PP, EX, A	1	3; 5; 16
1307	XYLENES (o- XYLENE)	3	F1	III	3+N2	N	3	3			97	0.88	3	yes	T1	II A	yes	PP, EX, A	0	
1307	XYLENES (m- XYLENE)	3	F1	III	3+N2	N	3	3			97	0.86	3	yes	T1	II A	yes	PP, EX, A	0	
1307	XYLENES (p- XYLENE)	3	F1	III	3+N2	N	3	3	2		97	0.86	3	yes	T1	II A	yes	PP, EX, A	0	6: +17 °C; 17
1307	XYLENES (mixture with melting point ≤ 0° C)	3	F1	II	3+N2	N	3	3			97		3	yes	T1	II A	yes	PP, EX, A	1	
1307	XYLENES (mixture with melting point ≤ 0° C)	3	F1	III	3+N2	N	3	3			97		3	yes	T1	II A	yes	PP, EX, A	0	
1307	XYLENES (mixture with 0° C < melting point < 13° C)	3	F1	III	3+N2	N	3	3	2		97		3	yes	T1	II A	yes	PP, EX, A	0	6: +17 °C; 17
1541	ACETONE CYANOHYDRIN, STABILIZED	6.1	T1	I	6.1+unst. +N1	C	2	2		50	95	0.932	1	no			no	PP, EP, TOX, A	2	3

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1545	ALLYL ISOTHIOCYANATE, STABILIZED	6.1	TF1	II	6.1+3+unst.	C	2	2		30	95	1.02	1	no	T4 [3]	II B [4]	yes	PP, EP, EX, TOX, A	2	2; 3
1547	ANILINE	6.1	T1	II	6.1+N1	C	2	2		25	95	1.02	2	no			no	PP, EP, TOX, A	2	
1578	CHLORONITROBENZENES, SOLID, MOLTEN (p-CHLORONITROBENZENE)	6.1	T2	II	6.1+N2+S	C	2	1	2	25	95	1.37	2	no	T1	II B [4]	yes	PP, EP, EX, TOX, A	2	7; 17; 26
1578	CHLORONITROBENZENES, SOLID, MOLTEN (p-CHLORONITROBENZENE)	6.1	T2	II	6.1+N2+S	C	2	1	4	25	95	1.37	2	no			no	PP, EP, TOX, A	2	7; 17; 20: +112ºC; 26
1591	o-DICHLOROBENZENE	6.1	T1	III	6.1+N1+S	C	2	2		25	95	1.32	2	no			no	PP, EP, TOX, A	0	
1593	DICHLOROMETHANE (methyl chloride)	6.1	T1	III	6.1	C	2	2	3	50	95	1.33	2	no			no	PP, EP, TOX, A	0	23
1594	DIETHYL SULPHATE	6.1	T1	II	6.1+N2 +CMR	C	2	2		25	95	1.18	2	no			no	PP, EP, TOX, A	2	
1595	DIMETHYL SULPHATE	6.1	TC1	I	6.1+8+N3+ CMR	C	2	2		25	95	1.33	1	no			no	PP, EP, TOX, A	2	
1604	ETHYLENEDIAMINE	8	CF1	II	8+3+N3	N	3	2			97	0.9	3	yes	T2	II A	yes	PP, EP, EX, A	1	6: +12 ºC; 17; 34
1605	ETHYLENE DIBROMIDE	6.1	T1	I	6.1+N2 +CMR	C	2	2		30	95	2.18	1	no			no	PP, EP, TOX, A	2	6: +14 ºC; 17
1648	ACETONITRILE (methyl cyanide)	3	F1	II	3	N	2	2		10	97	0.78	3	yes	T1	II A	yes	PP, EX, A	1	
1662	NITROBENZENE	6.1	T1	II	6.1+N2	C	2	2	2	25	95	1.21	2	no	T1	II B	yes	PP, EP, EX, TOX, A	2	6: +10ºC; 17
1663	NITROPHENOLS	6.1	T2	III	6.1+N3+S	C	2	2	2	25	95		2	no	T1	II B [4]	yes	PP, EP, EX, TOX, A	0	7; 17
1663	NITROPHENOLS	6.1	T2	III	6.1+N3+S	C	2	2	4	25	95		2	no			no	PP, EP, TOX, A	0	7; 17; 20: +65 ºC

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1664	NITROTOLUENES, LIQUID (o-NITROTOLUENE)	6.1	T1	II	6.1+N2 +CMR+S	C	2	2		25	95	1.16	2	no			no	PP, EP, TOX, A	2	17
1708	TOLUIDINES, LIQUID (o-TOLUIDINE)	6.1	T1	II	6.1+N1+CMR	C	2	2		25	95	1	2	no			no	PP, EP, TOX, A	2	
1708	TOLUIDINES, LIQUID (m-TOLUIDINE)	6.1	T1	II	6.1+N1	C	2	2		25	95	1.03	2	no			no	PP, EP, TOX, A	2	
1710	TRICHLOROETHYLENE	6.1	T1	III	6.1+N2 +CMR	C	2	2		50	95	1.46	2	no			no	PP, EP, TOX, A	0	15
1715	ACETIC ANHYDRIDE	8	CF1	II	8+3	N	2	3		10	97	1.08	3	yes	T2	II A	yes	PP, EP, EX, A	1	34
1717	ACETYL CHLORIDE	3	FC	II	3+8	C	2	2	3	50	95	1.1	2	yes	T2	II A [8)]	yes	PP, EP, EX, A	1	23
1718	BUTYL ACIDE PHOSPHATE	8	C3	III	8+N3	N	4	3			97	0.98	3	yes			no	PP, EP	0	34
1719	CAUSTIC ALKALI LIQUID, N.O.S.	8	C5	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 30; 34 *see 3.2.3.3
1719	CAUSTIC ALKALI LIQUID, N.O.S.	8	C5	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 30; 34 *see 3.2.3.3
1738	BENZYL CHLORIDE	6.1	TC1	II	6.1+8+3+N3+ CMR+S	C	2	2		25	95	1.1	2	no	T1	II A [8)]	yes	PP, EP, EX, TOX, A	2	
1742	BORON TRIFLUORIDE ACETIC ACID COMPLEX, LIQUID	8	C3	II	8	N	4	2			97	1.35	3	yes			no	PP, EP	0	34
1750	CHLORACETIC ACID SOLUTION	6.1	TC1	II	6.1+8+N1	C	2	2	2	25	95	1.58	2	no	T1	II A	yes	PP, EP, EX, TOX, A	2	7; 17
1750	CHLORACETIC ACID SOLUTION	6.1	TC1	II	6.1+8+N1	C	2	1	4	25	95	1.58	2	no			no	PP, EP, TOX, A	2	7; 17; 20: +111°C; 26
1760	CORROSIVE LIQUID, N.O.S.	8	C9	I	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1760	CORROSIVE LIQUID, N.O.S.	8	C9	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
1760	CORROSIVE LIQUID, N.O.S.	8	C9	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
1760	CORROSIVE LIQUID, N.O.S. (SODIUM MERCAPTOBENZOTHIAZOLE, 50 % AQUEOUS SOLUTION)	8	C9	II	8+N1+F	C	2	2		40	95	1.25	2	yes			no	PP, EP	0	
1760	CORROSIVE LIQUID, N.O.S. (FATTY ALCOHOL, C_{12}-C_{14})	8	C9	III	8+F	N	4	3			97	0.89	3	yes			no	PP, EP	0	34
1760	CORROSIVE LIQUID, N.O.S. (ETHYLENEDIAMINE-TETRAACETIC ACID, TETRASODIUM SALT, 40 % AQUEOUS SOLUTION)	8	C9	III	8+N2	N	4	3			97	1.28	3	yes			no	PP, EP	0	34
1764	DICHLOROACETIC ACID	8	C3	II	8+N1	N	2	3		35	97	1.56	2	yes	T1	II A[7)]	yes	PP, EP, EX, A	0	6: 17°C; 17
1778	FLUOROSILICIC ACID	8	C1	II	8+N3	N	2	3		10	97		3	yes			no	PP, EP	0	34
1779	FORMIC ACID with more than 85% acid by mass	8	CF1	II	8+3+N3	N	2	3		10	97	1.22	3	yes	T1	II A	yes	PP, EP, EX, A	1	6: +12 °C; 17; 34
1780	FUMARYL CHLORIDE	8	C3	II	8+N3	N	2	3		10	97	1.41	3	yes			no	PP, EP	0	8; 34
1783	HEXAMETHYLENEDIAMINE SOLUTION	8	C7	II	8+N3	N	3	2	2		97		3	yes	T4 [3)]	II B[4)]	yes	PP, EP, EX, A	0	7; 17; 34
1783	HEXAMETHYLENEDIAMINE SOLUTION	8	C7	III	8+N3	N	3	2	2		97		3	yes	T3	II B[4)]	yes	PP, EP, EX, A	0	7; 17; 34
1789	HYDROCHLORIC ACID	8	C1	II	8	N	2	3		10	97		3	yes			no	PP, EP	0	34
1789	HYDROCHLORIC ACID	8	C1	III	8	N	4	3			97		3	yes			no	PP, EP	0	34

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1805	PHOSPHORIC ACID, SOLUTION, WITH MORE THAN 80% (VOLUME) ACID	8	C1	III	8	N	4	3	2		95	> 1,6	3	yes			no	PP, EP	0	7; 17; 22; 34
1805	PHOSPHORIC ACID, SOLUTION, WITH 80% (VOLUME) ACID, OR LESS	8	C1	III	8	N	4	3			97	1,00 - 1,6	3	yes			no	PP, EP	0	22; 34
1814	POTASSIUM HYDROXIDE SOLUTION	8	C5	II	8+N3	N	4	2			97		3	yes			no	PP, EP	0	30; 34
1814	POTASSIUM HYDROXIDE SOLUTION	8	C5	III	8+N3	N	4	2			97		3	yes			no	PP, EP	0	30; 34
1823	SODIUM HYDROXIDE, SOLID, MOLTEN	8	C6	II	8+N3	N	4	1	4		95	2.13	3	yes			no	PP, EP	0	7; 17; 34
1824	SODIUM HYDROXIDE SOLUTION	8	C5	II	8+N3	N	4	2			97		3	yes			no	PP, EP	0	30; 34
1824	SODIUM HYDROXIDE SOLUTION	8	C5	III	8+N3	N	4	2			97		3	yes			no	PP, EP	0	30; 34
1830	SULPHURIC ACID with more than 51% acid	8	C1	II	8+N3	N	4	3			97	1,4 - 1,84	3	yes			no	PP, EP	0	8; 22; 30; 34
1831	SULPHURIC ACID, FUMING	8	CT1	I	8+6.1	C	2	2		50	95	1.94	1	no			no	PP, EP, TOX, A	2	8
1832	SULPHURIC ACID, SPENT	8	C1	II	8	N	4	3			97		3	yes			no	PP, EP	0	8; 30; 34
1846	CARBON TETRACHLORIDE	6.1	T1	II	6.1+N2+S	C	2	2	3	50	95	1.59	2	no			no	PP, EP, TOX, A	2	23
1848	PROPIONIC ACID with not less than 10% and less than 90% acid by mass	8	C3	III	8+N3	N	3	3			97	0.99	3	yes			no	PP, EP	0	34
1863	FUEL, AVIATION, TURBINE ENGINE WITH MORE THAN 10 % BENZENE vp50 > 175 kPa	3	F1	I	3+CMR+F	C	1	1			95		1	yes	T4 [3)]	II B[4)]	yes	PP, EP, EX, TOX, A	1	29

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1863	FUEL, AVIATION, TURBINE ENGINE WITH MORE THAN 10 % BENZENE 110 kPa < vp50 ≤ 175 kPa	3	F1	II	3+CMR+F	C	1	1			95		1	yes	T4 [3]	II B [4]	yes	PP, EP, EX, TOX, A	1	29
1863	FUEL, AVIATION, TURBINE ENGINE WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	II	3+CMR+F	C	1	1			95		1	yes	T4 [3]	II B [4]	yes	PP, EP, EX, TOX, A	1	29
1863	FUEL, AVIATION, TURBINE ENGINE WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 60 °C < BOILING POINT ≤ 85 °C	3	F1	II	3+CMR+F	C	2	2	3	50	95		2	yes	T4 [3]	II B [4]	yes	PP, EP, EX, TOX, A	1	23; 29
1863	FUEL, AVIATION, TURBINE ENGINE WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 85 °C < BOILING POINT ≤ 115 °C	3	F1	II	3+CMR+F	C	2	2		50	95		2	yes	T4 [3]	II B [4]	yes	PP, EP, EX, TOX, A	1	29
1863	FUEL, AVIATION, TURBINE ENGINE WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT > 115 °C	3	F1	II	3+CMR+F	C	2	2		35	95		2	yes	T4 [3]	II B [4]	yes	PP, EP, EX, TOX, A	1	29
1863	FUEL, AVIATION, TURBINE ENGINE	3	F1	I	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 [3]	II B [4]	yes	*	1	14; 29 *see 3.2.3.3
1863	FUEL, AVIATION, TURBINE ENGINE	3	F1	II	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 [3]	II B [4]	yes	*	1	14; 29 *see 3.2.3.3
1863	FUEL, AVIATION, TURBINE ENGINE	3	F1	III	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 [3]	II B [4]	yes	*	0	14 *see 3.2.3.3
1888	CHLOROFORM	6.1	T1	III	6.1+N2+CMR	C	2	2	3	50	95	1.48	2	no			no	PP, EP, TOX, A	0	23
1897	TETRACHLOROETHYLENE	6.1	T1	III	6.1+N2+S	C	2	2		50	95	1.62	2	no			no	PP, EP, TOX, A	0	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1912	METHYL CHLORIDE AND METHYLENE CHLORIDE MIXTURE	2	2F		2.1	G	1	1			91		1	no	T1	II A[8)]	yes	PP, EX, A	1	31
1915	CYCLOHEXANONE	3	F1	III	3	N	3	2			97	0.95	3	yes	T2	II A	yes	PP, EX, A	0	
1917	ETHYL ACRYLATE, STABILIZED	3	F1	II	3+unst.+N3	C	2	2		40	95	0.92	1	yes	T2	II B	yes	PP, EX, A	1	3; 5
1918	ISOPROPYLBENZENE (cumene)	3	F1	III	3+N2	N	3	3			97	0.86	3	yes	T2	II A[8)]	yes	PP, EX, A	0	
1919	METHYL ACRYLATE, STABILIZED	3	F1	II	3+unst.+N3	C	2	2	3	50	95	0.95	1	yes	T2	II B	yes	PP, EX, A	1	3; 5; 23
1920	NONANES	3	F1	III	3+N2+F	N	3	3			97	0,70 - 0,75	3	yes	T3	II A	yes	PP, EX, A	0	
1922	PYRROLIDINE	3	FC	II	3+8	C	2	2		50	95	0.86	2	yes	T2	II A[7)]	yes	PP, EP, EX, A	1	
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A)	2	2F		2.1	G	1	1			91		1	no	T4 [3)]	II B[4)]	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A0)	2	2F		2.1	G	1	1			91		1	no	T4 [3)]	II B[4)]	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A01)	2	2F		2.1	G	1	1			91		1	no	T4 [3)]	II B[4)]	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A02)	2	2F		2.1	G	1	1			91		1	no	T4 [3)]	II B[4)]	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A1)	2	2F		2.1	G	1	1			91		1	no	T4 [3)]	II B[4)]	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE B)	2	2F		2.1	G	1	1			91		1	no	T4 [3)]	II B[4)]	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE B1)	2	2F		2.1	G	1	1			91		1	no	T4 [3)]	II B[4)]	yes	PP, EX, A	1	31

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE B2)	2	2F		2.1	G	1	1			91		1	no	T4 [3]	II B[4]	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE C)	2	2F		2.1	G	1	1			91		1	no	T4 [3]	II B[4]	yes	PP, EX, A	1	31
1969	ISOBUTANE (contains less than 0.1% 1.3-butadiene)	2	2F		2.1	G	1	1			91		1	no	T2 [1]	II A[7]	yes	PP, EX, A	1	31
1969	ISOBUTANE (with 0.1% or more 1.3-butadiene)	2	2F		2.1+ CMR	G	1	1			91		1	no	T2[1]	II A	yes	PP, EP, EX, TOX, A	1	31
1978	PROPANE	2	2F		2.1	G	1	1			91		1	no	T1	II A	yes	PP, EX, A	1	31
1986	ALCOHOLS, FLAMMABLE, TOXIC, N.O.S.	3	FT1	I	3+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	2	27; 29; *see 3.2.3.3
1986	ALCOHOLS, FLAMMABLE, TOXIC, N.O.S.	3	FT1	II	3+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	2	27; 29; *see 3.2.3.3
1986	ALCOHOLS, FLAMMABLE, TOXIC, N.O.S.	3	FT1	III	3+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	0	27; 29; *see 3.2.3.3
1987	ALCOHOLS, N.O.S. (tert-BUTANOL 90 % (MASS)/METHANOL 10 % (MASS) MIXTURE)	3	F1	II	3	N	2	2		10	97		3	yes	T1	II A	yes	PP, EX, A	1	
1987	ALCOHOLS, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	1	14; 27; 29 *see 3.2.3.3
1987	ALCOHOLS, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	0	14; 27 *see 3.2.3.3
1987	ALCOHOLS, N.O.S. (CYCLOHEXANOL)	3	F1	III	3+N3+F	N	3	3	2		95	0.95	3	yes	T3	II A	yes	PP, EX, A	0	7; 17

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1987	ALCOHOLS, N.O.S. (CYCLOHEXANOL)	3	F1	III	3+N3+F	N	3	3	4		95	0.95	3	yes			no	PP	0	7; 17; 20: +46 ºC
1989	ALDEHYDES, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	1	14; 27; 29 *see 3.2.3.3
1989	ALDEHYDES, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	0	14; 27 *see 3.2.3.3
1991	CHLOROPRENE, STABILIZED	3	FT1	I	3+6.1+unst.+CMR	C	2	2	3	50	95	0.96	1	no	T2	II B[4]	yes	PP, EP, EX, TOX, A	2	3; 5; 23
1992	FLAMMABLE LIQUID, TOXIC, N.O.S	3	FT1	I	3+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	2	27; 29 *see 3.2.3.3
1992	FLAMMABLE LIQUID, TOXIC, N.O.S	3	FT1	II	3+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	2	27; 29 *see 3.2.3.3
1992	FLAMMABLE LIQUID, TOXIC, N.O.S	3	FT1	III	3+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	0	27; 29 *see 3.2.3.3
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 >175 kPa	3	F1	I	3+CMR	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE 110 kPa < vp50 ≤ 175 kPa	3	F1	I	3+CMR	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	II	3+CMR	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 60 °C < BOILING POINT ≤ 85 °C	3	F1	II	3+CMR	C	2	2	3	50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	23; 27; 29
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 85 °C < BOILING POINT ≤ 115 °C	3	F1	II	3+CMR	C	2	2		50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT > 115 °C	3	F1	II	3+CMR	C	2	2		35	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29
1993	FLAMMABLE LIQUID, N.O.S.	3	F1	I	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	1	14; 27; 29 *see 3.2.3.3
1993	FLAMMABLE LIQUID, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	1	14; 27; 29 *see 3.2.3.3
1993	FLAMMABLE LIQUID, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	0	14; 27 *see 3.2.3.3
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE 60 °C < BOILING POINT ≤ 85 °C	3	F1	III	3+CMR	C	2	2	3	50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	0	23; 27; 29
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE 85 °C < BOILING POINT ≤ 115 °C	3	F1	III	3+CMR	C	2	2		50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	0	27; 29
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE BOILING POINT > 115 °C	3	F1	III	3+CMR	C	2	2		35	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	0	27; 29

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1993	FLAMMABLE LIQUID, N.O.S. (CYCLOHEXANONE/ CYCLOHEXANOL MIXTURE)	3	F1	III	3+F	N	3	3			97	0.95	3	yes	T3	II A	yes	PP, EX, A	0	
1999	TARS, LIQUID, including road oils, and cutback bitumens	3	F1	III	3+S	N	4	3	2		97		3	yes	T3	II A[7)]	yes	PP, EX, A	0	
2014	HYDROGEN PEROXIDE, AQUEOUS SOLUTION with not less than 20 % but not more than 60 % hydrogen peroxide (stabilized as necessary)	5.1	OC1	II	5.1+8+unst.	C	2	2		35	95	1.2	2	yes			no	PP, EP	0	3; 33
2021	CHLOROPHENOLS, LIQUID (2-CHLOROPHENOL)	6.1	T1	III	6.1+N2	C	2	2		25	95	1.23	2	no	T1	II A[7)]	yes	PP, EP, EX, TOX, A	0	6: +10 °C; 17
2022	CRESYLIC ACID	6.1	TC1	II	6.1+8+3+S	C	2	2		25	95	1.03	2	no	T1	II A[7)]	yes	PP, EP, EX, TOX, A	2	6: +16 °C; 17
2023	EPICHLORHYDRINE	6.1	TF1	II	6.1+3+N3	C	2	2		35	95	1.18	2	no	T2	II B	yes	PP, EP, EX, TOX, A	2	5
2031	NITRIC ACID, other than red fuming, with more than 70 % acid	8	CO1	I	8+5.1+N3	N	2	3		10	97	1,41-1,48	3	yes			no	PP, EP	0	34
2031	NITRIC ACID, other than red fuming with at least 65 % but not more than 70 % acid	8	CO1	II	8+5.1+N3	N	2	3		10	97	1,39-1,41	3	yes			no	PP, EP	0	34
2031	NITRIC ACID, other than red fuming, with less than 65 % acid	8	CO1	II	8+N3	N	2	3		10	97	1,02-1,39	3	yes			no	PP, EP	0	34
2032	NITRIC ACID, RED FUMING	8	COT	I	8+5.1+6.1+N3	C	2	2		50	95	1,48-1.51	1	no			no	PP, EP, TOX, A	2	
2045	ISOBUTYRALDEHYDE (ISOBUTYL ALDEHYDE)	3	F1	II	3+N3	C	2	2	3	50	95	0.79	2	yes	T4	II A[7)]	yes	PP, EX, A	1	15; 23
2046	CYMENES	3	F1	III	3+N2+F	N	3	3			97	0.88	3	yes	T2	II A[7)]	yes	PP, EX, A	0	
2047	DICHLOROPROPENES (2,3-DICHLOROPROP-1-ENE)	3	F1	II	3+N2+CMR	C	2	2		45	95	1.2	2	yes	T1	II A[7)]	yes	PP, EP, EX, TOX, A	1	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2047	DICHLOROPROPENES (MIXTURES of 2,3-DICHLOROPROP-1-ENE and 1,3-DICHLOROPROPENE)	3	F1	II	3+N1+CMR	C	2	2		45	95	1.23	2	yes	T2[1)]	II A[7)]	yes	PP, EP, EX, TOX, A	1	
2047	DICHLOROPROPENES (MIXTURES of 2,3-DICHLOROPROP-1-ENE and 1,3-DICHLOROPROPENE)	3	F1	III	3+N1+CMR	C	2	2		45	95	1.23	2	yes	T2[1)]	II A[7)]	yes	PP, EP, EX, TOX, A	0	
2047	DICHLOROPROPENES (1,3-DICHLOROPROPENE)	3	F1	III	3+N1+CMR	C	2	2		40	95	1.23	2	yes	T2[1)]	II A[7)]	yes	PP, EP, EX, TOX, A	0	
2048	DICYCLOPENTADIENE	3	F1	III	3+N2+F	N	3	3	2		95	0.94	3	yes	T1	II B[4)]	yes	PP, EX, A	0	7; 17
2050	DIISOBUTYLENE, ISOMERIC COMPOUNDS	3	F1	II	3+N2+F	N	2	3		10	97	0.72	3	yes	T3[2)]	II A[7)]	yes	PP, EX, A	1	
2051	2-DIMETHYLAMINO ETHANOL	8	CF1	II	8+3+N3	N	3	2			97	0.89	3	yes	T3	II A[7)]	yes	PP, EP, EX, A	1	34
2053	METHYL ISOBUTYL CARBINOL	3	F1	III	3	N	3	2			97	0.81	3	yes	T2	II B[4)]	yes	PP, EX, A	0	
2054	MORPHOLINE	8	CF1	I	8+3+N3	N	3	2			97	1	3	yes	T3	II A	yes	PP, EP, EX, A	1	34
2055	STYRENE MONOMER, STABILIZED	3	F1	III	3+unst.+N3	N	3	2			97	0.91	3	yes	T1	II A	yes	PP, EX, A	0	3; 5; 16
2056	TETRAHYDROFURAN	3	F1	II	3	N	2	2		10	97	0.89	3	yes	T3	II B	yes	PP, EX, A	1	
2057	TRIPROPYLENE	3	F1	II	3+N3	N	2	3		10	97	0.744	3	yes	T3	II B[4)]	yes	PP, EX, A	1	
2057	TRIPROPYLENE	3	F1	III	3+N3	N	3	3			97	0.73	3	yes	T3	II B[4)]	yes	PP, EX, A	0	
2078	TOLUENE DIISOCYANATE (and isomeric mixtures) (2,4- TOLUENE DIISOCYANATE)	6.1	T1	II	6.1+N2+S	C	2	2	2	25	95	1.22	2	no	T1	II B[4)]	yes	PP, EP, EX, TOX, A	2	2; 7; 8; 17
2078	TOLUENE DIISOCYANATE (and isomeric mixtures) (2,4- TOLUENE DIISOCYANATE)	6.1	T1	II	6.1+N2+S	C	2	1	4	25	95	1.22	2	no			no	PP, EP, TOX, A	2	2; 7; 8; 17; 20: +112°C; 26
2079	DIETHYLENETRIAMINE	8	C7	II	8+N3	N	4	2			97	0.96	3	yes			no	PP, EP	0	34

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2187	CARBON DIOXIDE, REFRIGERATED LIQUID	2	3A		2.2	G	1	1	1		95		1	yes			no	PP	0	31,39
2205	ADIPONITRILE	6.1	T1	III	6.1	C	2	2		25	95	0.96	2	no	T4	II B[4)]	yes	PP, EP, EX, TOX, A	0	6: 6°C; 17
2206	ISOCYANATES, TOXIC, N.O.S. (4‑ CHLOROPHENYL ISOCYANATE)	6.1	T1	II	6.1+S	C	2	2	4	25	95	1.25	2	no			no	PP, EP, TOX, A	2	7; 17
2209	FORMALDEHYDE SOLUTION with not less than 25 % formaldehyde	8	C9	III	8+N3	N	4	2			97	1.09	3	yes			no	PP, EP	0	15; 34
2215	MALEIC ANHYDRIDE, MOLTEN	8	C3	III	8+N3	N	3	3	2		95	0.93	3	yes	T2	II B[4)]	yes	PP, EP, EX, A	0	7; 17; 25; 34
2215	MALEIC ANHYDRIDE, MOLTEN	8	C3	III	8+N3	N	3	1	4		95	0.93	3	yes			no	PP, EP	0	7; 17; 20: +88 °C; 25; 34
2218	ACRYLIC ACID, STABILIZED	8	CF1	II	8+3+unst.+N1	C	2	2	4	30	95	1.05	1	yes	T2	II B	yes	PP, EP, EX, A	1	3; 4; 5; 17
2227	n-BUTYL METHACRYLATE, STABILIZED	3	F1	III	3+unst.+N3+F	C	2	2		25	95	0.9	1	yes	T3	II A	yes	PP, EX, A	0	3; 5
2238	CHLOROTOLUENES (m-CHLOROTOLUENE)	3	F1	III	3+N2+S	C	2	2		30	95	1.08	2	yes	T1	II A[7)]	yes	PP, EX, A	0	
2238	CHLOROTOLUENES (o-CHLOROTOLUENE)	3	F1	III	3+N2+S	C	2	2		30	95	1.08	2	yes	T1	II A[7)]	yes	PP, EX, A	0	
2238	CHLOROTOLUENES (p-CHLOROTOLUENE)	3	F1	III	3+N2+S	C	2	2		30	95	1.07	2	yes	T1	II A[7)]	yes	PP, EX, A	0	6: +11 °C; 17
2241	CYCLOHEPTANE	3	F1	II	3+N2	N	2	3		10	97	0.81	3	yes	T4 [3)]	II A[7)]	yes	PP, EX, A	1	
2247	n-DECANE	3	F1	III	3+F	C	2	2		30	95	0.73	2	yes	T4	II A	yes	PP, EX, A	0	
2248	DI-n-BUTYLAMINE	8	CF1	II	8+3+N3	N	3	2				0.76	3	yes	T3	II A[7)]	yes	PP, EP, EX, A	1	34
2259	TRIETHYLENETETRAMINE	8	C7	II	8+N2	N	3	3			97	0.98	3	yes	T2	II B[4)]	yes	PP, EP, EX, A	0	6: 16°C; 17; 34

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2263	DIMETHYLCYCLOHEXANES (cis-1,4- DIMETHYL-CYCLOHEXANE)	3	F1	II	3	C	2	2		35	95	0.78	2	yes	T4 [3]	II A [7]	yes	PP, EX, A	1	
2263	DIMETHYLCYCLOHEXANES (trans-1,4- DIMETHYL-CYCLOHEXANE)	3	F1	II	3	C	2	2		35	95	0.76	2	yes	T4 [3]	II A [7]	yes	PP, EX, A	1	
2264	N,N-DIMETHYL-CYCLOHEXYLAMINE	8	CF1	II	8+3+N2	N	3	3			97	0.85	3	yes	T3	II B [4]	yes	PP, EP, EX, A	1	34
2265	N,N-DIMETHYLFORMAMIDE	3	F1	III	3+CMR	N	2	3	3	10	97	0.95	3	yes	T2	II A	yes	PP, EP, EX, TOX, A	0	
2266	DIMETHYL-N-PROPYLAMINE	3	FC	II	3+8	C	2	2	3	50	95	0.72	2	yes	T4	II A [7]	yes	PP, EP, EX, A	1	23
2276	2-ETHYLHEXYLAMINE	3	FC	III	3+8+N3	N	3	2			97	0.79	3	yes	T3	II A [7]	yes	PP, EP, EX, A	0	34
2278	n-HEPTENE	3	F1	II	3+N3	N	2	2		10	97	0.7	3	yes	T3	II B [4]	yes	PP, EX, A	1	
2280	HEXAMETHYLENEDIAMINE, SOLID, MOLTEN	8	C8	III	8+N3	N	3	3	2		95	0.83	3	yes	T3	II B [4]	yes	PP, EP, EX, A	0	7; 17; 34
2280	HEXAMETHYLENEDIAMINE, SOLID, MOLTEN	8	C8	III	8+N3	N	3	3	4		95	0.83	3	yes			no	PP, EP	0	7; 17; 20: +66 ºC; 34
2282	HEXANOLS	3	F1	III	3+N3	N	3	2			97	0.83	3	yes	T3	II A	yes	PP, EX, A	0	
2286	PENTAMETHYLHEPTANE	3	F1	III	3+F	N	3	3			97	0.75	3	yes	T2	II A [7]	yes	PP, EX, A	0	
2288	ISOHEXENES	3	F1	II	3+unst.+N3	C	2	2	3	50	95	0.735	2	yes	T2	II B [4]	yes	PP, EX, A	1	3; 23
2289	ISOPHORONEDIAMINE	8	C7	III	8+N2	N	3	3			97	0.92	3	yes	T2	II A [7]	yes	PP, EP, EX, A	0	6: 14°C; 17; 34
2302	5-METHYLHEXAN-2-ONE	3	F1	III	3	N	3	2			97	0.81	3	yes	T1	II A	yes	PP, EX, A	0	
2303	ISOPROPENYLBENZENE	3	F1	III	3+N2+F	N	3	3			97	0.91	3	yes	T2	II B	yes	PP, EX, A	0	
2309	OCTADIENE (1,7-OCTADIENE)	3	F1	II	3+N2	N	2	3		10	97	0.75	3	yes	T3	II B [4]	yes	PP, EX, A	1	
2311	PHENETIDINES	6.1	T1	III	6.1	C	2	2		25	95	1.07	2	no			no	PP, EP, TOX, A	0	6: +7 ºC; 17

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2312	PHENOL, MOLTEN	6.1	T1	II	6.1+N3+S	C	2	2	4	25	95	1.07	2	no	T1	II A[8)]	yes	PP, EP, EX, TOX, A	2	7; 17
2312	PHENOL, MOLTEN	6.1	T1	II	6.1+N3+S	C	2	2	4	25	95	1.07	2	no			no	PP, EP, TOX, A	2	7; 17; 20: +67 ºC
2320	TETRAETHYLENEPENTAMINE	8	C7	III	8+N2	N	4	3			97	1	3	yes			no	PP, EP	0	34
2321	TRICHLOROBENZENES, LIQUID (1,2,4-TRICHLOROBENZENE)	6.1	T1	III	6.1+N1+S	C	2	2	2	25	95	1.45	2	no	T1	II A[7)]	yes	PP, EP, EX, TOX, A	0	7; 17
2321	TRICHLOROBENZENES, LIQUID (1,2,4-TRICHLOROBENZENE)	6.1	T1	III	6.1+N1+S	C	2	1	4	25	95	1.45	2	no			no	PP, EP, TOX, A	0	7; 17; 20: +95 ºC; 26
2323	TRIETHYL PHOSPHITE	3	F1	III	3	N	3	2			97	0.8	3	yes	T3	II B[4)]	yes	PP, EX, A	0	
2324	TRIISOBUTYLENE	3	F1	III	3+N1+F	C	2	2		35	95	0.76	2	yes	T2	II B[4)]	yes	PP, EX, A	0	
2325	1,3,5-TRIMETHYLBENZENE	3	F1	III	3+N1	C	2	2		35	95	0.87	2	yes	T1	II A[7)]	yes	PP, EX, A	0	
2333	ALLYL ACETATE	3	FT1	II	3+6.1	C	2	2		40	95	0.93	2	no	T2	II A[7)]	yes	PP, EP, EX, TOX, A	2	
2348	BUTYL ACRYLATES, STABILIZED (n- BUTYL ACRYLATE, STABILIZED)	3	F1	III	3+unst.+N3	C	2	2		30	95	0.9	1	yes	T3	II B	yes	PP, EX, A	0	3; 5
2350	BUTYL METHYL ETHER	3	F1	II	3	N	2	2		10	97	0.74	3	yes	T4 [3)]	II B[4)]	yes	PP, EX, A	1	
2356	2-CHLOROPROPANE	3	F1	I	3	C	2	2	3	50	95	0.86	2	yes	T1	II A	yes	PP, EX, A	1	23
2357	CYCLOHEXYLAMINE	8	CF1	II	8+3+N3	N	3	2			97	0.86	3	yes	T3	II B[4)]	yes	PP, EP, EX, A	1	34
2362	1,1-DICHLOROETHANE	3	F1	II	3+N2	C	2	2	3	50	95	1.17	2	yes	T2	II A	yes	PP, EX, A	1	23
2370	1-HEXENE	3	F1	II	3+N3	N	2	2		10	97	0.67	3	yes	T3	II B[4)]	yes	PP, EX, A	1	
2381	DIMÉTHYL DISULPHIDE	3	FT1	II	3+6.1	C	2	2		40	95	1.063	2	yes	T2	IIB	yes	PP, EP, EX, TOX, A	2	
2382	DIMETHYLHYDRAZINE, SYMMETRICAL	6.1	TF1	I	6.1+3+CMR	C	2	2		50	95	0.83	1	no	T4 [3)]	II C[5)]	yes	PP, EP, EX, TOX, A	2	
2383	DIPROPYLAMINE	3	FC	II	3+8+N3	C	2	2		35	95	0.74	2	yes	T3	II A	yes	PP, EP, EX, A	1	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2397	3-METHYLBUTAN-2-ONE	3	F1	II	3	N	2	2		10	97	0.81	3	yes	T1	II A[7)]	yes	PP, EX, A	1	
2398	METHYL tert-BUTYL ETHER	3	F1	II	3	N	2	2		10	97	0.74	3	yes	T1	II A	yes	PP, EX, A	1	
2404	PROPIONITRILE	3	FT1	II	3+6.1	C	2	2		45	95	0.78	2	no	T1[9)]	II A[7)]	yes	PP, EP, EX, TOX, A	2	
2414	THIOPHENE	3	F1	II	3+N3+S	N	2	3		10	97	1.06	3	yes	T2	II A	yes	PP, EX, A	1	
2430	ALKYLPHENOLS, SOLID, N.O.S. (NONYLPHENOL, ISOMERIC MIXTURE, MOLTEN)	8	C4	II	8+N1+F	N	2	3	2	25	97	0.95	2	yes	T2	II A[7)]	yes	PP, EP, EX, A	0	7; 17
2430	ALKYLPHENOLS, SOLID, N.O.S. (NONYLPHENOL, ISOMERIC MIXTURE, MOLTEN)	8	C4	II	8+N1+F	N	2	3	4	25	97	0.95	2	yes			no	PP, EP	0	7; 17; 20: +125 °C
2432	N,N-DIETHYLANILINE	6.1	T1	III	6.1+N2	C	2	2		25	95	0.93	2	no			no	PP, EP, TOX, A	0	
2448	SULPHUR, MOLTEN	4.1	F3	III	4.1+S	N	4	1	4		95	2.07	3	yes			no	PP, EP, TOX*, A	0	* Toximeter for H2S; 7; 20: +150°C; 28; 32
2458	HEXADIENES	3	F1	II	3+N3	N	2	2		10	97	0.72	3	yes	T4 [3)]	II B[4)]	yes	PP, EX, A	1	
2477	METHYL ISOTHIOCYANATE	6.1	TF1	I	6.1+3+N1	C	2	2	2	35	95	1,07[11)]	1	no	T4 [3)]	II B[4)]	yes	PP, EP, EX, TOX, A	2	7; 17
2485	n-BUTYL ISOCYANATE	6.1	TF1	I	6.1+3	C	2	2		35	95	0.89	1	no	T2	II B[4)]	yes	PP, EP, EX, TOX, A	2	
2486	ISOBUTYL ISOCYANATE	6.1	TF1	I	6.1+3	C	2	2		40	95		1	no	T4 [3)]	II B[4)]	yes	PP, EP, EX, TOX, A	2	
2487	PHENYL ISOCYANATE	6.1	TF1	I	6.1+3	C	2	2		25	95	1.1	1	no	T1	II A	yes	PP, EP, EX, TOX, A	2	
2490	DICHLOROISOPROPYL ETHER	6.1	T1	II	6.1	C	2	2		25	95	1.11	2	no			no	PP, EP, TOX, A	2	
2491	ETHANOLAMINE or ETHANOLAMINE SOLUTION	8	C7	III	8+N3	N	3	2			97	1.02	3	yes	T2	II B[4)]	yes	PP, EP, EX, A	0	6: 14°C; 17; 34

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2493	HEXAMETHYLENEIMINE	3	FC	II	3+8+N3	N	3	2			97	0.88	3	yes	T3 [2)]	II A	yes	PP, EP, EX, A	1	34
2496	PROPIONIC ANHYDRIDE	8	C3	III	8+N3	N	4	3			97	1.02	3	yes			no	PP, EP	0	34
2518	1,5,9-CYCLODODECATRIENE	6.1	T1	III	6.1+F	C	2	2		25	95	0.9	2	no			no	PP, EP, TOX, A	0	
2527	ISOBUTYL ACRYLATE, STABILIZED	3	F1	III	3+unst.	C	2	2		30	95	0.89	1	yes	T2	II B[9)]	yes	PP, EX, A	0	3; 5
2528	ISOBUTYL ISOBUTYRATE	3	F1	III	3+N3	N	3	2			97	0.86	3	yes	T2	II A	yes	PP, EX, A	0	
2531	METHACRYLIC ACID, STABILIZED	8	C3	II	8+unst.+N3	C	2	2	4	25	95	1.02	1	yes	T2	II B[4)]	yes	PP, EP, EX, A	0	3; 4; 5; 7; 17
2564	TRICHLOROACETIC ACID SOLUTION	8	C3	II	8+N1	C	2	2	2	25	95	1,62[11)]	2	yes	T1	II A[7)]	yes	PP, EP, EX, A	0	7; 17; 22
2564	TRICHLOROACETIC ACID SOLUTION	8	C3	III	8+N1	C	2	2		25	95	1,62[11)]	2	yes			no	PP, EP	0	22
2574	TRICRESYL PHOSPHATE with more than 3% ortho isomer	6.1	T1	II	6.1+N1+S	C	2	2		25	95	1.18	2	no			no	PP, EP, TOX, A	2	
2579	PIPERAZINE, MOLTEN	8	C8	III	8+N2	N	3	3	2		95	0.9	3	yes			no	PP, EP	0	7; 17; 34
2582	FERRIC CHLORIDE SOLUTION	8	C1	III	8	N	4	3			97	1.45	3	yes			no	PP, EP	0	22; 30; 34
2586	ALKYLSULPHONIC ACIDS, LIQUID or ARYLSULPHONIC ACIDS, LIQUID with not more than 5% free sulphuric acid	8	C3	III	8	N	4	3			97		3	yes			no	PP, EP	0	34
2608	NITROPROPANES	3	F1	III	3	N	3	2			97	1	3	yes	T2	II B[7)]	yes	PP, EX, A	0	
2615	ETHYL PROPYL ETHER	3	F1	II	3	N	2	2		10	97	0.73	3	yes	T4 [3)]	II A[7)]	yes	PP, EX, A	1	
2618	VINYLTOLUENES, STABILIZED	3	F1	III	3+unst.+N2+F	C	2	2		25	95	0.92	1	yes	T1	II B[4)]	yes	PP, EX, A	0	3; 5
2651	4,4'-DIAMINO-DIPHENYLMETHANE	6.1	T2	III	6.1+N2+ CMR+S	C	2	2	2	25	95	1	2	no			no	PP, EP, TOX, A	0	7; 17

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2672	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 (more than 25% but not more than 35% ammonia)	8	C5	III	8+N1	C	2	2	1	50	95	0,88 [10] – 0,96 [10]	2	yes			no	PP, EP	0	
2672	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 (not more than 25% ammonia)	8	C5	III	8+N3	N	2	2		10	95	0,88 [10] – 0,96 [10]	2	yes			no	PP, EP	0	34
2683	AMMONIUM SULPHIDE SOLUTION	8	CFT	II	8+3+6.1	C	2	2		50	95		2	no	T4 [3]	II B [4]	yes	PP, EP, EX, TOX, A	2	15; 16
2693	BISULPHITES, AQUEOUS SOLUTION, N.O.S.	8	C1	III	8	N	4	3			97		3	yes			no	PP, EP	0	27; 34
2709	BUTYLBENZENES	3	F1	III	3+N1+F	N	2	3		35	97	0.87	2	yes	T2	II A [7]	yes	PP, EX, A	0	
2733	AMINES, FLAMMABLE, CORROSIVE, N.O.S. or POLYAMINES, FLAMMABLE, CORROSIVE, N.O.S. (2-AMINOBUTANE)	3	FC	II	3+8+N1	C	2	2	3	50	95	0.72	2	yes	T4 [3]	II A [7]	yes	PP, EP, EX, A	1	23
2735	AMINES, LIQUID, CORROSIVE, N.O.S. or POLYAMINES, LIQUID, CORROSIVE, N.O.S.	8	C7	I	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
2735	AMINES, LIQUID, CORROSIVE, N.O.S. or POLYAMINES, LIQUID, CORROSIVE, N.O.S.	8	C7	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
2735	AMINES, LIQUID, CORROSIVE, N.O.S. or POLYAMINES, LIQUID, CORROSIVE, N.O.S.	8	C7	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
2754	N-ETHYLTOLUIDINES (N-ETHYL-o-TOLUIDINE)	6.1	T1	II	6.1+F	C	2	2		25	95	0.94	2	no			no	PP, EP, TOX, A	2	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2754	N-ETHYLTOLUIDINES (N-ETHYL-m-TOLUIDINE)	6.1	T1	II	6.1+F	C	2	2		25	95	0.94	2	no			no	PP, EP, TOX, A	2	
2754	N-ETHYLTOLUIDINES (N-ETHYL-o-TOLUIDINE and N-ETHYL-m-TOLUIDINE MIXTURES)	6.1	T1	II	6.1+F	C	2	2		25	95	0.94	2	no			no	PP, EP, TOX, A	2	
2754	N-ETHYLTOLUIDINES (N-ETHYL-p-TOLUIDINE)	6.1	T1	II	6.1+F	C	2	2	2	25	95	0.94	2	no			no	PP, EP, TOX, A	2	7; 17
2785	4-THIAPENTANAL (3-MÉTHYLMERCAPTO-PROPIONALDÉHYDE)	6.1	T1	III	6.1	C	2	2		25	95	1.04	2	no			no	PP, EP, TOX, A	0	
2789	ACETIC ACID, GLACIAL or ACETIC ACID SOLUTION, more than 80 % acid, by mass	8	CF1	II	8+3	N	2	3	2	10	95	1,05 with 100% acid	3	yes	T1	II A[7)]	yes	PP, EP, EX, A	1	7; 17; 34
2790	ACETIC ACID SOLUTION, not less than 50 % but not more than 80 % acid, by mass	8	C3	II	8	N	2	3		10	97		3	yes			no	PP, EP	0	34
2790	ACETIC ACID SOLUTION, more than 10 % and less than 50 % acid, by mass	8	C3	III	8	N	2	3		10	97		3	yes			no	PP, EP	0	34
2796	BATTERY FLUID, ACID	8	C1	II	8+N3	N	4	3			97	1,00 - 1,84	3	yes			no	PP, EP	0	8; 22; 30; 34
2796	SULPHURIC ACID with not more than 51 % acid	8	C1	II	8+N3	N	4	3			97	1,00 - 1,41	3	yes			no	PP, EP	0	8; 22; 30; 34
2797	BATTERY FLUID, ALKALI	8	C5	II	8+N3	N	4	3			97	1,00 - 2,13	3	yes			no	PP, EP	0	22; 30; 34
2810	TOXIC LIQUID, ORGANIC, N.O.S.	6.1	T1	I	6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no			no	PP, EP, TOX, A	2	27; 29 *see 3.2.3.3

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2810	TOXIC LIQUID, ORGANIC, N.O.S.	6.1	T1	II	6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	2	27; 29 *see 3.2.3.3
2810	TOXIC LIQUID, ORGANIC, N.O.S.	6.1	T1	III	6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	0	27; 29 *see 3.2.3.3
2811	TOXIC SOLID, ORGANIC, N.O.S. (1,2,3-TRICHLOROBENZENE, MOLTEN)	6.1	T2	III	6.1+S	C	2	2	2	25	95		2	no	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	0	7; 17; 22
2811	TOXIC SOLID, ORGANIC, N.O.S. (1,2,3-TRICHLOROBENZENE, MOLTEN)	6.1	T2	III	6.1+S	C	2	1	4	25	95		2	no			no	PP, EP, TOX, A	0	7; 17; 20: +92 °C; 22; 26
2811	TOXIC SOLID, ORGANIC, N.O.S. (1,3,5-TRICHLOROBENZENE, MOLTEN)	6.1	T2	III	6.1+S	C	2	2	2	25	95		2	no	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	0	7; 17; 22
2811	TOXIC SOLID, ORGANIC, N.O.S. (1,3,5-TRICHLOROBENZENE, MOLTEN)	6.1	T2	III	6.1+S	C	2	1	4	25	95		2	no			no	PP, EP, TOX, A	0	7; 17; 20: +92 °C; 22; 26
2815	N-AMINOETHYL PIPERAZINE	8	C7	III	8+N2	N	4	3			97	0.98	3	yes			no	PP, EP	0	34
2820	BUTYRIC ACID	8	C3	III	8+N3	N	2	3		10	97	0.96	3	yes			no	PP, EP	0	34
2829	CAPROIC ACID	8	C3	III	8+N3	N	4	3			97	0.92	3	yes			no	PP, EP	0	34
2831	1,1,1-TRICHLOROETHANE	6.1	T1	III	6.1+N2	C	2	2	3	50	95	1.34	2	no			no	PP, EP, TOX, A	0	23
2850	PROPYLENE TETRAMER	3	F1	III	3+N1+F	N	2	3		35	97	0.76	2	yes	T3	II B[4]	yes	PP, EX, A	0	
2874	FURFURYL ALCOHOL	6.1	T1	III	6.1+N3	C	2	2		25	95	1.13	2	no			no	PP, EP, TOX, A	0	
2904	PHENOLATES, LIQUID	8	C9	III	8	N	4	2			97	1,13-1,18	3	yes			no	PP, EP	0	34

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2920	CORROSIVE LIQUID, FLAMMABLE, N.O.S. (2- PROPANOL AND DODECYLDIMETHYL-AMMONIUM CHLORIDE, AQUEOUS SOLUTION)	8	CF1	II	8+3+F	N	3	3			97	0.95	3	yes	T3	II A	yes	PP, EP, EX, A	1	34;
2920	CORROSIVE LIQUID, FLAMMABLE, N.O.S. (AQUEOUS SOLUTION OF HEXADECYLTRIMETHYL-AMMONIUM CHLORIDE (50 %) AND ETHANOL (35 %))	8	CF1	II	8+3+F	N	2	3		10	95	0.9	3	yes	T2	II B	yes	PP, EP, EX, A	1	6: +7 ºC; 17; 34;
2922	CORROSIVE LIQUID, TOXIC, N.O.S.	8	CT1	I	8+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no			no	PP, EP, TOX, A	2	27; 29 *see 3.2.3.3
2922	CORROSIVE LIQUID, TOXIC, N.O.S.	8	CT1	II	8+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	2	27; 29 *see 3.2.3.3
2922	CORROSIVE LIQUID, TOXIC, N.O.S.	8	CT1	III	8+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	0	27; 29 *see 3.2.3.3
2924	FLAMMABLE LIQUID, CORROSIVE, N.O.S.	3	FC	I	3+8+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	yes	T4 [3)]	II B[4)]	yes	*	1	27; 29 *see 3.2.3.3
2924	FLAMMABLE LIQUID, CORROSIVE, N.O.S.	3	FC	II	3+8+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	yes	T4 [3)]	II B[4)]	yes	*	1	27; 29 *see 3.2.3.3
2924	FLAMMABLE LIQUID, CORROSIVE, N.O.S.	3	FC	III	3+8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3)]	II B[4)]	yes	*	0	27; 34 *see 3.2.3.3

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2924	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (AQUEOUS SOLUTION OF DIALKYL-(C_8-C_{18})-DIMETHYLAMMONIUM CHLORIDE AND 2-PROPANOL)	3	FC	II	3+8+F	C	2	2		50	95	0.88	2	yes	T2	II A	yes	PP, EP, EX, A	1	
2927	TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S.	6.1	TC1	I	6.1+8+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no			no	PP, EP, TOX, A	2	27; 29 *see 3.2.3.3
2927	TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S.	6.1	TC1	II	6.1+8+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	2	27; 29 *see 3.2.3.3
2929	TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S.	6.1	TF1	I	6.1+3+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	2	27; 29 *see 3.2.3.3
2929	TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S.	6.1	TF1	II	6.1+3+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	2	27; 29 *see 3.2.3.3
2935	ETHYL-2-CHLORO-PROPIONATE	3	F1	III	3	C	2	2		30	95	1.08	2	yes	T4 [3]	II A	yes	PP, EX, A	0	
2947	ISOPROPYL CHLOROACETATE	3	F1	III	3	C	2	2		30	95	1.09	2	yes	T4 [3]	II A	yes	PP, EX, A	0	
2966	THIOGLYCOL	6.1	T1	II	6.1	C	2	2		25	95	1.12	2	no			no	PP, EP, TOX, A	2	
2983	ETHYLENE OXIDE AND PROPYLENE OXIDE MIXTURE, with not more than 30% ethylene oxide	3	FT1	I	3+6.1+unst.	C	1	1	3		95	0.85	1	no	T2	II B	yes	PP, EP, EX, TOX, A	2	2; 3; 12; 31
2984	HYDROGEN PEROXIDE AQUEOUS SOLUTION with not less than 8%, but less than 20% hydrogen peroxide (stabilized as necessary)	5.1	O1	III	5.1+unst.	C	2	2		35	95	1.06	2	yes			no	PP	0	3; 33

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3077	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., MOLTEN, (ALKYLAMINE (C_{12} to C_{18}))	9	M7	III	9+F	N	4	3	2		95	0.79	3	yes			no	PP	0	7; 17
3079	METHACRYLONITRILE, STABILIZED	6.1	TF1	I	6.1+3+unst.+ N3	C	2	2		45	95	0.8	1	no	T1	II B[4)]	yes	PP, EP, EX, TOX, A	2	3; 5
3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	9	M6	III	9+(N1, N2, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	22; 27 *see 3.2.3.3
3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BILGE WATER)	9	M6	III	9+N2+F	N	4	3			97		3	yes			no	PP	0	
3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE; LIQUID, N.O.S. (HEAVY HEATING OIL)	9	M6	III	9+CMR (N1, N2, F or S)	N	2	3		10	97		3	yes			no	PP	0	40
3092	1-METHOXY-2-PROPANOL	3	F1	III	3	N	3	2			97	0.92	3	yes	T3	II B	yes	PP, EX, A	0	
3145	ALKYLPHENOLS, LIQUID, N.O.S. (including C_2-C_{12} homologues)	8	C3	II	8+N3	N	4	3			97	0.95	3	yes			no	PP, EP	0	34
3145	ALKYLPHENOLS, LIQUID, N.O.S. (including C_2-C_{12} homologues)	8	C3	III	8+N3	N	4	3			97	0.95	3	yes			no	PP, EP	0	34
3175	SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S., MOLTEN, having a flash-point up to 60 °C (2- PROPANOL AND DIALKYL-(C_{12} to C_{18})-DIMETHYLAMMONIUM CHLORIDE)	4.1	F1	II	4.1	N	3	3	4		95	0.86	3	yes	T2	II A[7)]	yes	PP, EX, A	1	7; 17
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point	3	F2	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	95		*	yes	T4 [3)]	II B[4)]	yes	*	0	7; 27 *see 3.2.3.3

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point (CARBON BLACK REEDSTOCK) (PYROLYSIS OIL)	3	F2	III	3+F	N	3	3	2		95		3	yes	T 1	II B	yes	PP, EX, A	0	7
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point (PYROLYSIS OIL A)	3	F2	III	3+F	N	3	3	2		95		3	yes	T 1	II B	yes	PP, EX, A	0	7
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point (RESIDUAL OIL)	3	F2	III	3+F	N	3	3	2		95		3	yes	T 1	II B	yes	PP, EX, A	0	7
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point (MIXTURE OF CRUDE NAPHTHALINE)	3	F2	III	3+F	N	3	3	2		95		3	yes	T 1	II B	yes	PP, EX, A	0	7
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point (CREOSOTE OIL)	3	F2	III	3+N1+F	C	2	2	2	10	95		2	yes	T 2	II B	yes	PP, EX, A	0	7
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point (Low QI Pitch)	3	F2	III	3+N2+CMR+S	N	3	1	4		95	1,1-1,3	3	yes	T2	II B	yes	PP, EP, EX, TOX, A	0	7

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3257	ELEVATED TEMPERATURE LIQUID, N.O.S. at or above 100 °C and below its flash-point (including molten metals, molten salts, etc.)	9	M9	III	9+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	95		*	yes			no	*	0	7; 20:+115 °C; 22; 24; 25; 27 *see 3.2.3.3
3257	ELEVATED TEMPERATURE LIQUID, N.O.S. at or above 100 °C and below its flash-point (including molten metals, molten salts, etc.)	9	M9	III	9+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	95		*	yes			no	*	0	7; 20:+225 °C; 22; 24; 27 *see 3.2.3.3
3259	AMINES, SOLID, CORROSIVE, N.O.S. (MONOALKYL-(C_{12} to C_{18})-AMINE ACETATE, MOLTEN)	8	C8	III	8	N	4	3	2		95	0.87	3	yes			no	PP, EP	0	7; 17; 34
3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	8	C1	I	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	8	C1	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	8	C1	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (AQUEOUS SOLUTION OF PHOSPHORIC ACID AND CITRIC ACID)	8	C1	I	8	N	2	3		10	97		3	yes			no	PP, EP	0	34
3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (AQUEOUS SOLUTION OF PHOSPHORIC ACID AND CITRIC ACID)	8	C1	II	8	N	4	3			97		3	yes			no	PP, EP	0	34
3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (AQUEOUS SOLUTION OF PHOSPHORIC ACID AND CITRIC ACID)	8	C1	III	8	N	4	3			97		3	yes			no	PP, EP	0	34

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	8	C3	I	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	8	C3	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	8	C3	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
3266	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	8	C5	I	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
3266	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	8	C5	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
3266	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	8	C5	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
3267	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.	8	C7	I	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
3267	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.	8	C7	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
3267	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.	8	C7	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27; 34 *see 3.2.3.3
3271	ETHERS, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	1	14, 27; 29 *see 3.2.3.3
3271	ETHERS, N.O.S. (tert- AMYL-METHYL ETHER)	3	F1	II	3+N1	C	2	2	3	50	95	0.77	2	yes	T2	II B[4]	yes	PP, EX, A	1	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3271	ETHERS, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	0	14, 27 *see 3.2.3.3
3272	ESTERS, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T2	II B[4]	yes	*	1	14, 27; 29 *see 3.2.3.3
3272	ESTERS, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	0	14, 27 *see 3.2.3.3
3276	NITRILES, TOXIC, LIQUID, N.O.S. (2-METHYLGLUTARONITRILE)	6.1	T1	II	6.1	C	2	2		10	95	0.95	2	no			no	PP, EP, TOX, A	2	
3286	FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S.	3	FTC	I	3+6.1+8+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	2	27; 29 *see 3.2.3.3
3286	FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S.	3	FTC	II	3+6.1+8+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	2	27; 29 *see 3.2.3.3
3287	TOXIC LIQUID, INORGANIC, N.O.S.	6.1	T4	I	6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no			no	PP, EP, TOX, A	2	27; 29 *see 3.2.3.3
3287	TOXIC LIQUID, INORGANIC, N.O.S.	6.1	T4	II	6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	2	27; 29 *see 3.2.3.3
3287	TOXIC LIQUID, INORGANIC, N.O.S.	6.1	T4	III	6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	0	27; 29 *see 3.2.3.3
3287	TOXIC LIQUID, INORGANIC, N.O.S. (SODIUM DICHROMATE SOLUTION)	6.1	T4	III	6.1+CMR	C	2	2		30	95	1.68	2	no			no	PP, EP, TOX, A	0	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3289	TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. BOILING POINT > 115 °C	6.1	TC3	I	6.1+8+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no			no	PP, EP, TOX, A	2	27; 29 *see 3.2.3.3
3289	TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. BOILING POINT > 115 °C	6.1	TC3	II	6.1+8+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	2	27; 29 *see 3.2.3.3
3295	HYDROCARBONS, LIQUID, N.O.S. CONTAINS ISOPRENE AND PENTADIENE (vp 50 > 110 kPa), STABILIZED	3	F1	I	3+unst.+N2+ CMR	C	2	2	3	50	95	0,678	1	yes	T4[3)]	II B[4)]	yes	PP, EP, EX, TOX, A	1	3, 27, 29
3295	HYDROCARBONS, LIQUID, N.O.S.	3	F1	I	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3)]	II B[4)]	yes	*	1	14, 27; 29 *see 3.2.3.3
3295	HYDROCARBONS, LIQUID, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3)]	II B[4)]	yes	*	1	14, 27; 29 *see 3.2.3.3
3295	HYDROCARBONS, LIQUID, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3)]	II B[4)]	yes	*	0	14, 27 *see 3.2.3.3
3295	HYDROCARBONS, LIQUID, N.O.S. (1-OCTEN)	3	F1	II	3+N2+F	N	2	3		10	97	0.71	3	yes	T3	II B[4)]	yes	PP, EX, A	1	14
3295	HYDROCARBONS, LIQUID, N.O.S. (POLYCYCLIC AROMATIC HYDROCARBONS MIXTURE)	3	F1	III	3+CMR+F	N	2	3	3	10	97	1.08	3	yes	T1	II A	yes	PP, EP, EX, TOX, A	0	14
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 > 175 kPa	3	F1	I	3+CMR	C	1	1			95		1	yes	T4 [3)]	II B[4)]	yes	PP, EP, EX, TOX, A	1	27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE 110 kPa < vp50 ≤ 175 kPa	3	F1	I	3+CMR	C	1	1			95		1	yes	T4 [3)]	II B[4)]	yes	PP, EP, EX, TOX, A	1	27; 29

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	I	3+CMR	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	I	3+CMR	C	2	2	3	50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	23; 27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE 110 kPa < vp50 ≤ 175 kPa	3	F1	II	3+CMR	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	II	3+CMR	C	1	1			95		1	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	II	3+CMR	C	2	2	3	50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	23: 27; 29: 38
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 60 °C < BOILING POINT ≤ 85 °C	3	F1	II	3+CMR	C	2	2	3	50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	23; 27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 85 °C < BOILING POINT ≤ 115 °C	3	F1	II	3+CMR	C	2	2		50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT > 115 °C	3	F1	II	3+CMR	C	2	2		35	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	1	27; 29

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 60 °C < BOILING POINT ≤ 85 °C	3	F1	III	3+CMR	C	2	2	3	50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	0	23; 27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 85 °C < BOILING POINT ≤ 115 °C	3	F1	III	3+CMR	C	2	2		50	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	0	27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT > 115 °C	3	F1	III	3+CMR	C	2	2		35	95		2	yes	T4 [3]	II B[4]	yes	PP, EP, EX, TOX, A	0	27; 29
3412	FORMIC ACID with not less than 10% but not more than 85% acid by mass	8	C3	II	8+N3	N	2	3		10	97	1.22	3	yes	T1	II A	yes	PP, EP, EX, A	0	6: +12 °C; 17; 34
3412	FORMIC ACID with not less than 5% but less than 10% acid by mass	8	C3	III	8	N	2	3		10	97	1.22	3	yes	T1	II A	yes	PP, EP, EX, A	0	6: +12 °C; 17; 34
3426	ACRYLAMIDE, SOLUTION	6.1	T1	III	6.1	C	2	2		30	95	1.03	2	no			no	PP, EP, TOX, A	0	3; 5; 16
3429	CHLOROTOLUIDINES, LIQUID	6.1	T1	III	6.1+S	C	2	2		25	95	1.15	2	no	T1	II A[7]	yes	PP, EP, EX, TOX, A	0	6: +6 ºC; 17;
3446	NITROTOLUENES, SOLID, MOLTEN (p-NITROTOLUENE)	6.1	T2	II	6.1+N2+S	C	2	2	2	25	95	1.16	2	no	T2	II B[4]	yes	PP, EP, EX, TOX, A	2	7; 17
3446	NITROTOLUENES, SOLID, MOLTEN (p-NITROTOLUENE)	6.1	T2	II	6.1+N2+S	C	2	1	4	25	95	1.16	2	no			no	PP, EP, TOX, A	2	7; 17; 20: +88 ºC; 26
3451	TOLUIDINES, SOLID, MOLTEN (p-TOLUIDINE)	6.1	T2	II	6.1+N1	C	2	2	2	25	95	1.05	2	no	T1	II A[8]	yes	PP, EP, EX, TOX, A	2	7; 17
3451	TOLUIDINES, SOLID, MOLTEN (p-TOLUIDINE)	6.1	T2	II	6.1+N1	C	2	2	4	25	95	1.05	2	no			no	PP, EP, TOX, A	2	7; 17; 20: +60 ºC

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3455	CRESOLS, SOLID, MOLTEN	6.1	TC2	II	6.1+8+N3	C	2	2	2	25	95	1,03 - 1,05	2	no	T1	II A[8)]	yes	PP, EP, EX, TOX, A	2	7; 17
3455	CRESOLS, SOLID, MOLTEN	6.1	TC2	II	6.1+8+N3	C	2	2	4	25	95	1,03 - 1,05	2	no			no	PP, EP, TOX, A	2	7; 17; 20: +66 ºC
3463	PROPIONIC ACID with not less than 90% acid by mass	8	CF1	II	8+3+N3	N	3	3			97	0.99	3	yes	T1	II A[7)]	yes	PP, EP, EX, A	1	34
3475	ETHANOL AND GASOLINE MIXTURE or ETHANOL AND MOTOR SPIRIT MIXTURE or ETHANOL AND PETROL MIXTURE, with more than 10% but not more than 90% ethanol	3	F1	II	3+N2+CMR+F	N	2	3	3	10	97	0.69 – 0.78 [10)]	3	yes	T3	II A	yes	PP, EP, EX, TOX, A	1	
3475	ETHANOL AND GASOLINE MIXTURE or ETHANOL AND MOTOR SPIRIT MIXTURE or ETHANOL AND PETROL MIXTURE, with more than 90% ethanol	3	F1	II	3+N2+CMR+F	N	2	3	3	10	97	0.78 – 0.79 [10)]	3	yes	T2	II B	yes	PP, EP, EX, TOX, A	1	
3494	PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC	3	TF1	I	3+6.1+(N1, N2, N3, CMR, F)	C	*	*	*	*	95		1	no	T4[3)]	II B[4)]	yes	PP, EP, EX, TOX, A	2	14; 27; *see 3.2.3.3
3494	PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC	3	TF1	II	3+6.1+(N1, N2, N3, CMR, F)	C	*	*	*	*	95		2	no	T4[3)]	II B[4)]	yes	PP, EP, EX, TOX, A	2	14; 27; *see 3.2.3.3
3494	PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC	3	TF1	III	3+6.1+(N1, N2, N3, CMR, F)	C	*	*	*	*	95		2	no	T4[3)]	II B[4)]	yes	PP, EP, EX, TOX, A	0	14; 27; *see 3.2.3.3
9000	AMMONIA, ANHYDROUS, DEEPLY REFRIGERATED	2	3TC		2.1+2.3+8+N1	G	1	1	1; 3		95		1	no	T1	II A	yes	PP, EP, EX, TOX, A	2	1; 31

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
9001	SUBSTANCES WITH A FLASH-POINT ABOVE 60 °C handed over for carriage or carried at a TEMPERATURE WITHIN A RANGE OF 15K BELOW THEIR FLASH-POINT OR SUBSTANCES WITH A FLASH-POINT > 60 °C, HEATED TO LESS THAN 15 K FROM THE FLASH-POINT	3	F4		3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 [3]	II B[4]	yes	*	0	27 *see 3.2.3.3
9002	SUBSTANCES HAVING A SELF-IGNITION TEMPERATURE ≤ 200 °C, N.O.S.	3	F5		3+(N1, N2, N3, CMR, F or S)	C	1	1	*	*	95		1	yes	T4	II B[4]	yes	*	0	*see 3.2.3.3
9003	SUBSTANCES WITH A FLASH-POINT ABOVE 60 °C BUT NOT MORE THAN 100 °C or SUBSTANCES WHERE 60° C < flash−point ≤ 100° C, which are not affected to another class	9			9+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	*	0	27 *see 3.2.3.3
9003	SUBSTANCES WITH A FLASH-POINT ABOVE 60 °C BUT NOT MORE THAN 100 °C or SUBSTANCES WHERE 60° C < flash−point ≤ 100 °C, which are not affected to another class (ETHYLENE GLYCOL MONOBUTYL ETHER)	9			9+N3+F	N	4	3			97	0.9	3	yes			no	PP	0	
9003	SUBSTANCES WITH A FLASH-POINT ABOVE 60 °C BUT NOT MORE THAN 100 °C or SUBSTANCES WHERE 60° C < flash−point ≤ 100 °C, which are not affected to another class (2-ETHYLHEXYLACRYLATE)	9			9+N3+F	N	4	3			97	0.89	3	yes			no	PP	0	3; 5; 16;

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
9004	DIPHENYLMETHANE-4.4'-DIISOCYANATE	9			S	N	2	3	4	10	95	1,21[11)]	3	yes			no	PP	0	7; 8; 17; 19
9005	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S, MOLTEN	9			9+(N2, N3, CMR, F or S)	*	*	*	*	*	97		*	yes			no	*	0	*see 3.2.3.3
9006	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	9			9+(N2, N3, CMR, F or S)	*	*	*	*	*	97		*	yes			no	*	0	*see 3.2.3.3

Footnotes related to the list of substances

1) The ignition temperature has not been determined in accordance with IEC 79-4; therefore, provisional assignment has been made to temperature class T2 which is considered safe.

2) The ignition temperature has not been determined in accordance with IEC 79-4; therefore, provisional assignment has been made to temperature class T3 which is considered safe.

3) The ignition temperature has not been determined in accordance with IEC 79-IA; therefore, provisional assignment has been made to temperature class T4 which is considered safe.

4) No maximum experimental safe gap (MESG) has been measured in accordance with IEC 79-1A; therefore, provisional assignment has been made to explosion group IIB which is considered safe.

5) No maximum experimental safe gap (MESG) has been measured in accordance with IEC 79-1A; therefore, provisional assignment has been made to explosion group IIC which is considered safe.

6) (*Deleted*)

7) No maximum experimental safe gap (MESG) has been measured in accordance with IEC-79-1A; therefore, assignment has been made to the explosion group which is considered safe.

8) No maximum experimental safe gap (MESG) has been measured in accordance with IEC 79-1A; therefore, assignment has been made to the explosion group in compliance with EN 50014.

9) Assignment in accordance with IMO IBC Code.

10) Relative density at 15 °C.

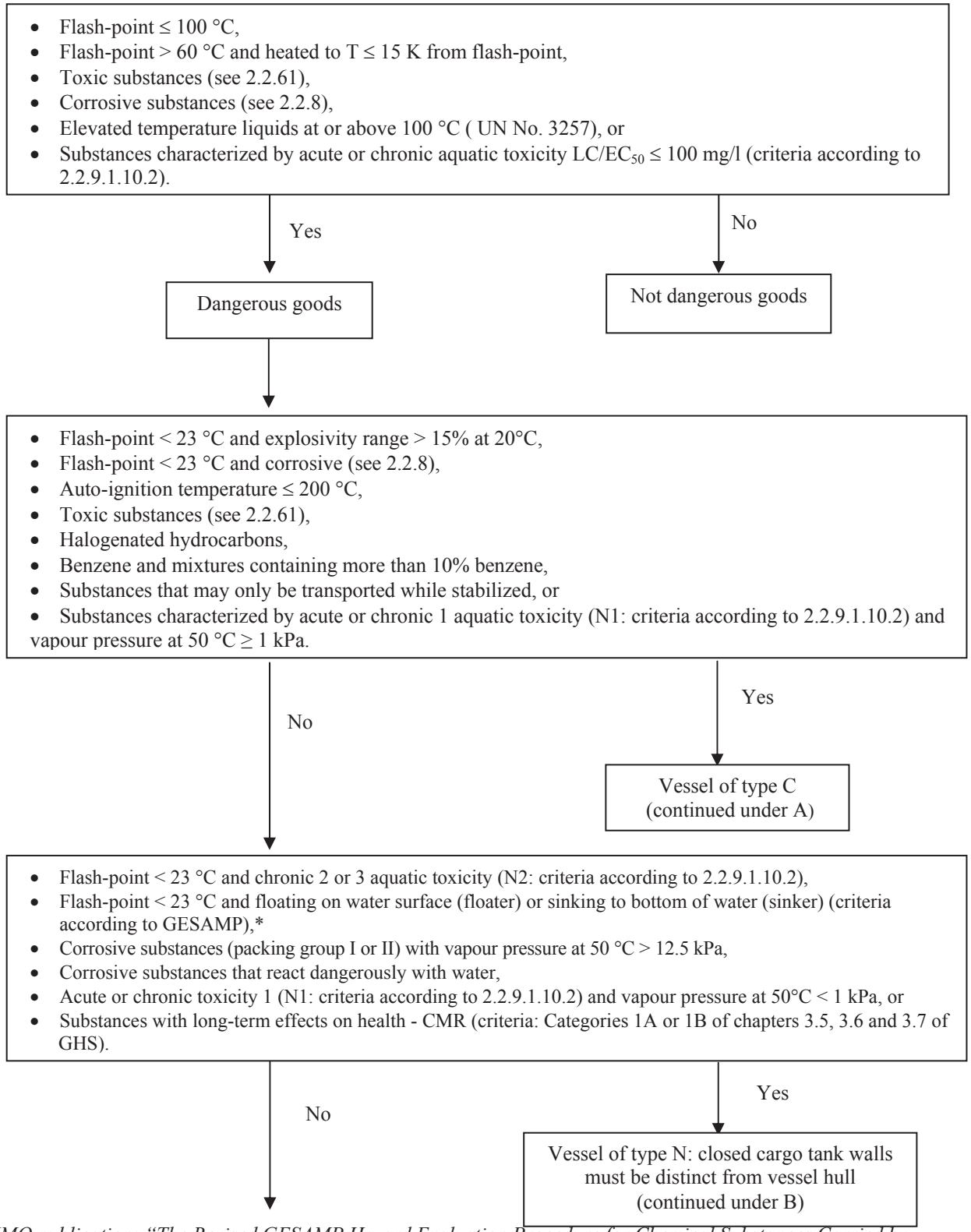
11) Relative density at 25 °C.

12) (*Deleted*)

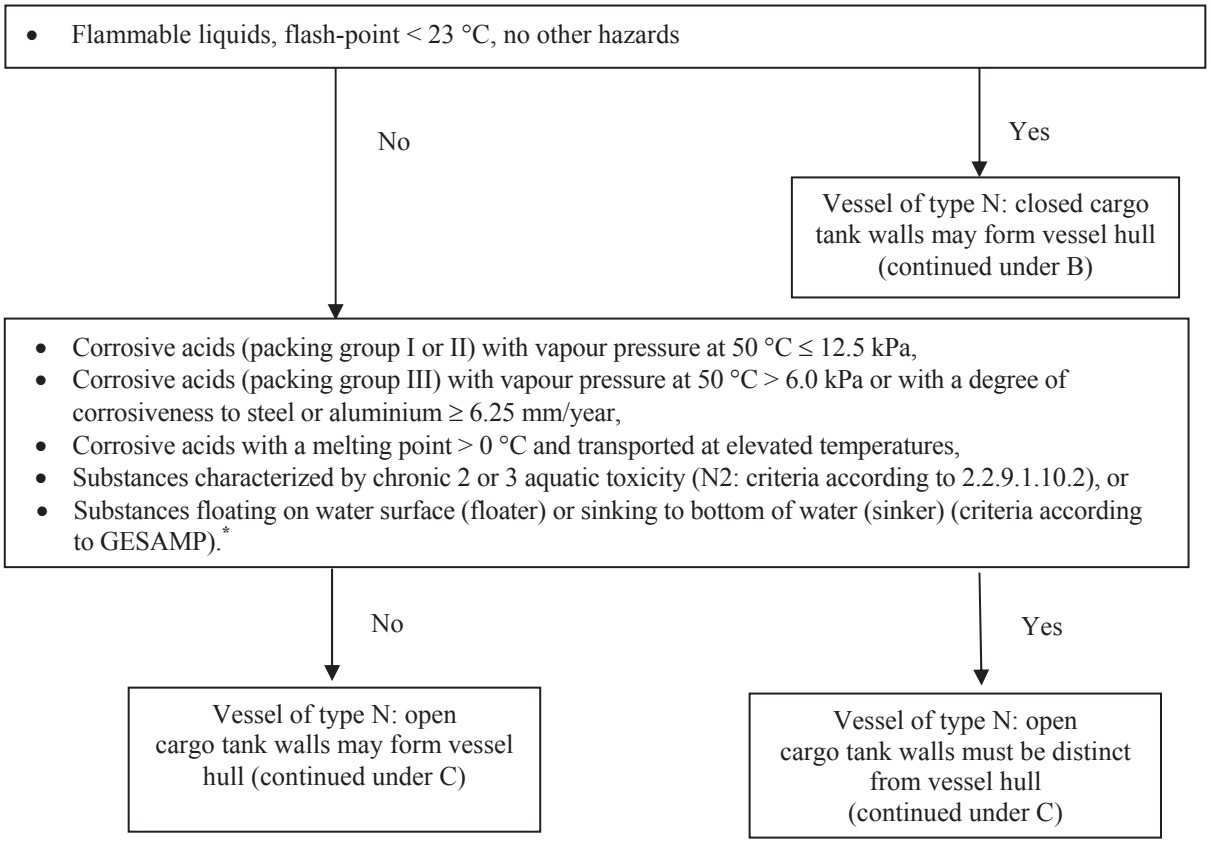
13) (*Deleted*)

3.2.3.3 *Flowchart, schemes and criteria for determining applicable special requirements (columns (6) to (20) of Table C*)

Flowchart for classification of liquids of Classes 3, 6.1, 8 and 9 for carriage in tanks in inland navigation



** IMO publication: "The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships", GESAMP Reports and Studies No. 64, IMO, London, 2002.*



Elevated temperature substances

Irrespective of the above classifications, for substances that must be transported at elevated temperatures, the type of cargo tank shall be determined on the basis of the transport temperature, using the following table:

Maximum transport temperature T in °C	Type N	Type C
T ≤ 80	Integral cargo tank	Integral cargo tank
80 < T ≤ 115	Independent cargo tank, remark 25	Independent cargo tank, remark 26
T > 115	Independent cargo tank	Independent cargo tank

Remark 25 = remark No. 25 in column (20) of the list of substances contained in Chapter 3.2, Table C.

Remark 26 = remark No. 26 in column (20) of the list of substances contained in Chapter 3.2, Table C.

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* *IMO publication: "The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships", GESAMP Reports and Studies No. 64, IMO, London, 2002.*

Scheme A: Criteria for cargo tank equipment in vessels of type C

Cargo tank equipment	Cargo tank internal pressure at liquid temperature of 30 °C and gaseous phase temperature of 37.8 °C > 50 kPa	Cargo tank internal pressure at liquid temperature of 30 °C and gaseous phase temperature of 37.8 °C > 50 kPa	Cargo tank internal pressure unknown, owing to absence of certain data
With refrigeration (No. 1 in column (9))	Refrigerated		
Pressure tank (400 kPa)	Non-refrigerated	Cargo tank internal pressure at 50 °C > 50 kPa without water spraying	Boiling point ≤ 60°C
High-velocity vent valve opening pressure: 50 kPa, with water-spraying system (No. 3 in column (9))		Cargo tank internal pressure at 50 °C > 50 kPa with water spraying	60 °C < boiling point ≤ 85°C
High-velocity vent valve opening pressure as calculated, but at least 10 kPa		Cargo tank internal pressure at 50 °C ≤ 50 kPa	
High-velocity vent valve opening pressure: 50 kPa			85 °C < boiling point ≤ 115°C
High-velocity vent valve opening pressure: 35 kPa			Boiling point > 115°C

Scheme B: Criteria for equipment of vessels of type N with closed cargo tanks

Cargo tank equipment	Class 3, flash-point < 23°C				Corrosive substances	CMR substances
Pressure tank (400 kPa)	175 kPa ≤ $P_{d\,50}$ < 300 kPa without refrigeration					
High-velocity vent valve opening pressure: 50 kPa	175 kPa ≤ $P_{d\,50}$ < 300 kPa, with refrigeration (No. 1 in column (9))	110 kPa ≤ $P_{d\,50}$ < 175 kPa without water spraying				
High-velocity vent valve opening pressure: 10 kPa			110 kPa ≤ $P_{d\,50}$ < 150 kPa with water spraying (No. 3 in column (9))	$P_{d\,50}$ < 110 kPa	Packing group I or II with $P_{d\,50}$ > 12.5 kPa or reacting dangerously with water	High-velocity vent valve opening pressure: 10 kPa; with water spraying when vapour pressure > 10 kPa (calculation of the vapour pressure according to the formula for column 10, except that v_a = 0.03)

Scheme C: Criteria for equipment of vessels of type N with open cargo tanks

Cargo tank equipment	Classes 3 and 9	Flammable substances	Corrosive substances
With flame-arrester	23°C ≤ flash-point ≤ 60°C	Flash-point > 60 °C carried while heated to ≤ 15 K below flash-point or Flash-point > 60 °C, at or above their flash-point	Acids, transported while heated or flammable substances
Without flame-arrester	60 °C < flash-point ≤ 100 °C or elevated temperature substances of Class 9		Non-flammable substances

Column (9): Cargo tank equipment for substances transported in a molten state

- **Possibility of heating the cargo (number 2 in column (9))**

  A possibility of heating the cargo shall be required on board:

  - When the melting point of the substance to be transported is + 15 °C or greater, or

  - When the melting point of the substance to be transported is greater than 0 °C but less than + 15 °C and the outside temperature is no more than 4 K above the melting point. In column (20), reference shall be made to remark 6 with the temperature derived as follows: melting point + 4 K

- **Heating system on board (number 4 in column (9))**

  A cargo heating system shall be required on board:

  - For substances that must not be allowed to solidify owing to the possibility of dangerous reactions on reheating, and

  - For substances that must be maintained at a guaranteed temperature not less than 15 K below their flash-point

Column (10): Determination of opening pressure of high-velocity vent valve in kPa

For vessels of type C, the opening pressure of the high-velocity vent valve shall be determined on the basis of the internal pressure of the tanks, rounded up to the nearest 5 kPa

To calculate the internal pressure, the following formula shall be used:

$$P_{\max} = P_{Ob\max} + \frac{k \cdot v_a \left(P_0 - P_{Da}\right)}{v_a - \alpha \cdot \delta_t + \alpha \cdot \delta_t \cdot v_a} - P_0$$

$$k = \frac{T_{D\max}}{T_a}$$

In this formula:

P_{max}	:	Maximum internal pressure in kPa
P_{Obmax}	:	Absolute vapour pressure at maximum liquid surface temperature in kPa
P_{Da}	:	Absolute vapour pressure at filling temperature in kPa
P_0	:	Atmospheric pressure in kPa
v_a	:	Free relative volume at filling temperature compared with cargo tank volume
α	:	Cubic expansion coefficient in K^{-1}
δ_t	:	Average temperature increase of the liquid due to heating in K
T_{Dmax}	:	Maximum gaseous phase temperature in K
T_a	:	Filling temperature in K
k	:	Temperature correction factor
t_{Ob}	:	Maximum liquid surface temperature in °C

In the formula, the following basic data are used:

P_{Obmax} : At 50 °C and 30 °C

P_{Da} : At 15 °C

P_0 : 101.3 kPa

v_a : 5% = 0.05

δ_t : 5 K

T_{Dmax} : 323 K and 310.8 K

T_a : 288 K

t_{Ob} : 50 °C and 30 °C

Column (11): Determination of maximum degree of filling of cargo tanks

If, in accordance with the provisions under A above:

- Type G is required: 91%; however, in the case of deeply refrigerated substances: 95%
- Type C is required: 95%
- Type N is required: 97%; however, in the case of substances in a molten state and of flammable liquids with 175 kPa $\leq P_{v50} <$ 300 kPa: 95%

Column (12): Relative density of substance at 20 °C

These data are provided for information only.

Column (13): Determination of type of sampling device

1 = *closed*:	−	Substances to be transported in pressure cargo tanks
	−	Substances with T in column (3b) and assigned to packing group I
	−	Stabilized substances to be transported under inert gas
2 = *partly closed*:	−	All other substances for which type C is required
3 = *open:*	−	All other substances

Column (14): Determination of whether a pump-room is permitted below deck

No	−	All substances with T in column (3b) with the exception of substances of Class 2
Yes	−	All other substances

Column (15): Determination of temperature class

Flammable substances shall be assigned to a temperature class on the basis of their auto-ignition point:

Temperature class	Auto-ignition temperature T of flammable liquids and gases in °C
T1	T > 450
T2	300 < T ≤ 450
T3	200 < T ≤ 300
T4	135 < T ≤ 200
T5	100 < T ≤ 135
T6	85 < T ≤ 100

When anti-explosion protection is required and the auto-ignition temperature is not known, reference shall be made to temperature class T4, considered safe.

Column (16): Determination of explosion group

Flammable substances shall be assigned to an explosion group on the basis of their maximum experimental safe gaps. The maximum experimental safe gaps shall be determined in accordance with standard IEC 60079-1-1.

The different explosion groups are as follows:

Explosion group	Maximum experimental safe gap in mm
II A	> 0.9
II B	≥ 0.5 to ≤ 0.9
II C	< 0.5

When anti-explosion protection is required and the relevant data are not provided, reference shall be made to explosion group II B, considered safe.

Column (17): Determination of whether anti-explosion protection is required for electrical equipment and systems

Yes
- Substances with a flash-point ≤ 60 °C
- Substances that must be transported while heated to a temperature less than 15 K from their flash-point
- Flammable gases

No
- All other substances

Column (18): Determination of whether personal protective equipment, escape devices, portable flammable gas detectors, portable toximeters or ambient-air-dependent breathing apparatus is required

- PP: For all substances of Classes 1 to 9;
- EP: For all substances
  - of Class 2 with letter T or letter C in the classification code indicated in column (3b),
  - of Class 3 with letter T or letter C in the classification code indicated in column (3b),
  - of Class 4.1,

- of Class 6.1, and
- of Class 8,
- CMR substances of Category 1A or 1B according to chapters 3.5, 3.6 and 3.7 of GHS;

- EX: For all substances for which anti-explosion protection is required;

- TOX: For all substances of Class 6.1,

  For all substances of other classes with T in column (3b),

  For CMR substances of Category 1A or 1B according to chapters 3.5, 3.6 and 3.7 of GHS;

- A: For all substances for which EX or TOX is required

Column (19): Determination of the number of cones or blue lights

For all substances of Class 2 with letter F in the classification code indicated in column (3b):	1 cone/light
For all substances of Classes 3 to 9 with letter F in the classification code indicated in column (3b) and assigned to packing group I or II:	1 cone/light
For all substances of Class 2 with letter T in the classification code indicated in column (3b)	2 cones/lights
For all substances of Classes 3 to 9 with letter T in the classification code indicated in column (3b) and assigned to packing group I or II:	2 cones/lights

Column (20): Determination of additional requirements and remarks

***Remark 1*:** Reference shall be made in column (20) to remark 1 for transport of UN No. 1005 AMMONIA, ANHYDROUS.

***Remark 2*:** Reference shall be made in column (20) to remark 2 for stabilized substances that react with oxygen.

***Remark 3*:** Reference shall be made in column (20) to remark 3 for substances that must be stabilized.

***Remark 4*:** Reference shall be made in column (20) to remark 4 for substances that must not be allowed to solidify owing to the possibility of dangerous reactions on reheating.

***Remark 5*:** Reference shall be made in column (20) to remark 5 for substances liable to polymerization.

***Remark 6*:** Reference shall be made in column (20) to remark 6 for substances liable to crystallization and for substances for which a heating system or possibility of heating is required and the vapour pressure of which at 20 ºC is greater than 0.1 kPa.

***Remark 7*:** Reference shall be made in column (20) to remark 7 for substances with a melting point of + 15 ºC or greater.

***Remark 8*:** Reference shall be made in column (20) to remark 8 for substances that react dangerously with water.

***Remark 9*:** Reference shall be made in column (20) to remark 9 for transport of UN No. 1131 CARBON DISULPHIDE.

***Remark 10*:** *No longer used*.

***Remark 11*:** Reference shall be made in column (20) to remark 11 for transport of UN No. 1040 ETHYLENE OXIDE WITH NITROGEN.

***Remark 12*:** Reference shall be made in column (20) to remark 12 for transport of UN No. 1280 PROPYLENE OXIDE and UN No. 2983 ETHYLENE OXIDE AND PROPYLENE OXIDE MIXTURE.

***Remark 13*:** Reference shall be made in column (20) to remark 13 for transport of UN No. 1086 VINYL CHLORIDE, STABILIZED.

***Remark 14*:** Reference shall be made in column (20) to remark 14 for mixtures or N.O.S. entries which are not clearly defined and for which type N is stipulated under the classification criteria.

***Remark 15*:** Reference shall be made in column (20) to remark 15 for substances that react dangerously with alkalis or acids such as sodium hydroxide or sulphuric acid.

***Remark 16*:** Reference shall be made in column (20) to remark 16 for substances that may react dangerously to local overheating.

***Remark 17*:** Reference shall be made in column (20) to remark 17 when reference is made to remark 6 or 7.

***Remark 18*:** *No longer used*.

***Remark 19*:** Reference shall be made in column (20) to remark 19 for substances that must under no circumstances come into contact with water.

***Remark 20*:** Reference shall be made in column (20) to remark 20 for substances the transport temperature of which must not exceed a maximum temperature in combination with the cargo tank materials. Reference shall be made to this maximum permitted temperature immediately after the number 20.

***Remark 21*:** *No longer used*.

***Remark 22*:** Reference shall be made in column (20) to remark 22 for substances for which a range of values or no value of the density is indicated in column (12).

***Remark 23*:** Reference shall be made in column (20) to remark 23 for substances the internal pressure of which at 30 ºC is less than 50 kPa and which are transported with water spraying.

***Remark 24*:** Reference shall be made in column (20) to remark 24 for transport of UN No. 3257 ELEVATED TEMPERATURE LIQUID, N.O.S.

***Remark 25*:** Reference shall be made in column (20) to remark 25 for substances that must be transported while heated in a type 3 cargo tank.

***Remark 26*:** Reference shall be made in column (20) to remark 26 for substances that must be transported while heated in a type 2 cargo tank.

***Remark 27*:** Reference shall be made in column (20) to remark 27 for substances for which the reference N.O.S. or a generic reference is made in column (2).

***Remark 28*:** Reference shall be made in column (20) to remark 28 for transport of UN No. 2448 SULPHUR, MOLTEN.

***Remark 29*:** Reference shall be made in column (20) to remark 29 for substances for which the vapour pressure or boiling point is indicated in column (2).

***Remark 30*:** Reference shall be made in column (20) to remark 30 for transport of UN Nos. 1719, 1794, 1814, 1819, 1824, 1829, 1830, 1832, 1833, 1906, 2240, 2308, 2583, 2584, 2677, 2679, 2681, 2796, 2797, 2837 and 3320 under the entries for which open type N is required.

***Remark 31*:** Reference shall be made in column (20) to remark 31 for transport of substances of Class 2 and UN Nos. 1280 PROPYLENE OXIDE and 2983 ETHYLENE OXIDE AND PROPYLENE OXIDE MIXTURE of Class 3.

***Remark 32*:** Reference shall be made in column (20) to remark 32 for transport of UN No. 2448 SULPHUR, MOLTEN of Class 4.1.

***Remark 33*:** Reference shall be made in column (20) to remark 33 for transport of UN Nos. 2014 and 2984 HYDROGEN PEROXIDE, AQUEOUS SOLUTION of Class 5.1.

***Remark 34*:** Reference shall be made in column (20) to remark 34 for transport of substances for which hazard 8 is mentioned in column (5) and type N in column (6).

***Remark 35*:** Reference shall be made in column (20) to remark 35 for substances for which a direct refrigeration system is not allowed.

***Remark 36*:** Reference shall be made in column (20) to remark 36 for substances for which only an indirect refrigeration system is allowed.

***Remark 37*:** Reference shall be made in column (20) to remark 37 for substances for which the cargo storage system must be capable of resisting the full vapour pressure of the cargo at the upper limits of the ambient design temperatures, whatever the system adopted for the boil-off gas.

***Remark 38*:** Reference must be made in column (20) to remark 38 for mixtures with an initial boiling point above 60 ºC in accordance with ASTMD 86-01.

Remark 39: Reference shall be made in column (20) to remark 39 for the carriage of UN No. 2187 CARBON DIOXIDE, REFRIGERATED LIQUID of Class 2.

***Remark 40*:** Reference shall be made in column (20) to remark 40 for UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S (heavy heating oil).

3.2.4 Modalities for the application of section 1.5.2 on special authorizations concerning transport in tank vessels

3.2.4.1 Model special authorization under section 1.5.2

Special authorization
under 1.5.2 of ADN

Under 1.5.2 of ADN, the transport in tank vessels of the substance specified in the annex to this special authorization shall be authorized in the conditions referred to therein.

Before transporting the substance, the carrier shall be required to have it added to the list referred to in 1.16.1.2.5 of ADN by a recognized classification society.

This special authorization shall be valid .....
(places and/or routes of validity)

It shall be valid for two years from the date of signature, unless it is repealed at an earlier date.

Issuing State: .....

Competent authority: .....

Date: .....

Signature: .....

3.2.4.2 Application form for special authorizations under section 1.5.2

For applications for special authorizations, please answer the following questions and points.* Data are used for administrative purposes only and are treated confidentially.

Applicant

.....
(Name) (Company)

.....

( ) .....

.....
(Address)

Summary of the application

Authorization for transport in tank vessels of ..... as a substance of Class .....

Annexes
(with brief description)

Application made:

At: .....

Date: .....

Signature: .....
(of the person responsible for the data)

1. General data on the dangerous substance

1.1 Is it a pure substance □, a mixture □, a solution □ ?

1.2 Technical name (if possible ADN nomenclature or possibly the IBC Code).

1.3 Synonym.

1.4 Trade name.

1.5 Structure formula and, for mixtures, composition and/or concentration.

1.6 Hazard class and, where applicable classification code, packing group.

1.7 UN No. or substance identification number (if known).

* *For questions not relevant to the subject of the application, write "not applicable".*

2. Physico-chemical properties

2.1 State during transport (e.g. gas, liquid, molten, ...).

2.2 Relative density of liquid at 20 º C or at the transport temperature if the substance is to be heated or refrigerated during transport.

2.3 Transport temperature (for substances heated or refrigerated during transport).

2.4 Melting point or range ..... º C.

2.5 Boiling point or range ..... º C.

2.6 Vapour pressure at 15 º C ....., 20 º C ....., 30 º C ....., 37.8 º C ....., 50 º C .....,
(for liquefied gases, vapour pressure at 70 º C .....), (for permanent gases, filling pressure at 15 º C .....).

2.7 Cubic expansion coefficient ….. K^{-1}

2.8 Solubility in water at 20 º C
Saturation concentration …… mg/l

or

Miscibility with water at 15 º C

□ Complete □ partial □ none
(If possible, in the case of solutions and mixtures, indicate concentration)

2.9 Colour.

2.10 Odour.

2.11 Viscosity ….. mm^2/s.

2.12 Flow time (ISO 2431-1996) .....s.

2.13 Solvent separation test ..... .

2.14 pH of the substance or aqueous solution (indicate concentration).

2.15 Other information.

3. Technical safety properties

3.1 Auto-ignition temperature in accordance with IEC 60079-4 (corresponds to DIN 51 794) ..... º C; where applicable, indicate the temperature class in accordance with EN 50 014: 1994.

3.2 Flash-point

For flash-points up to 175 º C

Closed-cup test methods - non-equilibrium procedure

ABEL method: EN ISO 13736:1997

ABEL-PENSKY method: DIN 51755-1:1974 and DIN 51755-2:1978 or AFNOR method: M07-019

PENSKY-MARTENS method: EN ISO 2719:2004

LUCHAIRE apparatus: French standard AFNOR T 60-103:1968

TAG method: ASTM D 56-02

Closed-cup test methods - equilibrium procedure

Rapid equilibrium procedure: EN ISO 3679:2004; ASTM D 3278-96:2004

Closed-cup equilibrium procedure: EN ISO 1523:2002; ASTM D 3941-90:2001

For flash-points above 175 º C

In addition to the above-mentioned methods, the following open-cup test method may be applied:

CLEVELAND method: EN ISO 2592:2002; ASTM D 92-02b

3.3 Explosion limits:

Determination of upper and lower explosion limits in accordance with EN 1839:2004.

3.4 Maximum safe gap in accordance with IEC 60079-1:2003 .....

3.5 Is the substance stabilized during transport? If so, provide data on the stabilizer:

.....

3.6 Decomposition products in the event of combustion on contact with air or under the influence of an external fire:

3.7 Is the substance fire intensifying?

3.8 Abrasion (corrosion) ..... mm/year.

3.9 Does the substance react with water or moist air by releasing flammable or toxic gases? Yes/no. Gases released: .....

3.10 Does the substance react dangerously in any other way?

3.11 Does the substance react dangerously when reheated?
Yes/no

4. Physiological hazards

4.1 LD_{50} and/or LC_{50} value. Necrosis value (where applicable, other toxicity criteria in accordance with 2.2.61.1 of ADN).

CMR properties according to Categories 1A and 1B of chapters 3.5, 3.6 and 3.7 of GHS.

4.2 Does decomposition or reaction produce substances posing physiological hazards? (Indicate which substances where known)

4.3 Environmental properties (see 2.4.2.1 of ADN)

Acute toxicity:

LC_{50} 96 hr for fish ..... mg/l

EC_{50} 48 hr for crustacea ..... mg/l

E_rC_{50} 72 hr for algae ..... mg/l

Chronic toxicity:

NOEC ..... mg/l

BCF ..... mg/l or log K_{ow} .....

Easily biodegradable ..... yes/no

5. Data on hazard potential

5.1 What specific damage is to be expected if the hazard characteristics produce their effect?

- ☐ Combustion
- ☐ Injury
- ☐ Corrosion
- ☐ Intoxication in the event of dermal absorption
- ☐ Intoxication in the event of absorption by inhalation
- ☐ Mechanical damage
- ☐ Destruction
- ☐ Fire
- ☐ Abrasion (corrosion to metals)
- ☐ Environmental pollution

6. Data on the transport equipment

6.1 Are particular loading requirements envisaged/necessary (what are they)?

7. Transport of dangerous substances in tanks

7.1 With which materials is the substance to be carried compatible?

8. Technical safety requirements

8.1 Taking into account the current state of science and technology, what safety measures are necessary in the light of the hazards posed by the substance or liable to arise in the course of the transport process as a whole?

8.2 Additional safety measures

Use of stationary or mobile techniques to measure flammable gases and flammable liquid vapours.

Use of stationary or mobile techniques (toximeters) to measure concentrations of toxic substances.

3.2.4.3 Criteria for assignment of substances

A. Columns (6), (7) and (8): Determination of the type of tank vessel

1. Gases (criteria according to 2.2.2 of ADN)

–	Without refrigeration:	type G	pressure
–	With refrigeration:	type G	refrigerated

2. Halogenated hydrocarbons

Substances that may only be transported in a stabilized state

Toxic substances (see 2.2.61.1 of ADN)

Flammable (flash-point < 23 ºC) and corrosive substances (see 2.2.8 of ADN)

Substances with an auto-ignition temperature ≤ 200 ºC

Substances with a flash-point < 23 ºC and an explosivity range > 15 % at 20 ºC

Benzene and mixtures of non-toxic and non-corrosive substances containing more than 10% benzene

Environmentally hazardous substances, Acute or Chronic Category 1 (group N1 in accordance with 2.2.9.1.10.2)

– Cargo tank internal pressure > 50 kPa at the following temperatures: liquid 30 ºC, gaseous phase 37.8 ºC

● Without refrigeration:	type C	pressure (400 kPa)
● With refrigeration:	type C	refrigerated

– Cargo tank internal pressure ≤ 50 kPa at the following temperatures: liquid 30 ºC, gaseous phase 37.8 ºC but with cargo tank internal pressure > 50 kPa at 50 ºC

● Without water spraying:	type C	pressure (400 kPa)
● With water spraying:	type C	with high-velocity vent valve opening pressure of 50 kPa

– Cargo tank internal pressure ≤ 50 kPa at the following temperatures: liquid 30 ºC, gaseous phase 37.8 ºC with cargo tank internal pressure ≤ 50 kPa at 50 ºC

	type C	with high-velocity vent valve opening pressure as calculated, but at least 10 kPa

2.1 Mixtures for which type C is required in accordance with the criteria referred to in 2 above but for which certain data are lacking

In cases where the internal pressurization of the tank cannot be calculated owing to a lack of data, the following criteria may be used

– Initial boiling point ≤ 60 ºC	type C	(400 kPa)

–	60 ºC < initial boiling point ≤ 85 ºC	type C	with high-velocity vent valve opening pressure of 50 kPa and with water spraying
–	85 ºC < initial boiling point ≤ 115 ºC	type C	with high-velocity vent valve opening pressure of 50 kPa
–	115 ºC < initial boiling point	type C	with high-velocity vent valve opening pressure of 35 kPa

3. Substances which are flammable only (see 2.2.3 of ADN)

–	Flash-point < 23 ºC with 175 kPa ≤ Pv 50 < 300 kPa		
	• Without refrigeration:	closed type N	pressure (400 kPa)
	• With refrigeration:	closed type N	refrigerated with high-velocity vent valve opening pressure of 50 kPa
–	Flash-point < 23 ºC with 150 kPa ≤ Pv 50 < 175 kPa:	closed type N	with eductor opening pressure of 50 kPa
–	Flash-point < 23 ºC with 110 kPa ≤ Pv 50 < 150 kPa		
	• Without water spraying:	closed type N	with high-velocity vent valve opening pressure of 50 kPa
	• With water spraying:	closed type N	with high-velocity vent valve opening pressure of 10 kPa
–	Flash-point < 23 ºC with Pv 50 < 110 kPa:	closed type N	with high-velocity vent valve opening pressure of 10 kPa
–	Flash-point ≥ 23 ºC but ≤ 60 ºC:	open type N	with flame-arrester
–	Substances with a flash-point > 60 ºC heated to less than 15 K from the flash-point, N.O.S. (...):	open type N	with flame-arrester
–	Substances with a flash-point > 60 ºC heated to or above the flash-point, N.O.S. (...):	open type N	with flame-arrester

4. Corrosive substances (see 2.2.8 of ADN)

– **Corrosive substances liable to produce corrosive vapours**

● Substances assigned to packing group I or II in the list of substances and having a vapour pressure[1] greater than 12.5 kPa (125 mbar) at 50 ºC or	closed type N	cargo tank walls must be distinct from vessel hull; high-velocity vent valve/safety valve opening pressure of 10 kPa
● Substances liable to react dangerously with water (for example acid chlorides)		
● Substances containing gases in solution		
− **Corrosive acids:**		
● Substances assigned to packing group I or II in the list of substances and having a vapour pressure[1] of 12.5 kPa (125 mbar) or less at 50 ºC or	open type N	cargo tank walls must be distinct from vessel hull
● Substances assigned to packing group III in the list of substances and having a vapour pressure[1] of > 6.0 kPa (60 mbar) at 50 ºC or	open type N	cargo tank walls must be distinct from vessel hull
● Substances assigned to packing group III in the list of substances because of their degree of corrosiveness to steel or aluminium or	open type N	cargo tank walls must be distinct from vessel hull
● Substances with a melting point greater than 0 ºC and transported at elevated temperatures	open type N	cargo tank walls must be distinct from vessel hull
● Flammable substances	open type N	with flame-arresters
● Elevated temperature substances	open type N	with flame-arresters
● Non-flammable substances	open type N	without flame-arresters
− **All other corrosive substances:**		
● Flammable substance	open type N	with flame-arresters
● Non-flammable substances	open type N	without flame-arresters
5. Environmentally hazardous substances (see 2.2.9.1 of ADN)		
● Chronic 2 and 3 (group N2 in accordance with 2.2.9.1.10.2)	open type N	cargo tank walls must be distinct from vessel hull

[1] *If the data are available, the sum of the partial pressures of the dangerous substances may be used in place of the vapour pressure.*

	● Acute 2 and 3 (group N3 in accordance with 2.2.9.1.10.2)	open type N	_____
6.	**Substances of Class 9, UN No. 3257**	open type N	independent cargo tanks
7.	**Substances of Class 9, Identification No. 9003**		
	Flash-point > 60 ºC and ≤ 100 ºC:	open type N	_____

8. Substances that must be transported at elevated temperatures

For substances that must be transported at elevated temperatures, the type of cargo tank shall be determined on the basis of the transport temperature, using the following table:

Maximum transport temperature T in °C	Type N	Type C
T ≤ 80	2	2
80 < T ≤ 115	1 + remark 25	1 + remark 26
T > 115	1	1

1 = cargo tank type: independent tank

2 = cargo tank type: integral tank

Remark 25 = remark No. 25 in column (20) of the list of substances contained in Chapter 3.2, Table C.

Remark 26 = remark No. 26 in column (20) of the list of substances contained in Chapter 3.2, Table C.

9. Substances with long-term effects on health - CMR substances (Categories 1A and 1B in accordance with the criteria of chapters 3.5, 3.6 and 3.7 of GHS[2]), provided that they are already assigned to Classes 2 to 9 by virtue of other criteria

C carcinogenic

M mutagenic

R toxic to reproduction

	closed type N	cargo tank walls must be distinct from vessel hull; high-velocity vent valve opening pressure of at least 10 kPa, with water-spray system, if the internal pressurization of the tank is more than 10 kPa (calculation of the vapour pressure according to the formula for column 10, except that $v_a = 0.03$)

[2] *Since there is no official international list of CMR substances of Categories 1A and 1B, pending the availability of such a list, the list of CMR substances of Categories 1 and 2 in Directives 67/548/EEC and 88/379/EEC of the Council of the European Union, as amended, shall apply.*

10. Substances that float on the water surface ('floaters') or sink to the bottom of the water ('sinkers') (criteria in accordance with GESAMP),[3] provided that they are already assigned to Classes 3 to 9 and that type N is required on that basis

	open type N	cargo tank walls must be distinct from vessel hull

B. Column (9): Determination of state of cargo tank

(1) Refrigeration system

Determined in accordance with A.

(2) Possibility of heating the cargo

A possibility of heating the cargo shall be required:

- When the melting point of the substance to be transported is + 15 ºC or greater, or
- When the melting point of the substance to be transported is greater than 0 °C but less than + 15 °C and the outside temperature is no more than 4 K above the melting point. In column (20), reference shall be made to remark 6 with the temperature derived as follows: melting point + 4 K.

(3) Water-spray system

Determined in accordance with A.

(4) Cargo heating system on board

- For substances that must not be allowed to solidify owing to the possibility of dangerous reactions on reheating, and
- For substances that must be maintained at a guaranteed temperature of not less than 15 K below their flash-point.

C. Column (10): Determination of opening pressure of high-velocity vent valve in kPa

For vessels of type C, the opening pressure of the high-velocity vent valve shall be determined on the basis of the internal pressure of the tanks, rounded up to the nearest 5 kPa.

To calculate the internal pressure, the following formula shall be used:

$$P_{\max} = P_{Ob\max} + \frac{k \cdot v_a \left(P_0 - P_{Da}\right)}{v_a - \alpha \cdot \delta_t + \alpha \cdot \delta_t \cdot v_a} - P_o$$

$$k = \frac{T_{D\max}}{T_a}$$

In this formula:

[3] *IMO publication: "The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships", GESAMP Reports and Studies No. 64, IMO, London, 2002.*

P_{max} : Maximum internal pressure in kPa

P_{Obmax} : Absolute vapour pressure at maximum liquid surface temperature in kPa

P_{Da} : Absolute vapour pressure at filling temperature in kPa

P_0 : Atmospheric pressure in kPa

v_a : Free relative volume at filling temperature compared with cargo tank volume

α : Cubic expansion coefficient in K^{-1}

δ_t : Average temperature increase of the liquid due to heating in K

T_{Dmax} : Maximum gaseous phase temperature in K

T_a : Filling temperature in K

k : Temperature correction factor

t_{Ob} : Maximum liquid surface temperature in °C

In the formula, the following basic data are used:

P_{Obmax} : At 50 °C and 30 °C

P_{Da} : At 15 °C

P_0 : 101.3 kPa

v_a : 5% = 0.05

δ_t : 5 K

T_{Dmax} : 323 K and 310.8 K

T_a : 288 K

t_{Ob} : 50 °C and 30 °C

D. Column (11): Determination of maximum degree of filling of cargo tanks

If, in accordance with the provisions under A above:

–	Type G is required:	91%	however, in the case of deeply refrigerated substances: 95%
–	Type C is required:	95%	
–	Type N is required:	97%	however, in the case of substances in a molten state and of flammable liquids with 175 kPa $\leq P_{v50} <$ 300 kPa: 95%.

E. Column (13): Determination of type of sampling device

1 = *closed*:	-	Substances to be transported in pressure cargo tanks
	-	Substances with T in column (3b) and assigned to packing group I
	-	Stabilized substances to be transported under inert gas.
2 = *partly closed*:	-	All other substances for which type C is required
3 = *open*:	-	All other substances

F. Column (14): Determination of whether a pump-room is permitted below deck

No	-	All substances with letter T in the classification code indicated in column (3b) with the exception of substances of Class 2.
Yes	-	All other substances

G. Column (15): Determination of temperature class

Flammable substances shall be assigned to a temperature class on the basis of their auto-ignition point:

Temperature class	Auto-ignition temperature T of flammable liquids and gases in °C
T1	$T > 450$
T2	$300 < T \leq 450$
T3	$200 < T \leq 300$
T4	$135 < T \leq 200$
T5	$100 < T \leq 135$
T6	$85 < T \leq 100$

When anti-explosion protection is required and the auto-ignition temperature is not known, reference shall be made to temperature class T4, considered safe.

H. Column (16): Determination of explosion group

Flammable substances shall be assigned to an explosion group on the basis of their maximum experimental safe gaps. The maximum experimental safe gaps shall be determined in accordance with standard IEC 60079-1-1.

The different explosion groups are as follows:

Explosion group	Maximum experimental safe gap in mm
II A	> 0.9
II B	≥ 0.5 to ≤ 0.9
II C	< 0.5

When anti-explosion protection is required and the relevant data are not provided, reference shall be made to explosion group II B, considered safe.

I. Column (17): Determination of whether anti-explosion protection is required for electrical equipment and systems

Yes	- Substances with a flash-point ≤ 60 °C. - Substances that must be transported while heated to a temperature less than 15 K from their flash-point. - Flammable gases
No	- All other substances

J. Column (18): Determination of whether personal protective equipment, escape devices, portable flammable gas detectors, portable toximeters or ambient-air-dependent breathing apparatus is required

- PP: For all substances of Classes 1 to 9;
- EP: For all substances
  - of Class 2 with letter T or letter C in the classification code indicated in column (3b);
  - of Class 3 with letter T or letter C in the classification code

indicated in column (3b);
- of Class 4.1;
- of Class 6.1;
- of Class 8; and

for CMR substances of Category 1A or 1B according to chapters 3.5, 3.6 and 3.7 of GHS;

- EX: For all substances for which anti-explosion protection is required;
- TOX: For all substances of Class 6.1;
  For all substances of other classes with T in column (3b);
  For CMR substances of Category 1A or 1B according to chapters 3.5, 3.6 and 3.7 of GHS;
- A: For all substances for which EX or TOX is required.

K. Column (19): Determination of the number of cones or blue lights

For all substances of Class 2 with letter F in the classification code indicated in column (3b):	1 cone/light
For all substances of Classes 3 to 9 with letter F in the classification code indicated in column (3b) and assigned to packing group I or II:	1 cone/light
For all substances of Class 2 with letter T in the classification code indicated in column (3b):	2 cones/lights
For all substances of Classes 3 to 9 with letter T in the classification code indicated in column (3b) and assigned to packing group I or II:	2 cones/lights

L. Column (20): Determination of additional requirements and remarks

***Remark 1*:** Reference shall be made in column (20) to remark 1 for transport of UN No. 1005 AMMONIA, ANHYDROUS.

***Remark 2*:** Reference shall be made in column (20) to remark 2 for stabilized substances that react with oxygen.

***Remark 3*:** Reference shall be made in column (20) to remark 3 for substances that must be stabilized.

***Remark 4*:** Reference shall be made in column (20) to remark 4 for substances that must not be allowed to solidify owing to the possibility of dangerous reactions on reheating.

***Remark 5*:** Reference shall be made in column (20) to remark 5 for substances liable to polymerization.

***Remark 6*:** Reference shall be made in column (20) to remark 6 for substances liable to crystallization and for substances for which a heating system or possibility of heating is required and the vapour pressure of which at 20 ºC is greater than 0.1 kPa.

***Remark 7*:** Reference shall be made in column (20) to remark 7 for substances with a melting point of + 15 ºC or greater.

***Remark 8*:** Reference shall be made in column (20) to remark 8 for substances that react dangerously with water.

***Remark 9*:** Reference shall be made in column (20) to remark 9 for transport of UN No. 1131 CARBON DISULPHIDE.

***Remark 10*:** *No longer used*.

***Remark 11*:** Reference shall be made in column (20) to remark 11 for transport of UN No. 1040 ETHYLENE OXIDE WITH NITROGEN.

***Remark 12*:** Reference shall be made in column (20) to remark 12 for transport of UN No. 1280 PROPYLENE OXIDE and UN No. 2983 ETHYLENE OXIDE AND PROPYLENE OXIDE MIXTURE.

***Remark 13*:** Reference shall be made in column (20) to remark 13 for transport of UN No. 1086 VINYL CHLORIDE, STABILIZED.

***Remark 14*:** Reference shall be made in column (20) to remark 14 for mixtures or N.O.S. entries which are not clearly defined and for which type N is stipulated under the classification criteria.

***Remark 15*:** Reference shall be made in column (20) to remark 15 for substances that react dangerously with alkalis or acids such as sodium hydroxide or sulphuric acid.

***Remark 16*:** Reference shall be made in column (20) to remark 16 for substances that may react dangerously to local overheating.

***Remark 17*:** Reference shall be made in column (20) to remark 17 when reference is made to remark 6 or 7.

***Remark 18*:** *No longer used*.

***Remark 19*:** Reference shall be made in column (20) to remark 19 for substances that must under no circumstances come into contact with water.

***Remark 20*:** Reference shall be made in column (20) to remark 20 for substances the transport temperature of which must not exceed a maximum temperature in combination with the cargo tank materials. Reference shall be made to this maximum permitted temperature immediately after the number 20.

***Remark 21*:** *No longer used*.

***Remark 22*:** Reference shall be made in column (20) to remark 22 for substances for which a range of values or no value of the density is indicated in column (12).

***Remark 23*:** Reference shall be made in column (20) to remark 23 for substances the internal pressure of which at 30 ºC is less than 50 kPa and which are transported with water spraying.

***Remark 24*:** Reference shall be made in column (20) to remark 24 for transport of UN No. 3257 ELEVATED TEMPERATURE LIQUID, N.O.S.

***Remark 25*:** Reference shall be made in column (20) to remark 25 for substances that must be transported while heated in a type 3 cargo tank.

***Remark 26*:** Reference shall be made in column (20) to remark 26 for substances that must be transported while heated in a type 2 cargo tank.

***Remark 27*:** Reference shall be made in column (20) to remark 27 for substances for which the reference N.O.S. or a generic reference is made in column (2).

***Remark 28*:** Reference shall be made in column (20) to remark 28 for transport of UN No. 2448 SULPHUR, MOLTEN.

***Remark 29*:** Reference shall be made in column (20) to remark 29 for substances for which the vapour pressure or boiling point is indicated in column (2).

***Remark 30*:** Reference shall be made in column (20) to remark 30 for transport of UN Nos. 1719, 1794, 1814, 1819, 1824, 1829, 1830, 1832, 1833, 1906, 2240, 2308, 2583, 2584, 2677, 2679, 2681, 2796, 2797, 2837 and 3320 under the entries for which open type N is required.

***Remark 31*:** Reference shall be made in column (20) to remark 31 for transport of substances of Class 2 and UN Nos. 1280 PROPYLENE OXIDE and 2983 ETHYLENE OXIDE AND PROPYLENE OXIDE MIXTURE of Class 3.

***Remark 32*:** Reference shall be made in column (20) to remark 32 for transport of UN No. 2448 SULPHUR, MOLTEN of Class 4.1.

***Remark 33*:** Reference shall be made in column (20) to remark 33 for transport of UN Nos. 2014 and 2984 HYDROGEN PEROXIDE, AQUEOUS SOLUTION of Class 5.1.

***Remark 34*:** Reference shall be made in column (20) to remark 34 for transport of substances for which hazard 8 is mentioned in column (5) and type N in column (6).

***Remark 35*:** Reference shall be made in column (20) to remark 35 for substances for which a direct refrigeration system is not allowed.

***Remark 36*:** Reference shall be made in column (20) to remark 36 for substances for which only an indirect refrigeration system is allowed.

***Remark 37*:** Reference shall be made in column (20) to remark 37 for substances for which the cargo storage system must be capable of resisting the full vapour pressure of the cargo at the upper limits of the ambient design temperatures, whatever the system adopted for the boil-off gas.

***Remark 38*:** Reference must be made in column (20) to remark 38 for mixtures with an initial boiling point above 60 ºC in accordance with ASTMD 86-01.

Remark 39: Reference shall be made in column (20) to remark 39 for the carriage of UN No. 2187 CARBON DIOXIDE, REFRIGERATED LIQUID of Class 2.

***Remark 40*:** Reference shall be made in column (20) to remark 40 for the carriage of UN No. 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S (HEAVY HEATING OIL).