



Economic Commission for Europe**Inland Transport Committee****Working Party on the Transport of Dangerous Goods****Joint Meeting of the RID Committee of Experts and the
Working Party on the Transport of Dangerous Goods**

Geneva, 17-27 September 2019

Item 5 (b) of the provisional agenda

**Proposals for amendments to RID/ADR/ADN:
new proposals****Provisions in 5.5.3 for dry ice (UN 1845) as a consignment****Proposal transmitted by Switzerland*, *****Summary*

Executive summary: The aim of this proposal is to clarify the provisions of 5.5.3 relating to dry ice.

Action to be taken: Amendments to 5.5.3.

Related documents : OTIF/RID/RC/2014-B – ECE/TRANS/WP.15/AC.1/136,
paragraph 40;

OTIF/RID/RC/2014/43 –
ECE/TRANS/WP.15/AC.1/2014/43;

Informal document INF.51 from the Joint Meeting in
September 2014.

Introduction

1. In RID/ADR/ADN 2017, the scope of 5.5.3 was extended in 5.5.3.1 for dry ice (UN 1845) to the carriage of dry ice as a consignment in addition to its carriage as a coolant or conditioner. Since then, the conditions of carriage specified in 5.5.3 have also applied to carriage as a consignment.

* In accordance with the programme of work of the Inland Transport Committee for 2018-2019, (ECE/TRANS/2018/21/Add.1, Cluster 9, (9.2)).

** Circulated by the Intergovernmental Organisation for International Carriage by Rail (OTIF) under the symbol OTIF/RID/RC/2019/45.

2. However, the marking of packages in 5.5.3.4 is by definition only prescribed for packages containing a coolant or conditioner. However, if dry ice is carried purely as a consignment, this sub-section does not currently apply to the marking of packages. Consequently, according to RID/ADR/ADN 2019, a package which, in an extreme case, only contains a single element of dry ice for the cooling of foodstuffs must bear a marking. In contrast, a package which contains dry ice as a consignment need not be marked, irrespective of how much it contains. In our view, this should be rectified.

3. For carriage as a consignment therefore, no transport document or package marking will be available, so the carrier cannot know that the package contains UN 1845. Even if it were interpreted as requiring a marking according to 5.5.3.4, it would have to be marked as a coolant and conditioner, which would not be correct. This is because originally, the texts in 5.5.3 were only intended for coolants and conditioners. The aim of the amendment to 5.5.3.1.1 in RID/ADR/ADN 2017 was to make UN 1845 subject to the provisions of 5.5.3 when carried as a consignment and not just as a coolant. However, as the current version of the texts only relates to coolants and conditioners and has not been adapted, UN 1845 as a consignment is in fact not subject to these provisions.

4. In order to give the text in the second sub-paragraph of 5.5.3.1 a meaning in practice, according to which all the conditions of carriage in 5.5.3 apply to all types of carriage of UN 1845, the existing texts of 5.5.3 must be amended.

5. In addition, the reference to UN number 1845 in 2.2.9.1.14 should also be deleted, as dry ice is in all cases subject to the provisions of 5.5.3.

Proposal 1

6. Switzerland proposes to amend RID/ADR 5.5.3 as follows: For ADN, the same amendments should be made, with the necessary adaptations (e.g. "vehicles, wagons" instead of "wagons/vehicles").

"5.5.3 Special provisions applicable to the carriage of dry ice (UN 1845) and to packages and wagons/vehicles and containers containing substances presenting a risk of asphyxiation when used for cooling or conditioning purposes (such as dry ice (UN 1845) or nitrogen, refrigerated liquid (UN 1977) or argon, refrigerated liquid (UN 1951))

5.5.3.1 Scope

5.5.3.1.1 This section is not applicable to substances which may be used for cooling or conditioning purposes when carried as a consignment of dangerous goods, except for the carriage of dry ice (UN No. 1845). When they are carried as a consignment, these substances shall be carried under the relevant entry of Table A of Chapter 3.2 in accordance with the associated conditions of carriage.

For UN No. 1845, the conditions of carriage specified in this section, except 5.5.3.3.1, apply for all kinds of carriage, as a coolant, conditioner, or as a consignment. For the carriage of UN No. 1845, no other provisions of ADR apply.

5.5.3.1.2 This section is not applicable to gases in cooling cycles.

5.5.3.1.3 Dangerous goods used for cooling or conditioning tanks or MEGCs during carriage are not subject to this section.

5.5.3.1.4 Wagons/vehicles and containers containing substances used for cooling or conditioning purposes include wagons/vehicles and containers containing substances used for cooling or conditioning purposes inside packages as well as wagons/vehicles and containers with unpackaged substances used for cooling or conditioning purposes.

5.5.3.1.5 Sub-sections 5.5.3.6 and 5.5.3.7 only apply when there is an actual risk of asphyxiation in the wagon/vehicle or container. It is for the participants

concerned to assess this risk, taking into consideration the hazards presented by the substances being used for cooling or conditioning, the amount of substance to be carried, the duration of the journey, the types of containment to be used and the gas concentration limits given in the Note to 5.5.3.3.3.

5.5.3.2 General

5.5.3.2.1 Wagons/vehicles and containers **in which dry ice (UN 1845) is carried** or containing substances used for cooling or conditioning purposes (other than fumigation) during carriage are not subject to any provisions of RID/ADR other than those of this section.

5.5.3.2.2 When dangerous goods are loaded in wagons/vehicles or containers **in which dry ice (UN 1845) is carried** or containing substances used for cooling or conditioning purposes any provisions of RID/ADR relevant to these dangerous goods apply in addition to the provisions of this section.

5.5.3.2.3 (Reserved)

5.5.3.2.4 Persons engaged in the handling or carriage of wagons/vehicles and containers **in which dry ice (UN 1845) is carried or** containing substances used for cooling or conditioning purposes shall be trained commensurate with their responsibilities.

5.5.3.3 Packages containing **dry ice (UN 1845) or a coolant or conditioner**

5.5.3.3.1 Packaged dangerous goods requiring cooling or conditioning assigned to packing instructions P 203, P 620, P 650, P 800, P 901 or P 904 of 4.1.4.1 shall meet the appropriate requirements of that packing instruction.

5.5.3.3.2 **For dry ice (UN 1845) and for** packaged dangerous goods requiring cooling or conditioning assigned to other packing instructions, the packages shall be capable of withstanding very low temperatures and shall not be affected or significantly weakened by **the dry ice (UN 1845) or by** the coolant or conditioner. Packages shall be designed and constructed to permit the release of gas to prevent a build-up of pressure that could rupture the packaging. The dangerous goods shall be packed in such a way as to prevent movement after the dissipation of the **dry ice (UN 1845) or of** any coolant or conditioner.

5.5.3.3.3 Packages containing **dry ice (UN 1845) or** a coolant or conditioner shall be carried in well ventilated wagons/vehicles and containers. Marking according to 5.5.3.6 is not required in this case.

Ventilation is not required, and marking according to 5.5.3.6 is required, if:

- gas exchange between the load compartment and the driver's cab is prevented; or
- the load compartment is insulated, refrigerated or mechanically refrigerated equipment, for example as defined in the Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP) and separated from the driver's cab.

NOTE: In this context "well ventilated" means there is an atmosphere where the carbon dioxide concentration is below 0.5% by volume and the oxygen concentration is above 19.5% by volume.

5.5.3.4 Marking of packages containing **dry ice (UN 1845) or a coolant or conditioner**

5.5.3.4.1 **Packages containing dry ice (UN 1845) as a consignment shall be marked "CARBON DIOXIDE, SOLID" or "DRY ICE";** packages containing dangerous goods used for cooling or conditioning shall be marked with the name indicated in Column (2) of Table A of Chapter 3.2 of these dangerous goods followed by the words "AS COOLANT" or "AS CONDITIONER" as appropriate in an official language of the country of origin and also, if that

language is not English, French or German/English, French, German or Italian, in English, French or German/English, French, German or Italian, unless agreements concluded between the countries concerned in the transport operation provide otherwise.

5.5.3.4.2 The marks shall be durable, legible and placed in such a location and of such a size relative to the package as to be readily visible.

5.5.3.5 Wagons/vehicles and containers containing unpackaged dry ice

5.5.3.5.1 If dry ice in unpackaged form is used, it shall not come into direct contact with the metal structure of a wagon/vehicle or container to avoid embrittlement of the metal. Measures shall be taken to provide adequate insulation between the dry ice and the wagon/vehicle or container by providing a minimum of 30 mm separation (e.g. by using suitable low heat conducting materials such as timber planks, pallets etc.).

5.5.3.5.2 Where dry ice is placed around packages, measures shall be taken to ensure that packages remain in the original position during carriage after the dry ice has dissipated.

5.5.3.6 Marking of wagons/vehicles and containers

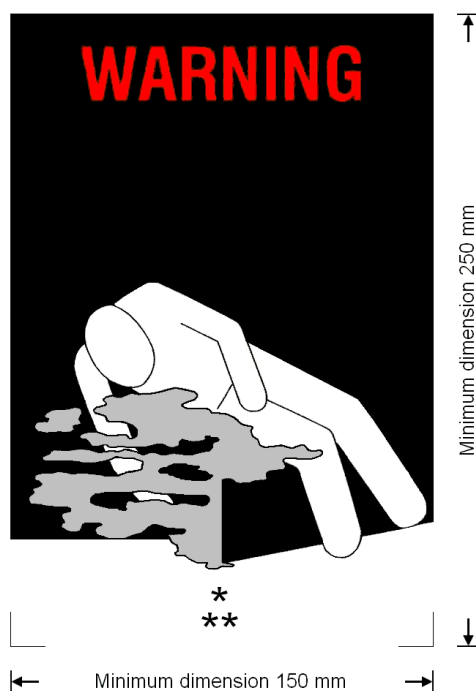
5.5.3.6.1 Wagons/vehicles and containers containing **dry ice (UN 1845)** or dangerous goods used for cooling or conditioning purposes that are not well ventilated shall be marked with a warning mark, as specified in 5.5.3.6.2, affixed at each access point in a location where it will be easily seen by persons opening or entering the wagon/vehicle or container. This mark shall remain on the wagon/vehicle or container until the following provisions are met:

- (a) The wagon/vehicle or container has been well ventilated to remove harmful concentrations of coolant or conditioner; and
- (b) The cooled or conditioned goods have been unloaded.

As long as the wagon/vehicle or container is marked, the necessary precautions have to be taken before entering it. The necessity of ventilating through the cargo doors or other means (e.g. forced ventilation) has to be evaluated and included in training of the involved persons.

5.5.3.6.2 The warning mark shall be as shown in Figure 5.5.3.6.2.

Figure 5.5.3.6.2



Dry ice and coolant/conditioning warning mark for wagons/vehicles and containers

- * Insert the name indicated in Column (2) of Table A of Chapter 3.2 of the coolant/conditioner **or for dry ice (UN 1845) as a consignment the name "CARBON DIOXIDE, SOLID or "DRY ICE".** The lettering shall be in capitals, all be on one line and shall be at least 25 mm high. If the length of the proper shipping name is too long to fit in the space provided, the lettering may be reduced to the maximum size possible to fit. For example: "CARBON DIOXIDE, SOLID".
- ** Insert "AS COOLANT" or "AS CONDITIONER" **as appropriate.** The lettering shall be in capitals, all be on one line and be at least 25 mm high.

The mark shall be a rectangle. The minimum dimensions shall be 150 mm wide × 250 mm high. The word "WARNING" shall be in red or white and be at least 25 mm high. Where dimensions are not specified, all features shall be in approximate proportion to those shown.

The words "WARNING", "CARBON DIOXIDE; SOLID", "DRY ICE", "AS COOLANT" **and** "AS CONDITIONER" shall be in an official language of the country of origin and also, if that language is not English, French or German/English, French, German or Italian, in English, French or German/English, French, German or Italian, unless agreements concluded between the countries concerned in the transport operation provide otherwise.

5.5.3.7 Documentation

5.5.3.7.1 Documents (such as a bill of lading, cargo manifest or CMR/CIM consignment note) associated with the carriage of wagons/vehicles or containers containing or having contained **dry ice (UN 1845) or** substances used for cooling or conditioning purposes and have not been completely ventilated before carriage shall include the following information:

- (a) The UN number preceded by the letters "UN"; and
- (b) The name indicated in Column (2) of Table A of Chapter 3.2 **or the name "CARBON DIOXIDE, SOLID" or "DRY ICE",** followed, **where appropriate,** by the words "AS COOLANT" or "AS CONDITIONER" as appropriate in an official language of the country

of origin and also, if that language is not English, French or German/English, French, German or Italian, in English, French or German/English, French, German or Italian, unless agreements, if any, concluded between the countries concerned in the transport operation provide otherwise.

For example: "UN 1845, CARBON DIOXIDE, SOLID, AS COOLANT".

5.5.3.7.2 The transport document may be in any form, provided it contains the information required in 5.5.3.7.1. This information shall be easy to identify, legible and durable."

Proposal 2

7. It is proposed to delete "UN 1845 CARBON DIOXIDE, SOLID (DRY ICE)**," in the Note to 2.2.9.1.14.
