

**Committee of Experts on the Transport of Dangerous Goods
and on the Globally Harmonized System of Classification
and Labelling of Chemicals**

Sub-Committee of Experts on the Transport of Dangerous Goods

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Listing, classification and packing

Transport of coolant/conditioning units

Revision of ST/SG/AC.10/C.3/2010/12

Submitted by Germany

Proposal

The following new section 5.5.3 should be included in Chapter 5.5 of the Model Regulations:

"5.5.3 Special provisions applicable to packages and cargo transport units 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))

***Note 1:** This section is not applicable to substances transported as a consignment of dangerous goods. When they are transported as a consignment substances are indicated in the Dangerous Goods List in Chapter 3.2 with the conditions of transport associated with these substances.*

***Note 2:** This section is not applicable to gases in cooling cycles.*

5.5.3.1 General

5.5.3.1.1 Dangerous goods used for cooling or conditioning ~~in~~-portable tanks during transport are not subject to these Regulations.

5.5.3.1.2 Cargo transport units containing substances used for cooling or conditioning purposes (other than fumigation) during transport are not subject to any provisions of these Regulations other than those of this section.

5.5.3.1.3 When dangerous goods are loaded in cooled or conditioned cargo transport units any provisions of these Regulations relevant to these dangerous goods apply in addition to the provisions of this ~~chapter~~ section.

5.5.3.1.4 For air transport, arrangements between consignor and operator shall be made for each consignment, to ensure that ventilation safety procedures are followed.

5.5.3.1.5 Persons engaged in the handling or transport of cooled or conditioned cargo transport units shall be trained commensurate with their responsibilities.

5.5.3.2 Packages containing a coolant or conditioner

5.5.3.2.1 Packaged dangerous goods requiring cooling or conditioning assigned to Packing Instructions P203, P620, P650, P800, P901 or P904 shall meet the appropriate requirements of that Packing Instruction.

5.5.3.2.2 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 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 to prevent movement after the dissipation of any coolant or conditioner.

5.5.3.2.3 Packages containing a coolant or conditioner shall be transported in well ventilated cargo transport units.

5.5.3.3 *Marking of packages containing a coolant or conditioner*

5.5.3.3.1 Packages ~~containing solid carbon dioxide (dry ice) used as a coolant shall be clearly marked with the words "WARNING UN 1845 CARBON DIOXIDE SOLID (DRY ICE)". For packages containing other dangerous goods used for cooling or conditioning, the UN number preceded by the letters "UN" and the proper shipping name of these dangerous goods shall be marked on the package, in addition to the word "WARNING".~~ Packages containing dangerous goods used for cooling or conditioning shall be marked with the word "WARNING" followed by the UN number preceded by the letters "UN" and the proper shipping name of these dangerous goods.

5.5.3.3.2 The markings shall be durable, legible and placed in such a location and of such a size relative to the packaging as to be readily visible.

5.5.3.4 *Cargo transport units containing unpackaged dry ice*

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

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

5.5.3.5 *Marking of cargo transport units*

5.5.3.5.1 Cargo transport units containing dangerous goods used for cooling or conditioning shall be marked with a warning mark, as specified in 5.5.3.5.2 affixed at each access point in a location where it will be easily seen by persons opening or entering the cargo transport unit. This mark shall remain on the cargo transport unit until the following provisions are met:

- (a) The cargo transport unit has been ventilated to remove harmful concentrations of coolant or conditioner; and
- (b) The cooled or conditioned goods have been unloaded.

5.5.3.5.2 The warning mark shall be rectangular and shall not be less than 150 mm wide and 250 mm high. The warning mark shall include:

- (a) The word "WARNING" in red or white with lettering not less than 25 mm high; and

(b) The UN number preceded by the letters "UN" followed by the words "AS COOLANT" or "AS CONDITIONER" as appropriate shall be shown below the symbol in black letters on a white background with lettering not less than 25 mm high.

For example: UN 1845 AS COOLANT
[UN XXXX AS CONDITIONER]

An illustration of this mark is given in Figure 5.5.2

Figure 5.5.2



~~*insert UN number preceded by the letters UN followed by the words "AS COOLANT" or "AS CONDITIONER" as appropriate~~

5.5.3.6 Documentation

5.5.3.6.1 Documents (such as a bill of lading or cargo manifest) associated with the transport of cargo transport units that have been cooled or conditioned and have not been completely ventilated before transport shall include the following information:

- (a) The UN number preceded by the letters "UN"; and
- (b) The proper shipping name followed by the words "AS COOLANT" or "AS CONDITIONER" as appropriate.

For example: UN 1845, CARBON DIOXIDE (~~DRY ICE~~), AS COOLANT"

5.5.3.6.2 The transport document may be in any form, provided it contains the information required in 5.5.3.6.1. This information shall be easy to identify, legible and durable."

Consequential amendments

13. Insert a new 1.1.1.7 as follows:

"1.1.1.7 Transport of dangerous goods used as a coolant or conditioner

Dangerous goods, that are asphyxiant (which dilute or replace the oxygen normally in the atmosphere) only, when used in cargo transport units for cooling or conditioning purposes are only subject to the provisions of section 5.5.3."

14. Insert a new 4.1.1.16~~14~~ as follows:

"4.1.1.11 Where ice is used as a coolant it shall not affect the integrity of the packaging."

The existing 4.1.1.16 and 4.1.1.17 are renumbered accordingly.

15. In the Dangerous Goods List, for UN 1845 delete "297" in column 6 and delete Special provision 297 in chapter 3.3.

16. Amend P650 as follows:

"(9) Refrigerated or frozen specimens: Ice, dry ice and liquid nitrogen

(a) When dry ice or liquid nitrogen is used as a coolant, all applicable requirements of these Regulations shall be met. When used, ice or dry ice shall be placed outside the secondary packagings or in the outer packaging or an overpack. Interior supports shall be provided to secure the secondary packagings in the original position after the ice or dry ice has dissipated. If ice is used, the outside packaging or overpack shall be leakproof. If carbon dioxide, solid (dry ice) is used, the packaging shall be designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packagings and the package (the outer packaging or the overpack) shall be marked ~~with the words "WARNING - UN 1845 CARBON DIOXIDE SOLID (DRY ICE)"~~.

Add a second sentence at the end of the additional requirement:

~~"Packages containing a coolant or conditioner shall be transported in well ventilated cargo transport units."~~ ~~["The requirements of 5.5.3 shall also apply."]~~

17. Amend the additional requirement of P904 to read as follows:

"Additional requirement:

Ice, dry ice and liquid nitrogen

When dry ice or liquid nitrogen is used as a coolant all applicable requirements of these Regulations shall be met. When used, ice or dry ice shall be placed outside the secondary packagings or in the outer packaging or an overpack. Interior supports shall be provided to secure the secondary packaging in the original position after the ice or dry ice has dissipated. If ice is used, the outside packaging or overpack shall be leakproof. If carbon dioxide, solid (dry ice) is used, the packaging shall be designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packagings and the package (the outer packaging or the overpack) shall be marked ~~with the words "WARNING - UN 1845 CARBON DIOXIDE SOLID (DRY ICE)"~~.

The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the refrigerant used as well as the temperatures and the pressures which could result if refrigeration were lost.

~~"Packages containing a coolant or conditioner shall be transported in well ventilated cargo transport units."~~ ~~["The requirements of 5.5.3 shall also apply."]~~