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Ref. T3/1.01

Circular letter No.2999
6 October 2009

To: All IMO Members and Contracting Governments to the International Convention for the Safety of Life at Sea, 1974

Subject: **Amendments to the International Maritime Dangerous Goods (IMDG) Code (resolution MSC.122(75))**

1 In accordance with the procedure established by MSC 75, the Sub-Committee on Dangerous Goods, Solid Cargoes and Containers, at its fourteen session (21 to 25 September 2009), agreed to the draft amendments (amendment (35-10)) to the International Maritime Dangerous Goods Code adopted by resolution MSC.122(75).

2 The Secretary-General has the honour to transmit herewith, in accordance with article VIII(b)(i) of the International Convention for the Safety of Life at Sea, 1974, the text of the proposed draft amendment to the IMDG Code, set out in the annex, for consideration by the Maritime Safety Committee, at its eighty-seventh session (12 to 21 May 2010), with a view to adoption in accordance with article VIII(b)(iv) of the Convention.

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**ANNEX**

**DRAFT AMENDMENTS TO THE INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG) CODE**

**Table of contents:**

3.1.3 Amend the title as follows:

"Mixtures or solutions".

5.4.1 Amend the title as follows:

"Dangerous goods transport information".

Insert the following:

"**Chapter 5.5 – Special provisions**
5.5.1 (Reserved).
5.5.2 Special provisions applicable to fumigated cargo transport units (UN 3359)".

Replace in 7.2.8 "Segregation provisions for goods of class 4.1 and class 5.2" with "(Reserved)".

Replace in 7.4.3 "Fumigated units" with "(Reserved)".

Insert "7.5.4 Tracking and monitoring equipment".

## PART 1 – GENERAL PROVISIONS, DEFINITIONS AND TRAINING

### Chapter 1.1 – General provisions

1.1.3.1 In the last sentence, in the word "provision" add the letter "s", and in the word "lists" delete the letter "s". Before "900" insert "349, 350, 351, 352, 353 and".

### Chapter 1.2 – Definitions, units of measurements and abbreviations

#### 1.2.1 Definitions

***Approval***

*Multilateral approval* Delete the last sentence ("The term … "through or into" specifically excludes … that country").

*Pressure receptacle* Before "and bundles" insert ", metal hydride storage systems".

*Repaired IBC* In the second sentence, "manufacturer's specification" is replaced with "design type from the same manufacturer".

*Tank* At the end of the sentence, "substances of class 2" is replaced with "gases as defined in 2.2.1.1".

*Cargo transport unit* is replaced by the following:

"*Cargo transport unit* means a road transport tank or freight vehicle, a railway transport tank or freight wagon, a multimodal freight container or portable tank, or a MEGC;".

*Closed cargo transport unit* is replaced by the following:

"*Closed cargo transport unit*, with the exception of class 1, means a cargo transport unit which totally encloses the contents by permanent structures with complete and rigid surfaces. Cargo transport units with fabric sides or tops are not considered closed cargo transport units; for definition of class 1 *cargo transport unit* see 7.1.7.1.1".

*GHS* In the first sentence "second" is replaced with "third" and the reference "Rev.2" is replaced with "Rev.3".

*Liquids* After "(ADR)" insert ", as amended" and the footnote is deleted.

*Tank* Insert a hyphen between "tank" and "wagon" and between "tank" and "vehicle".

The following new definitions are inserted in alphabetical order:

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

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

*Manual of test and criteria* means the fifth revised edition of the United Nations publication entitled "*Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria*" (ST/SG/AC.10/11/Rev.5).

*Metal hydride storage system* means a single complete hydrogen storage system, including a receptacle, metal hydride, pressure relief device, shut-off valve, service equipment and internal components used for the transport of hydrogen only.

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

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

(a) Is produced as a UN type from a non-UN type; or

(b) Is converted from one UN design type to another UN design type.

Remanufactured large packagings are subject to the same provisions of this Code that apply to new large packagings of the same type (see also design type definition in 6.6.5.1.2).

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

*Through or into* means through or into the countries in which a consignment is transported but specifically excludes countries "over" which a consignment is carried by air, provided that there are no scheduled stops in those countries."

**1.2.3 List of Abbreviations**

BC Code "BC Code" is replaced with "IMSBC Code", and its definition is replaced with "International Maritime Solid Bulk Cargo Code".

ISO The address of ISO is replaced with "1, ch. de la Voie-Creuse, CH-1211 Geneva 20, Switzerland".

**Chapter 1.3 – Training**

**1.3.1 Training of shore-side personnel**

1.3.1.1 In the first sentence, replace "shall receive training" with "shall be trained" and a new second sentence is inserted as follows:

"Employees shall be trained in accordance with the provisions of 1.3.1 before assuming responsibilities and shall only perform functions, for which required training has not yet been provided, under the direct supervision of a trained person.".

1.3.1.2 At the end of the introductory text, replace "shall receive the following training" with "shall be trained in the following".

1.3.1.2.1 Replace "shall receive training designed to provide familiarity" with "shall be trained in order to be familiar".

1.3.1.2.2 Replace "shall receive detailed training concerning" with "shall be trained in".

1.3.1.3 The existing paragraph is replaced by the following:

"1.3.1.3 Records of training received according to this chapter shall be kept by the employer and made available to the employee or competent authority, upon request. Records shall be kept by the employer for a period of time established by the competent authority.".

1.3.1.4 In the first sentence, replace "should receive training on" with "should be trained in".

**Chapter 1.4 – Security provisions**

**1.4.2 General provisions for shore-side personnel**

**1.4.2.3 Security Training**

1.4.2.3.4 The existing paragraph is replaced by the following:

"1.4.2.3.4 Records of all security training received should be kept by the employer and made available to the employee or competent authority, upon request. Records should be kept by the employer for a period of time established by the competent authority.".

**1.4.3 Provisions for high consequence dangerous goods**

1.4.3.5 The existing paragraph is replaced by the following:

"1.4.3.5 For radioactive material, the provisions of this chapter are deemed to be complied with when the provisions of the Convention on Physical Protection of Nuclear Material[1] and the IAEA circular on The Physical Protection of Nuclear Material and Nuclear Facilities[2] are applied.".

**Chapter 1.5 – General provisions concerning class 7**

**1.5.1 Scope and application**

1.5.1.1 In the second sentence, replace "2005" with "2009" (twice). And the last sentence is replaced by the following:

"Explanatory material can be found in "Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material (2009 Edition)", Safety Standard Series No. TS-G-1.1 (Rev.1), IAEA, Vienna (2008)"

and the footnote is deleted.

1.5.1.2 The first sentence is replaced by the following:

"The objective of this Code is to establish provisions that shall be satisfied to ensure safety and to protect persons, property and the environment from the effects of radiation in the transport of radioactive material.".

1.5.1.3 In the third sentence, replace "that is characterized" with "that are characterized".

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[1] IAEACIRC/274/Rev.1, IAEA, Vienna (1980).

[2] IAEACIRC/225/Rev.4 (Corrected), IAEA, Vienna (1999). See also "Guidance and Considerations for the Implementation of INFCIRC/225/Rev.4, the Physical Protection of Nuclear Material and Nuclear Facilities, IAEA-TECDoc-967/Rev.1.

1.5.1.5.1 The first paragraph is replaced by the following:

"1.5.1.5.1 Excepted packages which may contain radioactive material in limited quantities, instruments, manufactured articles and empty packagings as specified in 2.7.2.4.1 shall be subject only to the following provisions of Parts 5 to 7:"

and subparagraph .1 is replaced by the following:

.1 The applicable provisions specified in 5.1.2, 5.1.3.2, 5.1.4, 5.1.5.4, 5.2.1.5.2, 5.2.1.7, 7.1.14.1, 7.1.14.3 and 7.3.4.2;".

1.5.1.5.2 The existing paragraph is replaced by the following:

"1.5.1.5.2 Excepted packages shall be subject to the relevant provisions of all other parts of this Code.".

### 1.5.2 Radiation protection programme

1.5.2.3 At the end of the second sentence, replace "and 1.5.2.4" with ", 1.5.2.4 and 7.2.9".

## PART 2 – CLASSIFICATION

### Chapter 2.0 – Introduction

### 2.0.2 UN Numbers and Proper Shipping Names

2.0.2.2 The existing first paragraph is replaced by the following:

"2.0.2.2 Dangerous goods commonly transported are listed in the Dangerous Goods List in chapter 3.2. Where an article or substance is specifically listed by name, it shall be identified in transport by the proper shipping name in the Dangerous Goods List. Such substances may contain technical impurities (for example those deriving from the production process) or additives for stability or other purposes that do not affect their classification. However, a substance listed by name containing technical impurities or additives for stability or other purposes affecting its classification shall be considered a mixture or solution (see 2.0.2.5). For dangerous goods not specifically listed by name "generic" or "not otherwise specified" entries are provided (see 2.0.2.7) to identify the article or substance in transport.".

2.0.2.5 The existing paragraph is replaced by the following:

"2.0.2.5 A mixture or solution composed of a single predominant substance identified by name in the Dangerous Goods List and one or more substances not subject to the provisions of this Code and/or traces of one or more substances identified by name in the Dangerous Goods List, shall be assigned the UN number and proper shipping name of the predominant substance named in the Dangerous Goods List unless:

.1 The mixture or solution is identified by name in the Dangerous Goods List;

.2 The name and description of the substance named in the Dangerous Goods List specifically indicate that they apply only to the pure substance;

.3 The hazard class or division, subsidiary risk(s), packing group, or physical state of the mixture or solution is different from that of the substance named in the Dangerous Goods List; or

.4 The hazard characteristics and properties of the mixture or solution necessitate emergency response measures that are different from those required for the substance identified by name in the Dangerous Goods List.

In those other cases, except the one described in (.1), the mixture or solution shall be treated as a dangerous substance not specifically listed by name in the Dangerous Goods List.".

2.0.2.10 Add a new paragraph 2.0.2.10 with the following:

"2.0.2.10 A mixture or solution meeting the classification criteria of this Code that is not identified by name in the Dangerous Goods List and that is composed of two or more dangerous goods shall be assigned to an entry that has the proper shipping name, description, hazard class or division, subsidiary risk(s) and packing group that most precisely describe the mixture or solution.".

**2.0.3 Classification of substances, mixtures and solutions with multiple hazards (precedence of hazards characteristics)**

2.0.3.5 At the end of the paragraph, insert the following new sentence:

"For radioactive material in excepted packages, special provision 290 of chapter 3.3 applies.".

**Chapter 2.1 – Explosives**

**2.1.1.3 Definitions**

2.1.1.3 A new subparagraph .5 is added as follows:

".5 *Phlegmatized* means that a substance (or "phlegmatizer") has been added to an explosive to enhance its safety in handling and transport. The phlegmatizer renders the explosive insensitive, or less sensitive, to the following actions: heat, shock, impact, percussion or friction. Typical phlegmatizing agents include, but are not limited to: wax, paper, water, polymers (such as chlorofluoropolymers), alcohol and oils (such as petroleum jelly and paraffin).".

### 2.1.2 Compatibility groups and classification codes

2.1.2.2 Add the following new notes under the table:

> "**NOTE 1:** Articles of compatibility groups D and E may be fitted or packed together with their own means of initiation provided that such means have at least two effective protective features designed to prevent an explosion in the event of accidental functioning of the means of initiation. Such articles and packages shall be assigned to compatibility groups D or E.
>
> **NOTE 2:** Articles of compatibility groups D and E may be packed together with their own means of initiation, which do not have two effective protective features when, in the opinion of the competent authority of the country of origin, the accidental functioning of the means of initiation does not cause the explosion of an article under normal conditions of transport. Such packages shall be assigned to compatibility groups D or E.".

### 2.1.3 Classification Procedures

### 2.1.3.5.5 Default fireworks classification table**

2.1.3.5.5 In **Note 1** replace "all pyrotechnic composition" with "all pyrotechnic substances" and the existing **Note 2** is replaced by the following:

> "**NOTE 2:** "Flash composition" in this table refers to pyrotechnic substances in powder form or as pyrotechnic units as presented in the fireworks, that are used to produce an aural effect, or used as a bursting charge or lifting charge, unless the time taken for the pressure rise is demonstrated to be more than 8 ms for 0.5 g of pyrotechnic substance in the HSL Flash Composition Test in Appendix 7 of the United Nations Manual of Tests and Criteria.".

2.1.3.5.5 Within the **Default fireworks classification table**, replace "pyrotechnic composition" with "pyrotechnic substance" whenever it appears.

## Chapter 2.2 – Class 2 Gases

### 2.2.0 Introductory notes

2.2.0 **Note 2** is deleted.

2.2.0 Delete the words "Note 1:" and in the title of 2.2.0 delete "s" in the word "notes".

### 2.2.2 Class subdivisions

2.2.2.2 In subparagraph .2, delete the second sentence ("The oxidizing ability … 10156-2:2005)"

and the following new note is added:

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* [Footnote text is unchanged.]

"**NOTE:** In 2.2.2.2.2, "gases which cause or contribute to the combustion of other material more than air does" means pure gases or gas mixtures with an oxidizing power greater than 23.5% as determined by a method specified in ISO 10156:1996 or 10156-2:2005.".

2.2.2.6 A new paragraph 2.2.2.6 is added as follows:

"2.2.2.6 Gases of class 2.2 are not subject to the provisions of this Code when contained in the following:

.1 Foodstuffs (except UN 1950), including carbonated beverages;
.2 Balls intended for use in sports;
.3 Tyres (except for air transport); or
.4 Light bulbs provided they are packaged so that the projectile effects of any rupture of the bulb will be contained within the package.".

**2.2.3 Mixture of gases**

2.2.3.4 The reference "(see ISO 10156:1996 and ISO 10156-2:2055)" is replaced with "(see note in 2.2.2.2)".

**Chapter 2.3 – Class 3 Flammable liquids**

**2.3.3 Determination of flash point**

2.3.3.6 The existing section is replaced by the following:

"**2.3.3.6 Determination of flash point**

The following methods for determining the flash point of flammable liquids may be used:

International standards:

ISO 1516
ISO 1523
ISO 2719
ISO 13736
ISO 3679
ISO 3680

National standards:

*American Society for Testing Materials International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, USA 19428-2959:*

ASTM D3828-07a, Standard Test Methods for Flash Point by Small Scale Closed Cup Tester

ASTM D56-05, Standard Test Method for Flash Point by Tag Closed Cup Tester

ASTM D3278-96(2004)e, Standard Test Methods for Flash Point of Liquids by Small Scale Closed-Cup Apparatus

ASTM D93-08, Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester.

*Association française de normalisation, AFNOR, 11, rue de Pressensé, 93571 La Plaine Saint-Denis Cedex:*

French Standard NF M 07 – 019

French Standards NF M 07 – 011/NF T 30 – 050/NF T 66 – 009

French Standard NF M 07 – 036

*Deutsches Institut für Normung, Burggrafenstr. 6, D-10787 Berlin:*

Standard DIN 51755 (flash points below 65°C)

*State Committee of the Council of Ministers for Standardization, 113813, GSP, Moscow, M-49 Leninsky Prospect, 9:*

GOST 12.1.044-84".

2.3.4 Add a new section 2.3.4 with the following:

"**2.3.4 Determination of initial boiling point**

The following methods for determining the initial boiling point of flammable liquids may be used:

International standards:

ISO 3924
ISO 4626
ISO 3405

National standards:

*American Society for Testing Materials International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, USA 19428-2959:*

ASTM D86-07a, Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure

ASTM D1078-05, Standard Test Method for Distillation Range of Volatile Organic Liquids

Further acceptable methods:

Method A.2 as described in Part A of the Annex to Commission Regulation (EC) No.440/2008[1].".

**Chapter 2.4 – Class 4 Flammable solids; substances liable to spontaneous combustion; substances which, in contact with water, emit flammable gases**

**2.4.3 Class 4.2 – Substances liable to spontaneous combustion**

**2.4.3.1 Definitions and properties**

2.4.3.1.2 The existing paragraph is replaced with the following:

"2.4.3.1.2 Self-heating of a substance is a process where the gradual reaction of that substance with oxygen (in air) generates heat. If the rate of heat production exceeds the rate of heat loss, then the temperature of the substance will rise which, after an induction time, may lead to self-ignition and combustion.".

**Chapter 2.5 – Class 5 Oxidizing substances and organic peroxides**

**2.5.3 Class 5.2 – Organic peroxides**

2.5.3.2.4 In the table, amend the entries listed below as follows:

| **Organic peroxide** | | **Column** | **Amendment** |
|---|---|---|---|
| UN No. 3105 tert-AMYLPEROXY-3,5,5-TRIMETHYLHEXANOATE | | Subsidiary risks and remarks | Delete "3)" |
| UN No 3106 DI-(2-tert-BUTYLPEROXYISOPROPYL)BENZENE(S) | | Organic peroxide | Amend to read "DI-(tert-BUTYLPEROXYISOPROPYL)BENZENE(S)" |
| UN No 3105 2,5-DIMETHYL-2,5-DI-(tert-BUTYLPEROXY)HEXANE *(Concentration > 52 – 100)* | (1st row) | Delete | |

and amend the index accordingly.

[1] Commission Regulation (EC) No 440/2008 of 30 May 2008 laying down test methods pursuant to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (Official Journal of the European Union, No. L 142 of 31.05.2008, p.1-739 and No. L 143 of 03.06.2008, p.55).

Insert the following new entries:

| Numbers (generic entry) | Organic peroxide | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| 3103 | 2,5-DIMETHYL-2,5-DI-(tert-BUTYLPEROXY)HEXANE | > 90 – 100 | | | | | OP5 | | | |
| 3105 | 2,5-DIMETHYL-2,5-DI-(tert-BUTYLPEROXY)HEXANE | > 52 – 90 | ≥ 10 | | | | OP7 | | | |

and amend the index accordingly.

## Chapter 2.6 – Toxic and infectious substances

### 2.6.0 Introductory notes

**NOTE 2:** In the paragraph, before "an infectious" insert the words "a toxic or".

### 2.6.2 Class 6.1 – Toxic substances

2.6.2.2.4.2 At the end of the NOTE, the reference "2.8.2.2" should be replaced with "2.8.2.3". And move the note to 2.6.2.2.4.1.

### 2.6.3 Class 6.2 – Infectious substances

2.6.3.1.5 The existing paragraph is deleted and "(reserved)" is added.

2.6.3.6.2 Amend to read: "Animal material affected by pathogens of category A or which would be assigned to category A in cultures only, shall be assigned to UN 2814 or UN 2900 as appropriate. Animal material affected by pathogens of category B other than those which would be assigned to category A if they were in cultures shall be assigned to UN 3373".

## Chapter 2.7 – Radioactive material

### 2.7.1.3 Definitions or specific terms

*Fissile material* The paragraph before subparagraphs .1 and .2 is replaced with the following:

"*Fissile nuclides* means uranium-233, uranium-235, plutonium-239 and plutonium-241. Fissile material means a material containing any of the fissile nuclides. Excluded from the definition of fissile material are:"

### 2.7.2 Classification

### 2.7.2.2 Determination of activity level

2.7.2.2.1 In the table, under "Krypton (36)", add the following new entry:

" Kr-79 $4 \times 10^0$ $2 \times 10^0$ $1 \times 10^3$ $1 \times 10^5$ "

**2.7.2.3 Determination of other material characteristics**

**2.7.2.3.1** ***Low specific activity (LSA) material***

2.7.2.3.1.2.1 In subparagraph (ii) replace "providing they" with "that".

2.7.2.3.1.2.1 In subparagraphs (iii) and (iv) replace "excluding material classified as fissile according to 2.7.2.3.5" with "excluding fissile material not excepted under 2.7.2.3.5".

2.7.2.3.1.2.3 At the beginning and after "excluding powders," insert "meeting the requirements of 2.7.2.3.1.3,".

2.7.2.3.3.2.1 Replace ", or" with "and".

2.7.2.3.4.1 In the second sentence after "package", insert ", taking into account the provisions of 6.4.8.14,".

**2.7.2.3.5** ***Fissile material***

The introductory sentence is replaced with the following:

> "Packages containing fissile material shall be classified under the relevant entry of Table 2.7.2.1.1, the description of which includes the words "FISSILE" or "fissile-excepted". Classification as "fissile-excepted" is allowed only if one of the conditions (a) to (d) of this paragraph is met. Only one type of exception is allowed per consignment (see also 6.4.7.2).".

2.7.2.3.5.1 Replace by the following:

".1 A mass limit per consignment, provided that the smallest external dimension of each package is not less than 10 cm, such that:

$$\frac{\text{mass of uranium} - 235\,(\text{g})}{\text{X}} + \frac{\text{mass of other fissile material}\,(\text{g})}{\text{Y}} < 1$$

where X and Y are the mass limits defined in Table 2.7.2.3.5, provided that either:

(i) each individual package contains not more than 15 g of fissile nuclides; for unpackaged material, this quantity limitation shall apply to the consignment being carried in or on the conveyance; or

(ii) the fissile material is a homogeneous hydrogenous solution or mixture where the ratio of fissile nuclides to hydrogen is less than 5% by mass; or

(iii) there are not more than 5 g of fissile nuclides in any 10 litre volume of material.

Beryllium shall not be present in quantities exceeding 1% of the applicable consignment mass limits provided in Table 2.7.2.3.5 except where the concentration of beryllium in the material does not exceed 1 gram beryllium in any 1000 grams.

Deuterium shall also not be present in quantities exceeding 1% of the applicable consignment mass limits provided in Table 2.7.2.3.5 except where deuterium occurs up to natural concentration in hydrogen.".

2.7.2.3.5.2 Replace "fissile material is" with "fissile nuclides are".

2.7.2.3.5.4 The paragraph is replaced by the following:

".4 Plutonium containing not more than 20% of fissile nuclides by mass up to a maximum of 1 kg of plutonium per consignment. Shipments under this exception shall be under exclusive use.".

**2.7.2.4.1** ***Classification as excepted package***

2.7.2.4.1.1.2 At the end of the sentence add "as specified in Table 2.7.2.4.1.2".

2.7.2.4.1.1.4 At the end of the sentence add "as specified in Table 2.7.2.4.1.2".

2.7.2.4.1.3 In the first sentence of the first paragraph replace "provided that" with "only if".

2.7.2.4.1.4 In the first sentence of the first paragraph, replace "Radioactive material with an activity not exceeding the limit" with "Radioactive material in forms other than as specified in 2.7.2.4.1.3 and with an activity not exceeding the limits".

2.7.2.4.1.5 In the first sentence, delete "with an activity not exceeding the limit specified in column 4 of Table 2.7.2.4.1.2" and replace "provided that" with "only if".

2.7.2.4.1.6 At the end, replace "provided that" with "only if".

**2.7.2.4.2** ***Classification as Low specific activity (LSA) material***

2.7.2.4.2 Replace "if the conditions of 2.7.2.3.1 and 4.1.9.2 are met" with "if the definition of LSA in 2.7.1.3 and the conditions of 2.7.2.3.1, 4.1.9.2 and 7.1.14.2 are met".

**2.7.2.4.3** ***Classification as Surface contaminated object (SCO)***

2.7.2.4.3 Replace "if the conditions of 2.7.2.3.2.1 and 4.1.9.2 are met" with "if the definition of SCO in 2.7.1.3 and the conditions of 2.7.2.3.2, 4.1.9.2 and 7.1.14.2 are met".

## Chapter 2.8 – Corrosive substances

### 2.8.2 Assignments to packing groups

2.8.2.4 At the end of the paragraph, replace "OECD Guideline 404*." with "OECD Test Guideline 404[1] or 435[2]. A substance which is determined not to be corrosive in accordance with OECD Test Guideline 430[3] or 431[4] may be considered not to be corrosive to skin for the purposes of this Code without further testing." And the footnote "*" is deleted.

## Chapter 2.9 – Miscellaneous dangerous goods substances and articles (Class 9) and environmentally hazardous substances

### 2.9.1 Definitions

2.9.1.2 The existing paragraph is deleted.

### 2.9.2 Assignment to class 9

2.9.2.1 Subparagraphs .3 and .4 are deleted.

2.9.2.2 Insert a new paragraph 2.9.2.2 with the following:

"2.9.2.2 The substances and articles of Class 9 are subdivided as follows:

**Substances which, on inhalation as fine dust, may endanger health**

2212 BLUE ASBESTOS (crocidolite) or
2212 BROWN ASBESTOS (amosite, mysorite)
2590 WHITE ASBESTOS (chrysotile, actinolite, anthophyllite, tremolite)

**Substances evolving flammable vapour**

2211 POLYMERIC BEADS, EXPANDABLE, evolving flammable vapour
3314 PLASTICS MOULDING COMPOUND in dough, sheet or extruded rope form evolving flammable vapour

**Lithium batteries**

3090 LITHIUM METAL BATTERIES (including lithium alloy batteries)
3091 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT (including lithium alloy batteries) or
3091 LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT (including lithium alloy batteries)

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[1] OECD Guideline for the testing of chemicals No. 404 "Acute Dermal Irritation/Corrosion" 2002.

[2] OECD Guideline for the testing of chemicals No. 435 "In Vitro Membrane Barrier Test Method for Skin Corrosion" 2006.

[3] OECD Guideline for the testing of chemicals No. 430 "In Vitro Skin Corrosion: Transcutaneous Electrical Resistance Test (TER)" 2004.

[4] OECD Guideline for the testing of chemicals No. 431 "In Vitro Skin Corrosion: Human Skin Model Test" 2004.

3480 LITHIUM ION BATTERIES (including lithium ion polymer batteries)
3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT (including lithium ion polymer batteries) or
3481 LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)

**Life-saving appliances**

2990 LIFE-SAVING APPLIANCES, SELF-INFLATING
3072 LIFE-SAVING APPLIANCES NOT SELF-INFLATING containing dangerous goods as equipment
3268 AIR BAG INFLATORS or
3268 AIR BAG MODULES or
3268 SEAT-BELT PRETENSIONERS

**Substances and articles which, in the event of fire, may form dioxins**

This group of substances includes:

2315 POLYCHLORINATED BIPHENYLS, LIQUID
3432 POLYCHLORINATED BIPHENYLS, SOLID
3151 POLYHALOGENATED BIPHENYLS, LIQUID or
3151 POLYHALOGENATED TERPHENYLS, LIQUID
3152 POLYHALOGENATED BIPHENYLS, SOLID or
3152 POLYHALOGENATED TERPHENYLS, SOLID

Examples of articles are transformers, condensers and apparatus containing those substances.

**Substances transported or offered for transport at elevated temperatures**

3257 ELEVATED TEMPERATURE LIQUID, N.O.S., at or above 100°C and below its flashpoint (including molten metal, molten salts, etc.)
3258 ELEVATED TEMPERATURE SOLID, N.O.S., at or above 240°C

**Environmentally hazardous substances**

3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

These entries are used for substances and mixtures which are dangerous to the aquatic environment that do not meet the classification criteria of any other class or another substance within Class 9. These entries may also be used for wastes not otherwise subject to the provisions of this Code but which are covered under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal and for

substances designated to be environmentally hazardous substances by the competent authority of the country of origin, transit or destination which do not meet the criteria for an environmentally hazardous substance according to the provisions of this Code or for any other hazard Class. The criteria for substances which are hazardous to the aquatic environment are given in section 2.9.3.

**Genetically modified micro-organisms (GMMOs) and genetically modified organisms (GMOs)**

3245 GENETICALLY MODIFIED MICRO-ORGANISMS or
3245 GENETICALLY MODIFIED ORGANISMS

GMMOs and GMOs which do not meet the definition of toxic substances (see 2.6.2) or infectious substances (see 2.6.3) shall be assigned to UN 3245.

GMMOs or GMOs are not subject to the provisions of this Code when authorized for use by the competent authorities of the countries of origin, transit and destination.

Genetically modified live animals shall be transported under terms and conditions of the competent authorities of the countries of origin and destination.

**Other substances or articles presenting a danger during transport, but not meeting the definitions of another class**:

1841 ACETALDEHYDE AMMONIA
1845 CARBON DIOXIDE, SOLID (DRY ICE)
1931 ZINC DITHIONITE (ZINC HYDROSULPHITE)
1941 DIBROMODIFLUOROMETHANE
1990 BENZALDEHYDE
2071 AMMONIUM NITRATE BASED FERTILISER
2216 FISH MEAL (FISH SCRAP), STABILIZED
2807 MAGNETIZED MATERIAL*
2969 CASTOR BEANS or
2969 CASTOR MEAL or
2969 CASTOR POMACE or
2969 CASTOR FLAKE
3166 ENGINE, INTERNAL COMBUSTION or
3166 VEHICLE, FLAMMABLE GAS POWERED or
3166 VEHICLE, FLAMMABLE LIQUID POWERED or
3166 ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or
3166 ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or
3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or
3166 VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED

* Not subject to the provisions of this Code but may be subject to provisions governing the transport of dangerous goods by other modes (see also special provision 960).

3171 BATTERY-POWERED VEHICLE or
3171 BATTERY-POWERED EQUIPMENT
3316 CHEMICAL KIT or
3316 FIRST AID KIT
3334 AVIATION REGULATED LIQUID, N.O.S.*
3335 AVIATION REGULATED SOLID, N.O.S.*
3359 FUMIGATED CARGO TRANSPORT UNIT
3363 DANGEROUS GOODS IN MACHINERY or
3363 DANGEROUS GOODS IN APPARATUS
3496 BATTERIES, NICKEL-METAL HYDRIDE".

**2.9.3 Environmentally hazardous substances (aquatic environment)**

**2.9.3.1 General definitions**

2.9.3.1.1 The definition of "Substance" is replaced by the following:

"Substance means chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition".

**2.9.3.2 Definitions and data requirements**

2.9.3.2.2 In the second sentence, before the word "freshwater", insert the words "it has been agreed that".

2.9.3.2.3 Replace second and third sentence with the following:

"These species are considered as surrogate for all aquatic organisms and data on other species such as Lemna, may also be considered if the test methodology is suitable".

2.9.3.2.5 In the third sentence, delete the word "aquatic".

2.9.3.2.5 The fourth sentence is replaced by the following:

"These are fresh water tests and thus the use of the results from OECD Test Guideline 306, which is more suitable for marine environments, has also been included".

**2.9.3.4 Mixtures classification categories and criteria**

2.9.3.4.3.2 In the first paragraph, the last sentence is replaced by the following:

"When chronic (long term) toxicity data (NOEC) are also available, they shall be used as well".

2.9.3.4.4.1 In the first sentence, replace the words “this data” with “these data”.

2.9.3.4.5.1 In the first sentence, the words “classification of its ingredients” are replaced with “concentrations of its classified ingredients”.

2.9.3.4.5.2 The first sentence is replaced with the following:

> “Mixtures may be made of a combination of both ingredients that are classified (as Acute 1 and/or Chronic 1, 2) and those for which adequate test data are available.”

and in the second sentence replace “toxicity data is available” with “toxicity data are available”.

2.9.3.4.6.1.1 In the last sentence, the words “and it is not necessary therefore to undergo the further classification procedure” are replaced with “; therefore, it is not necessary to pursue the classification procedure further”.

2.9.3.4.6.4.1 The first sentence is replaced with the following:

> “Category acute 1 ingredients with toxicities well below 1 mg/*l* may influence the toxicity of the mixture and are given increased weight in applying the summation method.”

and the second sentence is replaced by the following:

> “When a mixture contains ingredients classified as acute 1 or chronic 1, the tiered approach described in 2.9.3.4.6.2 and 2.9.3.4.6.3 shall be applied using a weighted sum by multiplying the concentrations of acute 1 ingredients by a factor, instead of merely adding up the percentages”.

## PART 3 – DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND EXEMPTIONS

### Chapter 3.1 – General

#### 3.1.2 Proper Shipping Names

3.1.2 Delete **Note 2** and renumber **Note 3** as **Note 2**.

#### 3.1.2.8 Generic or “not otherwise specified” (N.O.S.) entries

3.1.2.8.1 In the first sentence after “special provision 274” insert “or 318”.

3.1.2.8.1.1 In the first sentence after “recognized chemical”, insert “or biological name,”.

**3.1.3 Mixtures and solutions containing one dangerous substance**

3.1.3 The existing section "3.1.3" and the title are replaced with the following:

"**3.1.3 Mixtures or solutions**

**NOTE:** Where a substance is specifically listed by name in the Dangerous Goods List, it shall be identified in transport by the proper shipping name in the Dangerous Goods List. Such substances may contain technical impurities (for example those deriving from the production process) or additives for stability or other purposes that do not affect its classification. However, a substance listed by name containing technical impurities or additives for stability or other purposes affecting its classification shall be considered a mixture or solution (see 2.0.2.2 and 2.0.2.5).

3.1.3.1 A mixture or solution is not subject to the provisions of this Code if the characteristics, properties, form or physical state of the mixture or solution are such that it does not meet the criteria, including human experience criteria, for inclusion in any class.

3.1.3.2 A mixture or solution composed of a single predominant substance identified by name in the Dangerous Goods List and one or more substances not subject to the provisions of this Code and/or traces of one or more substances identified by name in the Dangerous Goods List, shall be assigned the UN number and proper shipping name of the predominant substance named in the Dangerous Goods List unless:

.1 The mixture or solution is identified by name in the Dangerous Goods List;

.2 The name and description of the substance named in the Dangerous Goods List specifically indicate that they apply only to the pure substance;

.3 The hazard class or division, subsidiary risk(s), packing group, or physical state of the mixture or solution is different from that of the substance named in the Dangerous Goods List; or

.4 The hazard characteristics and properties of the mixture or solution necessitate emergency response measures that are different from those required for the substance identified by name in the Dangerous Goods List.

3.1.3.3 Qualifying words such as "MIXTURE" or "SOLUTION", as appropriate, shall be added as part of the proper shipping name, for example, "ACETONE SOLUTION". In addition, the concentration of the mixture or solution may also be indicated after the basic description of the mixture or solution, for example, "ACETONE 75% SOLUTION".

3.1.3.4 A mixture or solution meeting the classification criteria of this Code that is not identified by name in the Dangerous Goods List and that is composed of two or more dangerous goods shall be assigned to an entry that has the proper shipping name, description, hazard class or division, subsidiary risk(s) and packing group that most precisely describe the mixture or solution.".

**3.1.4 Segregation groups**

3.1.4.4 The segregation groups are amended as follows:

**8 Hypochlorites**

Add the following entries:

UN 3485 Calcium hypochlorite, dry, corrosive or calcium hypochlorite mixture, dry, corrosive with more than 39% available chlorine (8.8% available oxygen)

UN 3486 Calcium hypochlorite mixture, dry, corrosive with more than 10% but not more than 39% available chlorine

UN 3487 Calcium hypochlorite, hydrated, corrosive or calcium hypochlorite, hydrated mixture, corrosive, with not less than 5.5% but not more than 16% water

**18 Alkalis**

Add the following entry:

UN 3484 Hydrazine aqueous solution, flammable, with more than 37% hydrazine, by mass

**Chapter 3.2 – Dangerous Goods List**

For UN Nos. 0323, 0366, 0441, 0445, 0455, 0456, 0460 and 0500, add "347" in column (6).

For UN Nos. 1002 and 1956, delete "292" in column (6).

For UN Nos. 1092, 1098, 1135, 1143, 1163, 1182, 1185, 1238, 1239, 1244, 1251, 1510, 1541, 1580, 1595, 1605, 1647, 1670, 1695, 1752, 1809, 1810, 1834, 1838, 1892, 1994, 2232, 2334, 2337, 2382, 2407, 2474, 2477, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2521, 2605, 2606, 2644, 2646, 2668, 3023, 3079 and 3246 add "354" in column (6).

For UN Nos. 1092, 1098, 1135, 1143, 1163, 1182, 1185, 1238, 1239, 1244, 1251, 1541, 1580, 1595, 1605, 1647, 1670, 1695, 1752, 1809, 1810, 1838, 1892, 1994, 2232, 2334, 2337, 2382, 2407, 2474, 2477, 2480, 2482, 2484, 2485, 2486, 2487, 2488, 2521, 2606, 2644, 2646, 2668, 3023, 3246 and 3381 to 3390 amend the code in column (7b) to read "E0".

For UN Nos. 1135, 1143, 1695, 1752, 1809, 1810, 2232, 2337, 2382, 2474, 2477, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2521, 2605, 2606, 2644, 2646, 3023, 3079 and 3246 replace "P001" with "P602" in column (8).

For UN Nos. 1135, 1182, 1541, 1605, 1670, 1810, 1838, 1892, 2232, 2382, 2474, 2477, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2521, 2605, 2606, 2644, 2668, 3079 and 3246 amend the code in column (13) to read "T20".

For UN Nos. 1135, 1182, 1251, 1541, 1580, 1605, 1670, 1810, 1838, 1892, 2232, 2382, 2474, 2477, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2521, 2605, 2606, 2644, 2668, 3079 and 3246 add "TP37" in column (14).

For UN Nos. 1194, 1222, 1261, 1865, 3094 (PG I) and 3301 (PG I), replace "P099" with "P001" in column (8).

For UN Nos. 1251 and 1580 replace "T14" with "T22" in column (13).

For UN Nos. 1378, 1450, 1461, 1462, 1482 (PG II and III), 1549, 1556 (PG I, II and III), 1557 (PG I, II and III), 1564 (PG II and III), 1566 (PG II and III), 1583 (PG I, II and III), 1655 (PG I, II and III), 1707, 1935 (PG I, II and III), 2024 (PG I, II and III), 2025 (PG I, II and III), 2026 (PG I, II and III), 2291, 2570 (PG I, II and III), 2627, 2630, 2742, 2856, 2881 (PG I, II and III), 3141, 3144 (PG I, II and III), 3210 (PG II and III), 3212, 3213 (PG II and III), 3214, 3219 (PG II and III), 3256, 3257, 3258, 3283 (PG I, II and III), 3284 (PG I, II and III), 3285 (PG I, II and III), 3361, 3362 and 3440 (PG I, II and III) add "274" in column (6).

For UN Nos. 1391, 1649 and 2030 (PG I), delete "329" in column (6).

For UN Nos. 1450 and 3213(PG II and III), add "350" and delete "900" in column (6).

For UN Nos. 1461 and 3210 (PG II and III), add "351" and delete "900" in column (6).

For UN Nos. 1482 (PG II and III) and 3214, add "353" and delete "900" in column (6).

For UN Nos. 1748 (PG II), 2208 and 2880 (PG II and III), delete "313" in column (6).

For UN Nos. 1810, 1834 and 1838, replace "8" with "6.1" in column (3) and add "8" in column (4).

For UN Nos. 1810, 1838, 2474, 2486 and 2668, replace "II" with "I" in column (5).

For UN Nos. 1810, 1834, 2474 and 2668 add "TP13" in column (14).

For UN Nos. 1950 and 2037, add "344" in column (6).

For UN 1040 Add "342" in column (6).

For UN 1072 Add "355" in column (6).

For UN 1131 in column (16) delete "see also SP 953".

For UN Nos. 1259, 2845, 3194, 3392, 3394 in column (16) replace "Prohibited on any ship carrying goods of class 1 with exceptions as in 7.2.7.1.3.2" with "Separated longitudinally by an intervening complete compartment or hold from Class 1".

For UN 1266 (PG II and III) Add "163" in column (6).

For UN 1267 (PG I, II and III) Add “357” in column (6).

For UN 1267 (PG I) Delete “Boiling range: 14°C upwards”in column (17).

For UN 1268 (PG I) Delete “Boiling range: 14°C upwards”in column (17).

For UN 1462 Add “352” and delete “900” in column (6).

For UN 1510 Replace “5.1” with “6.1” in column (3) and replace “6.1” with “5.1” in column (4).

For UN 1580 Replace “P602” with “P601” in column (8).

For UN 1838 Replace “P001” with “P602” in column (8) and delete “IBC02” in column (10).

For UN 1845 Delete “III” in column (5).

For UN 1977 Add “345 346” in column (6).

For UN 1999 (PG II and III) In column (2), amend the name and description to read “TARS, LIQUID, including road oils, and cutback bitumens”. Amend the alphabetical index accordingly.

For UN Nos. 2078, 2206, 2236, 2250, 2281, 2285, 2290, 2328, 2478, 2480, 2482, 2484, 2485, 2487, 2488, 3080 and 3428, insert in column (17) “Irritating to skin, eyes and mucous membranes.”.

For UN 2315 Delete “908” in column (6).

For UN Nos. 2474, 2486 and 2668 amend the value in column (7a) to read “0”.

For UN Nos. 2481, 2483, 2486, 2605 and 3079, replace “3” with “6.1” in column (3) and replace “6.1” with “3” in column (4).

For UN Nos. 2910, 2916, 2917, 2919 and 3323, add “325” in column (6).

For UN 2481 Replace “P601” with “P602” in column (8).

For UN 2668 Replace “P001 IBC99” with “P602” in column (8) and delete “IBC99” in column (10).

For UN Nos. 3077 and 3082, delete “179” and “909” in column (6).

For UN Nos. 3095 (PG I), 3096 (PG I) and 3124 (PG I), replace “P099” with “P002” in column (8).

For UN 3151 Delete “908” in column (6).

For UN 3212 Add “349” in column (6).

For UN Nos. 3328, 3329, 3330 and 3331, add “326” in column (6).

For UN Nos. 3391 to 3394, 3395 to 3399 (PG I, II and III) and 3400 (PG II and III), add “TP36” in column (14).

For UN 3468 Add “356” in column (6) and replace “P099” with “P205” in column (8).

For UN 3474 In column (2), amend the name and description to read “1-HYDROXYBENZOTRIAZOLE MONOHYDRATE” and in column (6), delete “28”. Amend the alphabetical index accordingly.

For UN Nos. 3480 and 3481, add “348” in column (6).

For UN 3126 (PGII), 3127 (PGII), 3128 (PGII), 3131 (PGII) and 3132 (PGII) insert “T3” in column (13) and “TP33” in column (14).

For UN 3126 (PGIII), 3127 (PGIII), 3128 (PGIII), 3131 (PGIII) and 3132 (PGIII) insert “T1” in column (13) and “TP33” in column (14).

For UN 0020, 0021, 0243, 0244, 0245, 0246, 0248, 0249, 0250, 0301, 0303, 0322, 0354, 0355, 0356, 0357, 0358, 0359, 0380 insert in column (17) “,” after “under deck” in the last sentence.

For UN 0501 replace “S-X” with “S-Y” in column (15).

For UN 0216, Amend column (2) to read “TRINITRO-m-CRESOL”. Amend the alphabetical index accordingly.

For UN 1110, Amend column (2) to read “n-AMYL METHYL KETONE”. Amend the alphabetical index accordingly.

For UN 1125, Amend column (2) to read “n-BUTYLAMINE”. Amend the alphabetical index accordingly.

For UN 1128, Amend column (2) to read “n-BUTYL FORMATE”. Amend the alphabetical index accordingly.

For UN 1131, Delete “953” in column (6) and replace in column (16) “Prohibited on any ship carrying goods of class 1 with exceptions as in 7.2.7.1.3.2” with “Separated longitudinally by an intervening complete compartment or hold from Class 1”.

For UN 1143, Replace “Category B” with “Category D” in column (16).

For UN 1274, Amend column (2) to read “n-PROPANOL (PROPYL ALCOHOL, NORMAL)”. Amend the alphabetical index accordingly.

For UN 1276, Amend column (2) to read “n-PROPYL ACETATE”. Amend the alphabetical index accordingly.

For UN 1348, Amend column (2) to read “SODIUM DINITRO-o-CRESOLATE, WETTED with not less than 15% water, by mass”. Amend the alphabetical index accordingly.

For UN 1391, Replace “e.g., metallic sodium, suspended in a flammable liquid such as toluene, xylene, naphta, kerosene, etc” with “suspended in a liquid” in column (17).

For UN 1471 (PG II) amend column (2) to read “LITHIUM HYPOCHLORITE, DRY or LITHIUM HYPOCHLORITE MIXTURE” and amend the alphabetical index accordingly.

For UN 1486, 1498 and 1499, add “964” in column (6).

For UN 1510, Replace in column (17) “Toxic if swallowed, by skin contact or by vapour inhalation” with “Highly toxic if swallowed, by skin contact or by inhalation”.

For UN 1512, Delete “B2” in column (11).

For UN 1579, Amend column (2) to read “4-CHLORO-o-TOLUIDINE HYDROCHLORIDE, SOLID”. Amend the alphabetical index accordingly.

For UN 1591, Amend column (2) to read “o-DICHLOROBENZENE”. Amend the alphabetical index accordingly.

For UN 1598, Amend column (2) to read “DINITRO-o-CRESOL”. Amend the alphabetical index accordingly.

For UN 1647, Replace “Category C” with “Category D” in column (16).

For UN 1649, Delete “*” in column (15) and delete “May have a flashpoint within the range of flammable liquids.” and “*If flammable : F-E, S-D” in column (17).

For UN 1661, Amend column (2) to read “NITROANILINES (o-, m-, p-)”. Amend the alphabetical index accordingly.

For UN 1663, Amend column (2) to read “NITROPHENOLS (o-, m-, p-)”. Amend the alphabetical index accordingly.

For UN 1673, Amend column (2) to read “PHENYLENEDIAMINES (o-, m-, p-)”. Amend the alphabetical index accordingly.

For UN 1810, Replace “Category C” with “Category D” in column (16) and add in column (17) “Highly toxic if swallowed, by skin contact or by inhalation.”.

For UN 1834, Replace “Category C” with “Category D” in column (16) and add in column (17) “Highly toxic if swallowed, by skin contact or by inhalation.”.

For UN 1838, Replace “Category C” with “Category D” in column (16) and replace in column (17) “Vapour irritates mucous membranes” with “Highly toxic if swallowed, by skin contact or by inhalation. Causes burns to skin, eyes and mucous membranes.”.

For UN 1865, Amend column (2) to read “n-PROPYL NITRATE”. Amend the alphabetical index accordingly.

For UN 1913, Replace “Category B” with “Category D” in column (16).

For UN 1951, Replace “Category B” with “Category D” in column (16).

For UN 1963, Replace “Category B” with “Category D” in column (16).

For UN 1970, Replace “Category B” with “Category D” in column (16).

For UN 1977, Delete in column (17) in the second sentence “of the gas”.

For UN 2030, Delete “*” in column (15) and delete “*If flammable : F-E, S-C (S-C is a special case)” in column (17).

For UN 2187, Replace “Category B” with “Category D” in column (16).

For UN 2201, Replace “Category B” with “Category D” in column (16).

For UN 2227, Amend column (2) to read “n-BUTYL METHACRYLATE, STABILIZED”. Amend the alphabetical index accordingly.

For UN 2247, Amend column (2) to read “n-DECANE”. Amend the alphabetical index accordingly.

For UN 2278, Amend column (2) to read “n-HEPTENE”. Amend the alphabetical index accordingly.

For UN 2337, Replace “Category B” with “Category D” in column (16).

For UN 2364, Amend column (2) to read “n-PROPYLBENZENE”. Amend the alphabetical index accordingly.

For UN 2384, Amend column (2) to read “DI-n-PROPYL ETHER”. Amend the alphabetical index accordingly.

For UN 2398, Amend column (2) to read “METHYL tert-BUTYL ETHER”. Amend the alphabetical index accordingly.

For UN 2455, Delete “F-C, S-V” in column (15).

For UN 2474, Replace “Category B” with “Category D” in column (16) and replace in column (17) “Toxic if swallowed, by skin contact or by inhalation” with “Highly toxic if swallowed, by skin contact or by inhalation”.

For UN 2477, Add “Clear of living quarters.” in column (16).

For UN 2481, Replace in column (17) “Toxic by inhalation” with “Highly toxic if swallowed, by skin contact or by inhalation”.

For UN 2482, Amend column (2) to read “n-PROPYL ISOCYANATE”. Amend the alphabetical index accordingly.

For UN 2483, Replace in column (17) “Toxic if swallowed, by skin contact or by inhalation” with “Highly toxic if swallowed, by skin contact or by inhalation”.

For UN 2485, Amend column (2) to read “n-BUTYL ISOCYANATE”. Amend the alphabetical index accordingly.

For UN 2486, Replace in column (17) “Toxic by inhalation” with “Highly toxic if swallowed, by skin contact or by inhalation”.

For UN 2591, Replace “Category B” with “Category D” in column (16).

For UN 2605, Replace in column (17) “Toxic if swallowed, by skin contact or by inhalation” with “Highly toxic if swallowed, by skin contact or by inhalation”.

For UN 2606, Replace “Category E” with “Category D” in column (16).

For UN 2644, Replace “Category C” with “Category D” in column (16).

For UN 2668, Replace “Category A” with “Category D” in column (16) and replace in column (17) “Toxic if swallowed, by skin contact or by inhalation” with “Highly toxic if swallowed, by skin contact or by inhalation”.

For UN 2671, Amend column (2) to read “AMINOPYRIDINES (o-, m-, p-)”. Amend the alphabetical index accordingly.

For UN 2740, Amend column (2) to read “n-PROPYL CHLOROFORMATE”. Amend the alphabetical index accordingly.

For UN 2743, Amend column (2) to read “n-BUTYL CHLOROFORMATE”. Amend the alphabetical index accordingly.

For UN 2949, Insert “,” after “HYDROSULPHIDE” in column (2).

For UN 3056, Amend column (2) to read “n-HEPTALDEHYDE”. Amend the alphabetical index accordingly.

For UN 3065 (PG II and III), Insert “,” after “BEVERAGES” in column (2).

For UN 3079, Replace in column (17) “Toxic if swallowed, by skin contact or by inhalation” with “Highly toxic if swallowed, by skin contact or by inhalation”.

For UN Nos 3101, 3102, 3103, 3104, 3105, 3106, 3107, 3108, 3109, 3110, 3111, 3112, 3113, 3114, 3115, 3116, 3117, 3118, 3119 and 3120, Add at the end of current text in column (17) “May evolve irritant or toxic fumes.”.

For UN 3124, Replace in column (17) “Toxic if swallowed, by skin contact or by inhalation” with “Highly toxic if swallowed, by skin contact or by inhalation”.

For UN 3166:

Amend column (2) to read “ENGINE, INTERNAL COMBUSTION or VEHICLE, FLAMMABLE GAS POWERED or VEHICLE, FLAMMABLE LIQUID POWERED or ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED”.

Amend column (6) to read “312 356 961 962”.

Amend column (15) to read “*”.

Amend column (16) to read “Category A”.

Amend column (17) to read “Type of articles transported under this entry include internal combustion engines, compression/ignition engines, fuel cell powered engines, motor vehicles, hybrid vehicles, motorcycles and boats. *F-D, S-U for gases or F-E, S-E for liquids.”.

Amend the alphabetical index accordingly.

For UN 3171:

Amend column (6) to read “240 961 962”.

Amend column (15) to read “F-I, S-I”.

Amend column (16) to read “Category A”.

Amend column (17) to read “Type of articles transported under this entry include vehicles or equipment powered by wet batteries, sodium batteries or lithium batteries with the batteries installed, such as electrically-powered cars, lawnmowers, wheelchairs and other mobility aids.”.

For UN 3359 In column (2), amend the proper shipping name to read “FUMIGATED CARGO TRANSPORT UNIT”. Delete “910” in column (6). In column (17), amend “FUMIGATED UNIT” to read “FUMIGATED CARGO TRANSPORT UNIT”, delete “Fumigants shall not be applied to the contents of a cargo transport unit once it has been loaded aboard the ship. A closed cargo transport unit that has been fumigated is not subject to the provisions of this Code if it has been completely ventilated either by opening the doors of the unit or by mechanical ventilation after fumigation and if the date of ventilation is marked on the fumigation warning sign (see also special provision 910)” and add “See also 5.5.2.”. Amend the proper shipping name in the index accordingly.

For UN Nos 3381, 3382, 3383, 3385, 3387 and 3389 Replace in column (17) “Highly toxic by inhalation. Toxic if swallowed or by skin contact.” with “Highly toxic if swallowed, by skin contact or by inhalation.” and “significant” with “highly”.

For UN Nos 3384, 3386, 3388 and 3390 Replace in column (17) “Toxic by inhalation, if swallowed or by skin contact.” with “Highly toxic if swallowed, by skin contact or by inhalation.” and “significant” with “highly”.

Add the following new entries:

| (1) | (2) | (3) | (4) | (5) | (6) | (7a) | (7b) | (8) | (9) | (10) | (11) | (13) | (14) | (15) | (16) | (17) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0509 | POWDER, SMOKELESS | 1.4C | - | - | - | 0 | E0 | P114(b) | PP48 | - | - | - | - | F-B, S-Y | Category 09. | Substances based on nitrocellulose used as a propellant. |
| 1471 | LITHIUM HYPOCHLORITE, DRY or LITHIUM HYPOCHLORITE MIXTURE | 5.1 | - | III | 223 | 5 kg | E1 | P002<br>LP02 | - | IBC08 | B3 | T1 | TP33 | F-H, S-Q | Category A.<br>Ventilation may be required.<br>The possible need to open hatches in case of fire to provide maximum ventilation and to apply water in an emergency, and the consequent risk to the stability of the ship through flooding of the cargo spaces, shall be considered before loading. "Separated from" ammonium compounds, acids, cyanides, hydrogen peroxide and liquid organic substances.<br>"Away from" sources of heat. | See entry above. |
| 3482 | ALKALI METAL DISPERSION, FLAMMABLE or ALKALINE EARTH METAL DISPERSION, FLAMMABLE | 4.3 | 3 | I | 182<br>183 | 0 | E0 | P402 | PP31 | - | - | - | - | F-G, S-N | Category D.<br>"Separated from" acids. | Finely divided alkali or alkaline earth metal suspended in a flammable liquid. Reacts violently with moisture, water or acids, evolving hydrogen, which may be ignited by the heat of the reaction. |
| 3483 | MOTOR FUEL ANTI-KNOCK MIXTURE, FLAMMABLE | 6.1 | 3<br>P | I | - | 0 | E5 | P602 | - | - | - | T14 | TP2<br>TP13 | F-E, S-D | Category D.<br>Clear of living quarters. Shaded from radiant heat. | Volatile flammable liquids evolving toxic vapour. Mixture of tetraethyllead or tetramethyllead with ethylene dibromide and ethylene dichloride. Insoluble in water. Highly toxic if swallowed, by skin contact or by inhalation. |
| 3484 | HYDRAZINE AQUEOUS SOLUTION, FLAMMABLE with more than 37% hydrazine, by mass | 8 | 3<br>6.1 | I | - | 0 | E0 | P001 | - | - | - | T10 | TP2<br>TP13 | F-E, S-C | Category D.<br>Clear of living quarters.<br>Segregation as for class 3, but "away from" class 4.1.<br>"Separated from" acids. | Colourless flammable liquid. Powerful reducing agent, burns readily. Toxic if swallowed, by skin contact or by inhalation. Causes burns to skin, eyes and mucous membranes. Reacts violently with acids. |

| (1) | (2) | (3) | (4) | (5) | (6) | (7a) | (7b) | (8) | (9) | (10) | (11) | (13) | (14) | (15) | (16) | (17) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3485 | CALCIUM HYPOCHLORITE, DRY, CORROSIVE or CALCIUM HYPOCHLORITE MIXTURE, DRY, CORROSIVE with more than 39% available chlorine (8.8% available oxygen) | 5.1 | 8 | II | 314 | 1 kg | E2 | P002 | PP85 | - | - | - | - | F-H, S-Q | Category D.<br>Cargo transport units shall be shaded from direct sunlight and stowed away from sources of heat. Packages in cargo transport units shall be stowed so as to allow for adequate air circulation throughout the cargo. "Separated from" ammonium compounds, acids, cyanides, hydrogen peroxides and liquid organic substances. | White or yellowish corrosive solid (powder, granules or tablets) with chlorine-like odour. Soluble in water. May cause fire in contact with organic material or ammonium compounds. Substances are liable to exothermic decomposition at elevated temperatures. This condition may lead to fire or explosion. Decomposition can be initiated by heat or by impurities (e.g., powdered metals (iron, manganese, cobalt, magnesium) and their compounds). Liable to heat slowly. Reacts with acids, evolving chlorine, an irritating, corrosive and toxic gas. In the presence of moisture, corrosive to most metals. Causes burns to skin, eyes and mucous membranes. |
| 3486 | CALCIUM HYPOCHLORITE MIXTURE, DRY, CORROSIVE with more than 10% but not more than 39% available chlorine | 5.1 | 8 | III | 314 | 5 kg | E1 | P002 | PP85 | - | - | - | - | F-H, S-Q | Category D.<br>Cargo transport units shall be shaded from direct sunlight and stowed away from sources of heat. Packages in cargo transport units shall be stowed so as to allow for adequate air circulation throughout the cargo. "Separated from" ammonium compounds, acids, cyanides, hydrogen peroxides and liquid organic substances. | White or yellowish corrosive solid (powder, granules or tablets) with chlorine-like odour. Soluble in water. May cause fire in contact with organic material or ammonium compounds. Substances are liable to exothermic decomposition at elevated temperatures. This condition may lead to fire or explosion. Decomposition can be initiated by heat or by impurities (e.g., powdered metals (iron, manganese, cobalt, magnesium) and their compounds). Liable to heat slowly. Reacts with acids, evolving chlorine, an irritating, corrosive and toxic gas. In the presence of moisture, corrosive to most metals. Causes burns to skin, eyes and mucous membranes. |
| 3487 | CALCIUM HYPOCHLORITE, HYDRATED, CORROSIVE or CALCIUM HYPOCHLORITE, HYDRATED MIXTURE, CORROSIVE with not less than 5.5% but not more than 16% water | 5.1 | 8 | II | 314<br>322 | 1 kg | E2 | P002 | PP85 | - | - | - | - | F-H, S-Q | Category D.<br>Cargo transport units shall be shaded from direct sunlight and stowed away from sources of heat. Packages in cargo transport units shall be stowed so as to allow for adequate air circulation throughout the cargo. "Separated from" ammonium compounds, acids, cyanides, hydrogen peroxides and liquid organic substances. | White or yellowish corrosive solid (powder, granules or tablets) with chlorine-like odour. Soluble in water. May cause fire in contact with organic material or ammonium compounds. Substances are liable to exothermic decomposition at elevated temperatures. This condition may lead to fire or explosion. Decomposition can be initiated by heat or by impurities (e.g., powdered metals (iron, manganese, cobalt, magnesium) and their compounds). |

| (1) | (2) | (3) | (4) | (5) | (6) | (7a) | (7b) | (8) | (9) | (10) | (11) | (13) | (14) | (15) | (16) | (17) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | Liable to heat slowly.<br>Reacts with acids, evolving chlorine, an irritating, corrosive and toxic gas. In the presence of moisture, corrosive to most metals. Causes burns to skin, eyes and mucous membranes. |
| 3487 | CALCIUM HYPOCHLORITE, HYDRATED, CORROSIVE or CALCIUM HYPOCHLORITE, HYDRATED MIXTURE, CORROSIVE with not less than 5.5% but not more than 16% water | 5.1 | 8 | III | 223<br>314 | 5 kg | E1 | P002 | PP85 | - | - | - | - | F-H, S-Q | Category D.<br>Cargo transport units shall be shaded from direct sunlight and stowed away from sources of heat. Packages in cargo transport units shall be stowed so as to allow for adequate air circulation throughout the cargo. "Separated from" ammonium compounds, acids, cyanides, hydrogen peroxides and liquid organic substances. | See entry above. |
| 3488 | TOXIC BY INHALATION LIQUID, FLAMMABLE, CORROSIVE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 $LC_{50}$ | 6.1 | 3<br>8 | I | 274 | 0 | E0 | P601 | - | - | - | T22 | TP2<br>TP13 | F-E, S-D | Category D.<br>Clear of living quarters.<br>Segregation as for class 3 but "away from" class 4.1. | A variety of toxic liquids which present a highly toxic inhalation hazard as well as being flammable and corrosive. Highly toxic if swallowed, by skin contact or by inhalation. Causes burns to skin, eyes and mucous membranes. |
| 3489 | TOXIC BY INHALATION LIQUID, FLAMMABLE, CORROSIVE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m³ and saturated vapour concentration greater than or equal to 10 $LC_{50}$ | 6.1 | 3<br>8 | I | 274 | 0 | E0 | P602 | - | - | - | T20 | TP2<br>TP13 | F-E, S-D | Category D. Clear of living quarters. Segregation as for class 3 but "away from" class 4.1. | A variety of toxic liquids which present a highly toxic inhalation hazard as well as being flammable and corrosive. Highly toxic if swallowed, by skin contact or by inhalation. Causes burns to skin, eyes and mucous membranes. |
| 3490 | TOXIC BY INHALATION LIQUID, WATER-REACTIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 $LC_{50}$ | 6.1 | 4.3<br>3 | I | 274 | 0 | E0 | P601 | - | - | - | T22 | TP2<br>TP13 | F-G, S-N | Category D. Clear of living quarters. Segregation as for class 3 but "away from" classes 3 and 8. | A variety of toxic liquids which present a highly toxic inhalation hazard as well as being water-reactive and flammable. Highly toxic if swallowed, by skin contact or by inhalation. |
| 3491 | TOXIC BY INHALATION LIQUID, WATER-REACTIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m³ and saturated vapour concentration greater than or equal to 10 $LC_{50}$ | 6.1 | 4.3<br>3 | I | 274 | 0 | E0 | P602 | - | - | - | T20 | TP2<br>TP13 | F-G, S-N | Category D. Clear of living quarters. Segregation as for class 3 but "away from" classes 3 and 8. | A variety of toxic liquids which present a highly toxic inhalation hazard as well as being water-reactive and flammable. Highly toxic if swallowed, by skin contact or by inhalation. |

| (1) | (2) | (3) | (4) | (5) | (6) | (7a) | (7b) | (8) | (9) | (10) | (11) | (13) | (14) | (15) | (16) | (17) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3492 | TOXIC BY INHALATION LIQUID, CORROSIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 $LC_{50}$ | 6.1 | 8<br>3 | I | 274 | 0 | E0 | P601 | - | - | - | T22 | TP2<br>TP13 | F-E, S-D | Category D. Clear of living quarters. Segregation as for class 3 but "away from" class 4.1. | A variety of toxic liquids which present a highly toxic inhalation hazard as well as being flammable and corrosive. Highly toxic if swallowed, by skin contact or by inhalation. Causes burns to skin, eyes and mucous membranes. |
| 3493 | TOXIC BY INHALATION LIQUID, CORROSIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m³ and saturated vapour concentration greater than or equal to 10 $LC_{50}$ | 6.1 | 8<br>3 | I | 274 | 0 | E0 | P602 | - | - | - | T20 | TP2<br>TP13 | F-E, S-D | Category D. Clear of living quarters. Segregation as for class 3 but "away from" class 4.1. | A variety of toxic liquids which present a highly toxic inhalation hazard as well as being flammable and corrosive. Highly toxic if swallowed, by skin contact or by inhalation. Causes burns to skin, eyes and mucous membranes. |
| 3494 | PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC | 3 | 6.1 | I | 343 | 0 | E0 | P001 | - | - | - | T14 | TP2<br>TP13 | F-E, S-E | Category D. Clear of living quarters. | Immiscible with water. Evolves hydrogen sulphide, which is a flammable, toxic gas with a foul odour, heavier than air (1.2). Toxic if swallowed, by skin contact or by inhalation. |
| 3494 | PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC | 3 | 6.1 | II | 343 | 1 *l* | E2 | P001 | - | IBC02 | - | T7 | TP2 | F-E, S-E | Category D. Clear of living quarters. | See entry above. |
| 3494 | PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC | 3 | 6.1 | III | 343 | 5 *l* | E1 | P001 | - | IBC03 | - | T4 | TP1 | F-E, S-E | Category C. Clear of living quarters. | See entry above. |
| 3495 | IODINE | 8 | 6.1 | III | 279 | 5 kg | E1 | P002 | - | IBC08 | B3 | T1 | TP33 | F-A, S-B | Category B. Clear of living quarters. "Separated from" ammonia. | Bluish-black solid with a metallic lustre and a pungent odour. Melting point: 114°C. Below its melting point, may evolve vapours which are irritating to skin, eyes and mucous membranes. Slightly soluble in water but soluble in the most organic solvents. Corrosive to most metals. |
| 3496 | BATTERIES, NICKEL-METAL HYDRIDE | 9 | - | - | 117<br>963 | 0 | E0 | See SP963 | - | - | - | - | - | F-A, S-I | Category A. "Away from" sources of heat. | Nickel-metal hydride button cells or nickel-metal hydride cells or batteries packed with or contained in equipment are not subject to the provisions of this Code. |

and amend the alphabetical index and Appendix A accordingly.

**Chapter 3.3 – Special provisions applicable to certain substances, materials or articles**

**3.3.1** Special Provisions

**SP172** Amend to read as follows:

"Radioactive material with a subsidiary risk shall:

(a) be labelled with subsidiary risks labels corresponding to each subsidiary risk exhibited by the material; corresponding placard shall be affixed to transport units in accordance with the relevant provisions of 5.3.1;

(b) be allocated to packing groups I, II or III, as and if appropriate, by application of the grouping criteria provided in Part 2 corresponding to the nature of the predominant subsidiary risk.

The description required in 5.4.1.5.7.1.2 shall include a description of these subsidiary risks (e.g., "Subsidiary risk: 3, 6.1"), the name of the constituents which most predominantly contribute to this (these) subsidiary risk(s), and where applicable, the packing group. For packing, see also 4.1.9.1.5."

**SP179** Delete.

**SP188** At the end of the second sentence in subparagraph .2, after "case", add the following text:

", except those manufactured before 1 January 2009"

and at the beginning of subparagraph .6, after "Except for packages containing", insert "button cell batteries installed in equipment (including circuit boards), or".

**SP198** Insert after "paints" the words ", perfumery products" and after "1263" insert ", 1266".

**SP219** Replace the existing text with the following:

"**219** Genetically modified microorganisms (GMMOs) and genetically modified organisms (GMOs) packed and marked in accordance with packing instruction P904 are not subject to any other provisions of this Code.

If GMMOs or GMOs meet the definition in Chapter 2.6 of a toxic substance or an infectious substance and the criteria for inclusion in Class 6.1 or 6.2 the provisions of this Code for transporting toxic substances or infectious substances apply.".

**SP240** Insert SP240 with the following:

"**240** This entry only applies to vehicles and equipment powered by wet batteries, sodium batteries or lithium batteries and transported with these batteries installed. Examples of such vehicles and equipment are electrically-powered cars, lawnmowers, wheelchairs and other mobility aids. Hybrid electric vehicles powered by both an internal combustion engine and wet batteries,

sodium batteries or lithium batteries, transported with the batteries installed shall be consigned under the entries UN 3166 VEHICLE, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FLAMMABLE LIQUID POWERED, as appropriate. Vehicles which contain a fuel cell shall be consigned under the entries UN 3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FUEL CELL, FLAMABLE LIQUID POWERED, as appropriate."

**SP290** Replace the existing text with the following:

"**290** When this radioactive material meets the definitions and criteria of other classes or divisions as defined in Part 2, it shall be classified in accordance with the following:

.1 Where the substance meets the criteria for dangerous goods in excepted quantities as set out in chapter 3.5, the packagings shall be in accordance with 3.5.2 and meet the testing requirements of 3.5.3. All other requirements applicable to radioactive material, excepted packages as set out in 1.5.1.5 shall apply without reference to the other class or division;

.2 Where the quantity exceeds the limits specified in 3.5.1.2 the substance shall be classified in accordance with the predominant subsidiary risk. The dangerous goods transport document shall describe the substance with the UN number and proper shipping name applicable to the other class supplemented with the name applicable to the radioactive excepted package according to column 2 in the Dangerous Goods List of chapter 3.2, and shall be transported in accordance with the provisions applicable to that UN number. An example of the information shown on the dangerous goods transport document is:

UN 1993, Flammable liquid, N.O.S. (ethanol and toluene mixture), Radioactive material, excepted package – limited quantity of material, class 3, PG II.

In addition, the provisions of 2.7.2.4.1 shall apply;

.3 The provisions of chapter 3.4 for the transport of dangerous goods packed in limited quantities shall not apply to substances classified in accordance with subparagraph .2;

.4 When the substance meets a special provision that exempts this substance from all dangerous goods provisions of the other classes it shall be classified in accordance with the applicable UN number of class 7 and all requirements specified in 1.5.1.5 shall apply.".

**SP292** Delete.

**SP302** Amend to read as follows:

"**302** Fumigated cargo transport units containing no other dangerous goods are only subject to the provisions of 5.5.2.".

**SP304** Amend to read as follows:

"This entry may only be used for the transport of non-activated batteries which contain dry potassium hydroxide and which are intended to be activated prior to use by the addition of an appropriate amount of water to the individual cells."

**SP 310** In the first sentence the word "lithium" is deleted.

**SP312** Insert SP312 with the following:

"**312** Vehicles or machinery powered by a fuel cell engine shall be consigned under the entries UN 3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED, or UN 3166 ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3166 ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED as appropriate. These entries include hybrid electric vehicles powered by both a fuel cell and an internal combustion engine with wet batteries, sodium batteries or lithium batteries, transported with the battery(ies) installed."

Other vehicles which contain an internal combustion engine shall be consigned under the entries UN 3166 VEHICLE, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FLAMMBLE LIQUID POWERED, as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries or lithium batteries, transported with the batteries installed.

**SP313** Delete.

**SP329** Delete.

**SP900** In the text, delete the following substances:

AMMONIUM BROMATE
AMMONIUM BROMATE SOLUTION
AMMONIUM CHLORATE
AMMONIUM CHLORATE SOLUTION
AMMONIUM CHLORITE
AMMONIUM PERMANGANATE
AMMONIUM PERMANGANATE SOLUTION

and replace:

"CHLORIC ACID AQUEOUS SOLUTION with a concentration exceeding 10%" with "CHLORIC ACID, AQUEOUS SOLUTION with more than 10% chloric acid"

"HYDROCYANIC ACID with more than 20% acid, by mass" with "HYDROCYANIC ACID, AQUEOUS SOLUTION (HYDROGEN CYANIDE, AQUEOUS SOLUTION) with more than 20% hydrogen cyanide"

"HYDROGEN CYANIDE SOLUTION with more than 45% HYDROGEN CYANIDE" with "HYDROGEN CYANIDE SOLUTION IN ALCOHOL with more than 45% hydrogen cyanide".

**SP908** Delete.

**SP909** Delete.

**SP910** Delete.

**SP 953** Delete.

Insert the following new special provisions:

"**342** Glass inner receptacles (such as ampoules or capsules) intended only for use in sterilization devices, when containing less than 30 ml of ethylene oxide per inner packaging with not more than 300 ml per outer packaging, may be transported in accordance with the provisions in chapter 3.5, irrespective of the indication of "E0" in column 7b of the Dangerous Goods List provided that:

.1 After filling, each glass inner receptacle has been determined to be leak-tight by placing the glass inner receptacle in a hot water bath at a temperature, and for a period of time, sufficient to ensure that an internal pressure equal to the vapour pressure of ethylene oxide at 55°C is achieved. Any glass inner receptacle showing evidence of leakage, distortion or other defect under this test shall not be transported under the terms of this special provision;

.2 In addition to the packaging required by 3.5.2, each glass inner receptacle is placed in a sealed plastics bag compatible with ethylene oxide and capable of containing the contents in the event of breakage or leakage of the glass inner receptacle; and

.3 Each glass inner receptacle is protected by a means of preventing puncture of the plastics bag (e.g., sleeves or cushioning) in the event of damage to the packaging (e.g., by crushing).

**343** This entry applies to crude oil containing hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard. The packing group assigned shall be determined by the flammability hazard and inhalation hazard, in accordance with the degree of danger presented.

**344** The provisions of 6.2.4 shall be met.

**345** This gas contained in open cryogenic receptacles with a maximum capacity of 1 litre constructed with glass double walls having the space between the inner and outer wall evacuated (vacuum insulated) is not subject to the provisions of this Code provided each receptacle is transported in an outer packaging with suitable cushioning or absorbent materials to protect it from impact damage.

**346** Open cryogenic receptacles conforming to the requirements of packing instruction P203 and containing no dangerous goods except for UN 1977, nitrogen, refrigerated liquid, which is fully absorbed in a porous material are not subject to any other provisions of this Code.

**347** This entry shall only be used if the results of Test series 6 (d) of Part I of the United Nations Manual of Tests and Criteria have demonstrated that any hazardous effects arising from functioning are confined within the package.

**348** Batteries manufactured after 31 December 2011 shall be marked with the Watt-hour rating on the outside case.

**349** Mixtures of a hypochlorite with an ammonium salt are not to be accepted for transport. UN No. 1791 hypochlorite solution is a substance of class 8.

**350** Ammonium bromate and its aqueous solutions and mixtures of a bromate with an ammonium salt are not to be accepted for transport.

**351** Ammonium chlorate and its aqueous solutions and mixtures of a chlorate with an ammonium salt are not to be accepted for transport.

**352** Ammonium chlorite and its aqueous solutions and mixtures of a chlorite with an ammonium salt are not to be accepted for transport.

**353** Ammonium permanganate and its aqueous solutions and mixtures of a permanganate with an ammonium salt are not to be accepted for transport.

**354** This substance is toxic by inhalation.

**355** Oxygen cylinders for emergency use transported under this entry may include installed actuating cartridges (cartridges, power device of Class 1.4, Compatibility Group C or S), without changing the classification of Class 2.2 provided the total quantity of deflagrating (propellant) explosives does not exceed 3.2 g per oxygen cylinder. The cylinders with the installed actuating cartridges as prepared for transport shall have an effective means of preventing inadvertent activation.

**356** Metal hydride storage system(s) installed in conveyances or in completed conveyance components or intended to be installed in conveyances shall be approved by the competent authority before acceptance for transport. The transport document shall include an indication that the package was approved by the competent authority or a copy of the competent authority approval shall accompany each consignment.

**357** Petroleum crude oil containing hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard shall be consigned under the entry UN 3494 PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC.

**961** Vehicles and equipment are not subject to the provisions of this Code if they are stowed on a roll-on/roll-off ship or in another cargo space designated by the Administration (flag State) as specifically designed and approved for the carriage of vehicles and equipment and there are no signs of leakage from the battery, engine, fuel cell, compressed gas cylinder or accumulator, or fuel tank when applicable.

In addition, vehicles and equipment are not subject to the provisions of this Code if any of the following conditions are met:

.1 The fuel tank(s) of the vehicle or equipment powered by a flammable liquid fuel is empty and installed batteries are protected from short circuit;

.2 The fuel tank(s) of the vehicle or equipment powered by a flammable gas is emptied of liquefied or compressed gas, the positive pressure in the tank does not exceed 2 bar, the fuel shut-off or isolation valve is closed and secured, and installed batteries are protected from short circuit; or

.3 The vehicle or equipment is solely powered by a wet or dry electric storage battery or a sodium battery, and the battery is protected from short circuit.

**962** Vehicles or equipment powered by internal combustion engines, fuel cells or batteries not meeting the conditions of special provision 961 shall be assigned to class 9 and shall meet the following requirements:

.1 vehicles and equipment shall not show signs of leakage from batteries, engines, fuel cells, compressed gas cylinders or accumulators, or fuel tank(s) when applicable;

.2 for flammable liquid powered vehicles and equipment, the fuel tank(s) containing the flammable liquid shall not be more than one-fourth full and in any case the flammable liquid shall not exceed 250 *l*;

.3 for flammable gas powered vehicles and equipment, the fuel shut-off valve of the fuel tank(s) shall be securely closed;

.4 installed batteries shall be protected from damage, short circuit, and accidental activation during transport. Lithium ion or lithium metal batteries shall meet the requirements of the United Nations Manual of Tests and Criteria, Part III, subsection 38.3, unless otherwise approved by the competent authority; and

.5 dangerous goods required for the operation of the vehicle or equipment such as fire extinguishers, compressed gas accumulators, airbag inflators, etc., shall be securely mounted in the vehicle or equipment.

The marking, labelling and placarding provisions of this Code shall not apply.”.

**963** Nickel-metal hydride button cells or nickel-metal hydride cells or batteries packed with or contained in equipment are not subject to the provisions of this Code.

All other nickel-metal hydride cells or batteries shall be securely packed and protected from short circuit. They are not subject to other provisions of this Code provided that they are loaded in a cargo transport unit in a total quantity of

less than 100 Kg gross mass. When loaded in a cargo transport unit in a total quantity of 100 Kg gross mass or more, they are not subject to other provisions of this Code except those of 5.4.1, 5.4.3 and column (16) of the dangerous good list in Chapter 3.2.

**964** This substance is not subject to the provisions of this Code when transported in non friable prills or granules form and if it passes the test for oxidizing solid substances as reflected in the United Nations *Manual of Test and Criteria* (see 34.4.1) and is accompanied by a certificate from a laboratory accredited by a competent authority, stating that the product has been correctly sampled by trained staff from the laboratory and that the sample was correctly tested and has passed the test.

## Chapter 3.4 – Limited quantities

### 3.4.2 Packing

3.4.2.1 Add a new second sentence to read as follows: "Intermediate packagings may be used.".

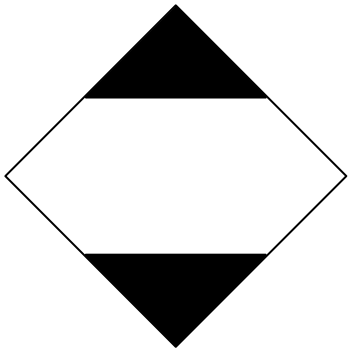
3.4.2.2 The end of the first sentence, after "with these special provisions", is replaced with the following:

"Inner packagings that are liable to break or be easily punctured, such as those made of glass, porcelain, stoneware or certain plastics, shall be placed in suitable intermediate packagings meeting the provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8, and be so designed that they meet the construction requirements of 6.1.4.".

### 3.4.5 Marking and labelling

3.4.5.1 and 3.4.5.2 are replaced with the following:

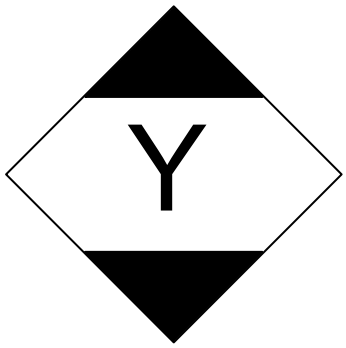
"3.4.5.1 Packages containing dangerous goods in limited quantities need not be labelled nor marked with the marine pollutant mark, proper shipping name or UN number of the contents, but shall bear the marking shown below. The marking shall comply with 5.2.1.9.



Marking for packages containing limited quantities

Top and bottom portions and line shall be black, centre area white or suitable contrasting background. Minimum dimensions: 100 mm x 100 mm.
Minimum width of line forming diamond: 2 mm.
If the size of the package so requires, the dimension may be reduced, to be not less than 50 mm x 50 mm provided the marking remains clearly visible.

3.4.5.2 Packages containing dangerous goods consigned for air transport in conformity with the provisions of Part 3, Chapter 4 of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air shall bear the marking shown below. The marking shall be readily visible, legible and able to withstand open weather exposure without a substantial reduction in effectiveness.




Marking for packages containing limited quantities conforming to Part 3, Chapter 4 of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air

Top and bottom portions and line shall be black, centre area white or suitable contrasting background. Minimum dimensions: 100 mm x 100 mm.
Minimum width of line forming diamond: 2 mm.
The symbol "Y" shall be placed in the centre of the mark and shall be clearly visible.
If the size of the package so requires, the dimension may be reduced, to be not less than 50 mm x 50 mm provided the marking remains clearly visible.

3.4.5.3 Packages containing dangerous goods bearing the marking shown in 3.4.5.2 shall be deemed to meet the provisions of sections 3.4.1, 3.4.2 and 3.4.4 of this chapter and need not bear the marking shown in 3.4.5.1.

3.4.5.4 When packages containing dangerous goods in limited quantities are placed in an overpack or in a unit load, the overpack or the unit load shall be marked with the marking required by this chapter unless the markings representative of all dangerous goods in the overpack or the unit load are visible. In addition, an overpack shall be marked with the word "OVERPACK" unless markings representative of all dangerous goods, as required by this chapter, in the overpack are visible.

3.4.5.5 Cargo transport units containing dangerous goods in only limited quantities shall not be placarded nor marked according to 5.3.2.0 and 5.3.2.1. They shall, however, be suitably marked on the exterior with the mark in 3.4.5.1 which shall have minimum dimensions of 250 mm x 250 mm in locations indicated in 5.3.1.1.4.1.".

### 3.4.7 Exceptions

3.4.7 Delete paragraph.

### 3.4.8 Marine pollutants

3.4.8 Renumbered as 3.4.7

## Chapter 3.5 – Dangerous goods packed in excepted quantities

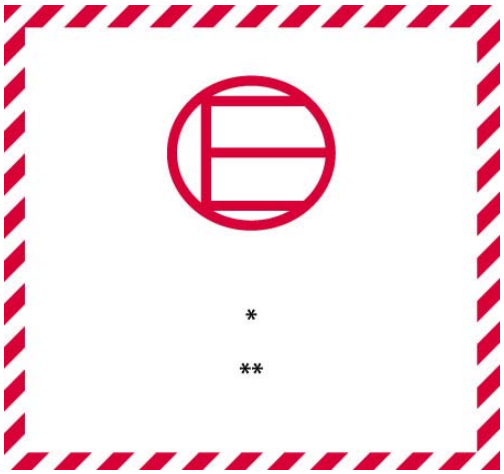
### 3.5.3 Tests of packages

3.5.3.1.2 In the last paragraph delete the word "drop".

### 3.5.4 Marking of packages

3.5.4.1 Amend the mark as follows:

"




Excepted quantities mark

Hatching and symbol of the same colour, black or red,
on white or suitable contrasting background

* *The Class or, when assigned, the Division number(s) shall be shown in this location.*

** *The name of the consignor or of the consignee shall be shown in this location if not shown elsewhere on the package.*"

## PART 4 – PACKING AND TANK PROVISIONS

### Chapter 4.1 – Use of packagings, including intermediate bulk containers (IBCs) and large packagings

#### 4.1.1 General provisions for the packing of dangerous goods in packagings including IBCs and large packagings

4.1.1.1 At the end, replace "or reused" with ", reused or remanufactured".

4.1.1.2 Add a new subparagraph .3 to read as follows:

".3 shall not allow permeation of the dangerous goods that could constitute a danger under normal conditions of transport.".

4.1.1.3 Replace the second sentence with the following:

"However, IBCs manufactured before 1 January 2011 and conforming to a design type which has not passed the vibration test of 6.5.6.13 or which was not required to meet the criteria of 6.5.6.9.5.4 at the time it was subjected to the drop test, may still be used.".

#### 4.1.4 List of packing instructions

4.1.4.1 Amend the following provisions:

**P001** Delete the asterisk in the PG I column against the authorized maximum capacity (250 *l*) specified for 6HA1 and 6HB1 composite packagings.

**P002** In special packing provision PP85, replace "For UN Nos. 1748, 2208 and 2880" with "For UN Nos. 1748, 2208, 2880, 3485, 3486 and 3487,".

**P114 (b)** Amend special packing provision PP48 to read as follows:

"**PP48** For UN Nos. 0508 and 0509, metal packagings shall not be used.".

**P200 (4)** In special packing provision "k:", amend the first sentence to read as follows:

"Valve outlets shall be fitted with pressure retaining gas-tight plugs or caps having threads that match those of the valve outlets.". Amend the seventh paragraph ("Each valve shall have a taper threaded connection …") to read as follows:

Each valve shall be capable of withstanding the test pressure of the pressure receptacle and be connected directly to the pressure receptacle by either a taper thread or other means which meets the requirements of ISO 10692-2:2001.".

In special packing provision "q:", in the first sentence, replace "The valves" with "Valve outlets". In the second sentence, at the end, replace "manifold outlet valve" with "outlet of the manifold valve" and add "pressure retaining" before "gas-tight plug". Add a new third sentence to read as follows:

"Gas-tight plugs or caps shall have threads that match those of the valve outlets."

and add the following new special packing provision "ra" below "r":

"ra: This gas may also be packed in capsules under the following conditions:

(i) The mass of gas shall not exceed 150 g per capsule;

(ii) The capsules shall be free from faults liable to impair the strength;

(iii) The leakproofness of the closure shall be ensured by an additional device (cap, crown, seal, binding, etc.) capable of preventing any leakage of the closure during transport;

(iv) The capsules shall be placed in an outer packaging of sufficient strength. A package shall not weigh more than 75 kg.".

**P200** In Table 2, against UN 1037, add "ra" in column "Special packing provisions".

**P203** Replace the existing "P203" with the following:

| **P203** | **PACKING INSTRUCTION** | **P203** |
|---|---|---|
| This instruction applies to class 2 refrigerated liquefied gases. | | |
| **Requirements for closed cryogenic receptacles:** | | |
| (1) | The general requirements of 4.1.6.1 shall be met. | |
| (2) | The requirements of chapter 6.2 shall be met. | |
| (3) | The closed cryogenic receptacles shall be so insulated that they do not become coated with frost. | |
| (4) | Test pressure<br>Refrigerated liquids shall be filled in closed cryogenic receptacles with the following minimum test pressures:<br>(a) For closed cryogenic receptacles with vacuum insulation, the test pressure shall not be less than 1.3 times the sum of the maximum internal pressure of the filled receptacle, including during filling and discharge, plus 100 kPa (1 bar);<br>(b) For other closed cryogenic receptacles, the test pressure shall be not less than 1.3 times the maximum internal pressure of the filled receptacle, taking into account the pressure developed during filling and discharge. | |
| (5) | Degree of filling<br>For non-flammable, non-toxic refrigerated liquefied gases the volume of liquid phase at the filling temperature and at a pressure of 100 kPa (1 bar) shall not exceed 98% of the water capacity of the pressure receptacle.<br>For flammable refrigerated liquefied gases the degree of filling shall remain below the level at which, if the contents were raised to the temperature at which the vapour pressure equalled the opening pressure of the relief valve, the volume of the liquid phase would reach 98% of the water capacity at that temperature. | |
| (6) | Pressure-relief devices<br>Closed cryogenic receptacles shall be fitted with at least one pressure-relief device. | |
| (7) | Compatibility<br>Materials used to ensure the leakproofness of the joints or for the maintenance of the closures shall be compatible with the contents. In the case of receptacles intended for the transport of oxidizing gases, (i.e. with a subsidiary risk of 5.1) these materials shall not react with these gases in a dangerous manner. | |

| P203 | PACKING INSTRUCTION | P203 |
|---|---|---|

**Requirements for open cryogenic receptacles:**

Only the following non oxidizing refrigerated liquefied gases of class 2.2 may be transported in open cryogenic receptacles: UN 1913, 1951, 1963, 1970, 1977, 2591, 3136 and 3158.

Open cryogenic receptacles shall be constructed to meet the following requirements:

(1) The receptacles shall be designed, manufactured, tested and equipped in such a way as to withstand all conditions, including fatigue, to which they will be subjected during their normal use and during normal conditions of transport.

(2) The capacity shall be not more than 450 litres.

(3) The receptacle shall have a double wall construction with the space between the inner and outer wall being evacuated (vacuum insulation). The insulation shall prevent the formation of hoar frost on the exterior of the receptacle.

(4) The materials of construction shall have suitable mechanical properties at the service temperature.

(5) Materials which are in direct contact with the dangerous goods shall not be affected or weakened by the dangerous goods intended to be transported and shall not cause a dangerous effect, e.g., catalysing a reaction or reacting with the dangerous goods.

(6) Receptacles of glass double wall construction shall have an outer packaging with suitable cushioning or absorbent materials which withstand the pressures and impacts liable to occur under normal conditions of transport.

(7) The receptacle shall be designed to remain in an upright position during transport, e.g., have a base whose smaller horizontal dimension is greater than the height of the centre of gravity when filled to capacity or be mounted on gimbals.

(8) The openings of the receptacles shall be fitted with devices allowing gases to escape, preventing any splashing out of liquid, and so configured that they remain in place during transport.

(9) Open cryogenic receptacles shall bear the following marks permanently affixed, e.g., by stamping, engraving or etching:
- The manufacturer's name and address;
- The model number or name;
- The serial or batch number;
- The UN number and proper shipping name of gases for which the receptacle is intended;
- The capacity of the receptacle in litres.

**P402** In PP 31, insert "3148," after "1422," and replace "and 3399 (PG I)" with ", 3399 (PG I) and 3482".

**P601** In special packing provision (1) in the first indent, replace "quantity of 1 litre" with "net quantity of 1 litre".

**P602** In special packing provision (1) in the first indent, replace "quantity of 1 litre" with "net quantity of 1 litre".

**P620** Add the following new additional requirement:

"4. Other dangerous goods shall not be packed in the same packaging as class 6.2 infectious substances unless they are necessary for maintaining the viability, stabilizing or preventing degradation or neutralizing the hazards of the infectious substances. A quantity of 30 ml or less of dangerous goods included in Classes 3, 8 or 9 may be packed in each primary receptacle

containing infectious substances. These small quantities of dangerous goods of Classes 3, 8 or 9 are not subject to any additional provisions of this Code when packed in accordance with this packing instruction."

and renumber remaining provision "4." as "5." accordingly.

**P621** In the second sentence, insert ", except 4.1.1.15," after "4.1.1".

**P804** (1) Replace the existing paragraph in the table with the following:

"(1) Combination packagings with a maximum gross mass of 25 kg, consisting of one or more glass inner packaging(s) with a maximum capacity of 1.3 litres each and filled to no more than 90% of their capacity; the closure(s) of which shall be physically held in place by any means capable of preventing back-off or loosening by impact or vibration during transport, individually placed in:

- metal or rigid plastics receptacles together with cushioning and absorbent material sufficient to absorb the entire contents of the glass inner packaging(s), further packed in;

- 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G, or 4H2 outer packagings."

**P901** Replace "Maximum quantity of dangerous goods per outer packaging: 10 kg." with "The quantity of dangerous goods per outer packaging shall not exceed 10 kg, excluding the mass of any carbon dioxide, solid, (dry ice) used as a refrigerant."

and at the end of the additional provision, add the following new text:

"<u>Dry ice</u>

When carbon dioxide, solid, (dry ice) is used as a refrigerant, the packaging shall be designed and constructed to permit the release of the gaseous carbon dioxide to prevent the build up of pressure that could rupture the packaging.".

**P904** Replace the existing "P904" with the following:

| **P904** | **PACKING INSTRUCTION** | **P904** |
|---|---|---|

This instruction applies to UN 3245.

The following packagings are authorized:

(1) Packagings meeting the provisions of 4.1.1.1, 4.1.1.2, 4.1.1.4, 4.1.1.8 and 4.1.3 and so designed that they meet the construction requirements of 6.1.4. Outer packagings constructed of suitable material of adequate strength and designed in relation to the packaging capacity and its intended use shall be used. Where this packing instruction is used for the transport of inner packagings of combination packagings the packaging shall be designed and constructed to prevent inadvertent discharge during normal conditions of transport.

(2) Packagings, which need not conform to the packaging test requirements of Part 6, but conforming to the following:

(a) An inner packaging comprising:

(i) primary receptacle(s) and a secondary packaging, the primary receptacle(s) or the secondary packaging shall be leakproof for liquids or siftproof for solids;

(ii) for liquids, absorbent material placed between the primary receptacle(s) and the secondary packaging. The absorbent material shall be in a quantity sufficient to absorb the entire contents of the primary receptacle(s) so that any release of the liquid substance will not compromise the integrity of the cushioning material or of the outer packaging;

(iii) if multiple fragile primary receptacles are placed in a single secondary packaging they shall be individually wrapped or separated to prevent contact between them;

(b) An outer packaging shall be strong enough for its capacity, mass and intended use, and with a smallest external dimension of at least 100 mm.

For transport, the mark illustrated below shall be displayed on the external surface of the outer packaging on a background of a contrasting colour and shall be clearly visible and legible. The mark shall be in the form of a square set at an angle of 45° (diamond-shaped) with each side having a length of at least 50 mm; the width of the line shall be at least 2 mm and the letters and numbers shall be at least 6 mm high.


**Additional provision:**

Ice, dry ice and liquid nitrogen

When dry ice or liquid nitrogen is used, all applicable provisions of this Code 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 "Carbon dioxide, solid" or "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.

Add the following new packing instruction:

| P205 | PACKING INSTRUCTION | P205 |
|---|---|---|
| This instruction applies to UN 3468. | | |
| (1) | For metal hydride storage systems, the general packing requirements of 4.1.6.1 shall be met. | |
| (2) | Only pressure receptacles not exceeding 150 litres in water capacity and having a maximum developed pressure not exceeding 25 MPa are covered by this packing instruction. | |
| (3) | Metal hydride storage systems meeting the applicable requirements for the construction and testing of pressure receptacles containing gas of chapter 6.2 are authorized for the transport of hydrogen only. | |
| (4) | When steel pressure receptacles or composite pressure receptacles with steel liners are used, only those bearing the "H" mark, in accordance with 6.2.2.9.2(j) shall be used. | |
| (5) | Metal hydride storage systems shall meet the service conditions, design criteria, rated capacity, type tests, batch tests, routine tests, test pressure, rated charging pressure and provisions for pressure relief devices for transportable metal hydride storage systems specified in ISO 16111:2008 and their conformity and approval shall be assessed in accordance with 6.2.2.5. | |
| (6) | Metal hydride storage systems shall be filled with hydrogen at a pressure not exceeding the rated charging pressure shown in the permanent markings on the system as specified by ISO 16111:2008. | |
| (7) | The periodic test requirements for a metal hydride storage system shall be in accordance with ISO 16111:2008 and carried out in accordance with 6.2.2.6, and the interval between periodic inspections shall not exceed five years. | |

### 4.1.4.2 Packing instructions concerning the use of IBCs

4.1.4.2 Amend the following packing instructions:

**IBC04** Replace ", 21N, 31A, 31B and 31N" with "and 21N".

**IBC05** In (1), replace ", 21N, 31A, 31B and 31N" with "and 21N".
In (2), replace ", 21H2, 31H1 and 31H2" with "and 21H2".
In (3), replace ", 21HZ1 and 31HZ1" with "and 21HZ1".

**IBC06, IBC07** and **IBC08**
In (1), replace ", 21N, 31A, 31B and 31N" with "and 21N".
In (2), replace ", 21H2, 31H1 and 31H2" with "and 21H2".
In (3), replace ", 21HZ2, 31HZ1 and 31HZ2" with "and 21HZ2".

**IBC06** Replace the additional provision with the following:

"**Additional provision:**
Where the solid may become liquid during transport see 4.1.3.4.".

**IBC07** Amend the additional provision to read as follows:

"**Additional provision:**
1. Where the solid may become liquid during transport see 4.1.3.4.
2. Liners of wooden IBCs shall be siftproof.".

**IBC08** Add the following new additional provision:

"**Additional provision:**
Where the solid may become liquid during transport see 4.1.3.4.".

**IBC520** For UN No. 3109, in the entry for Peroxyacetic acid, stabilized, not more than 17% (last entry), add "31H2" in column "Type of IBC". And in the eleventh row, "Isopropyl cumyl" should read "Isopropylcumyl" without a space,

and amend the index accordingly.

**IBC620** In the second sentence, insert ", except 4.1.1.15" after "4.1.1".

### 4.1.5 Special packing provisions for goods of class 1

4.1.5.5 Replace the existing paragraph with the following:

"4.1.5.5 Unless otherwise specified in this Code, packagings, including IBCs and large packagings, shall conform to the requirements of chapters 6.1, 6.5 or 6.6, as appropriate, and shall meet their test provisions for packing group II.".

### 4.1.6 Special packing provisions for goods of class 2

#### 4.1.6.1 General provisions

4.1.6.1.8 In the last paragraph, replace "the requirements of annex B of ISO 10297:1999" with "the requirements of annex A of ISO 10297:2006". At the end, add the following new paragraph:

"For metal hydride storage systems, the valve protection requirements specified in ISO 16111:2008 shall be met.".

4.1.6.1.10 In the first sentence, insert "or P205, as applicable" after "P200".

### 4.1.7 Special packing provisions for organic peroxides (class 5.2) and self-reactive substances of class 4.1

#### 4.1.7.1 Use of packagings

4.1.7.1 Amend the heading to read "**Use of packagings (except IBCs)**".

4.1.7.1.1 Replace existing paragraph with the following:

"4.1.7.1.1 Packagings for organic peroxides and self-reactive substances shall conform to the provisions of chapter 6.1 and shall meet its test provisions for packing group II.".

**4.1.7.2 Use of intermediate bulk containers**

4.1.7.2.1 At the end, add the following new sentence: "IBCs shall conform to the requirements of chapter 6.5 and shall meet its test provisions for packing group II.".

**4.1.9 Special packing provisions for class 7**

**4.1.9.1 General**

4.1.9.1.3 In the first sentence, after "package", insert ", other than an excepted package,".

4.1.9.1.5 Replace existing paragraph with the following:

"4.1.9.1.5 For radioactive material having other dangerous properties the package design shall take into account those properties. Radioactive material with a subsidiary risk, packaged in packages that do not require competent authority approval, shall be transported in packagings, IBCs, tanks or bulk containers fully complying with the provisions of the relevant chapters of Part 6 as appropriate, as well as applicable provisions of chapters 4.1, 4.2 or 4.3 for that subsidiary risk.".

**4.1.9.2 Provisions and controls for transport of LSA material and SCO**

4.1.9.2.3.2 Replace "2.7.2.3.2" with "2.7.1.2".

**4.1.9.3 Packages containing fissile material**

4.1.9.3.1 Insert "(or mass of each fissile nuclide for mixtures when appropriate)" after "a mass of fissile material".

**Chapter 4.2 – Use of portable tanks and multiple-element gas containers (MEGCs)**

**4.2.0 Transitional provisions**

4.2.0.3 A new paragraph "4.2.0.3" is added with the following:

"4.2.0.3 Portable tanks and MEGCs manufactured before 1 January 2012, that conform to the marking provisions of 6.7.2.20.1, 6.7.3.16.1, 6.7.4.15.1 or 6.7.5.13.1 of the IMDG Code in force on 1 January 2010 (amendment 34-08), as relevant, may continue to be used if they comply with all other relevant provisions of the current edition of the Code including, when applicable, the requirement of 6.7.2.20.1 (g) for marking the symbol "S" on the plate when the shell or the compartment is divided by surge plates into sections of not more than 7,500 litres capacity. When the shell, or the compartment, was already divided by surge plates into sections of not more than 7,500 litres capacity before 1 January 2012, the capacity of the shell, or respectively of the compartment, need not be supplemented with the symbol "S" until the next periodic inspection or test according to 6.7.2.19.5 is performed.

Portable tanks manufactured before 1 January 2014 need not be marked with the portable tank instruction as required in 6.7.2.20.2, 6.7.3.16.2 and 6.7.4.15.2 until the next periodic inspection and test.".

**4.2.5 Portable tank instructions and special provisions**

**4.2.5.2 Portable tank instructions**

4.2.5.2.6 In the table for portable tank instructions T1-T22, add a new footnote "b" in the heading of the last column after "Bottom-opening provisions". The footnote shall read as follows:

"[b] When this column indicates "not allowed", bottom openings are not permitted when the substance to be transported is a liquid (see 6.7.2.6.1). When the substance to be transported is a solid at all temperatures encountered under normal conditions of transport, bottom openings conforming to the provisions of 6.7.2.6.2 are authorized.".

**4.2.5.3 Portable tank special provisions**

4.2.5.3 Add the following new special provisions accordingly:

"TP36 Fusible elements in the vapour space may be used on portable tanks.

TP37 Portable tank provision T14 may continue to be applied until 31 December 2016 except:

.1 for UN 1810, 2474 and 2668, T7 may be applied;
.2 for UN 2486, T8 may be applied; and
.3 for UN 1838, T10 may be applied.".

## PART 5 – CONSIGNMENTS PROCEDURES

**Chapter 5.1 – General provisions**

5.1.1.3 Insert a new subsection 5.1.1.3 with the following:

"5.1.1.3.1 A carrier shall not accept dangerous goods for transport unless:

(a) A copy of the dangerous goods transport document and other documents or information as required by the provisions of this Code are provided; or

(b) The information applicable to the dangerous goods is provided in electronic form.

5.1.1.3.2 The information applicable to the dangerous goods shall accompany the dangerous goods to final destination. This information may be on the dangerous goods transport document or may be on another document. This information shall be given to the consignee when the dangerous goods are delivered.

5.1.1.3.3 When the information applicable to the dangerous goods is given to the carrier in electronic form, the information shall be available to the carrier at all times during transport to final destination. The information shall be able to be produced without delay as a paper document.".

Renumber (current) 5.1.1.3 as 5.1.1.4

**5.1.5 General provisions for class 7**

**5.1.5.1.4** ***Notifications***

5.1.5.1.4.1 Insert "the competent authority of the country of origin of the shipment and to" after "have been submitted to".

5.1.5.1.4.2 At the end, insert "the competent authority of the country of origin of the shipment and" after "shall notify".

5.1.5.1.4.4 In subparagraph .5, insert "(or of each fissile nuclide for mixtures when appropriate)" after "the mass of fissile material".

**5.1.5.3 Determination of transport index (TI) and criticality safety index (CSI)**

5.1.5.3.4.4 Replace "when otherwise specified in the competent authority approval certificate of the country of origin of design (see 2.7.2.4.6)" with "under the provisions of 5.1.5.3.5".

5.1.5.3.4.5 Replace "when otherwise specified in the competent authority approval certificate of the country of origin of design (see 2.7.2.4.6)" with "under the provisions of 5.1.5.3.5".

5.1.5.3.5 Add a new paragraph 5.1.5.3.5 to read as follows:

"5.1.5.3.5 In all cases of international transport of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, the categorization shall be in accordance with the certificate of the country of origin of design".

5.1.5.4 Add a new subsection 5.1.5.4 to read as follows:

"**5.1.5.4 Specific provisions for excepted packages**

5.1.5.4.1 Excepted packages shall be legibly and durably marked on the outside of the packaging with:

.1 The UN number preceded by the letters "UN";

.2 An identification of either the consignor or consignee, or both; and

.3 The permissible gross mass if this exceeds 50 kg.

5.1.5.4.2 The documentation provisions of chapter 5.4 do not apply to excepted packages of radioactive material, except that the UN number preceded by the letters "UN", and the name and address of the consignor and the consignee shall be shown on a transport document such as a bill of lading, air waybill or other similar document.".

**Chapter 5.2 – Marking and labelling of packages including IBCs**

**5.2.1 Marking of packages including IBCs**

**5.2.1.5 Special marking provisions for class 7**

5.2.1.5.2 Replace existing paragraph with the following:

"The marking of excepted packages shall be as required by 5.1.5.4.1.".

5.2.1.5.8 Replace existing paragraph with the following:

"5.2.1.5.8 In all cases of international transport of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, marking shall be in accordance with the certificate of the country of origin of the design.".

**5.2.1.6 Special marking provisions for marine pollutants**

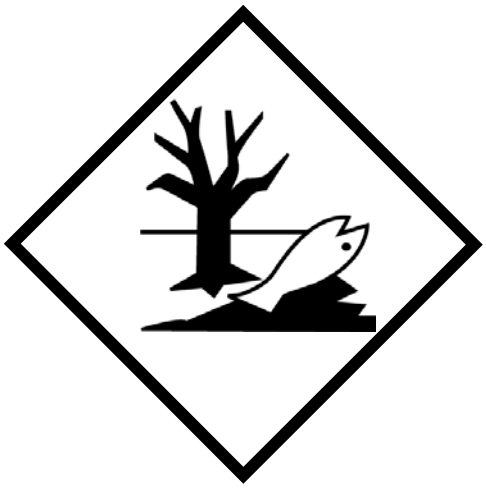
5.2.1.6.1 Replace existing paragraph with the following:

"5.2.1.6.1 Packages containing marine pollutants meeting the criteria of 2.9.3 shall be durably marked with the environmentally hazardous substance mark with the exception of single packagings and combination packagings where such single packagings or inner packagings of such combination packagings have:

- a net quantity of 5 *l* or less for liquids; or

- a net mass of 5 kg or less for solids.".

**5.2.1.6.3** The marine pollutant mark is amended as follows:



**5.2.1.7**

5.2.1.7 Replace "ISO 780:1985" with "ISO 780:1997".

5.2.1.7.1 (d) Delete "or" at the end.

5.2.1.7.1 (e) Add "or" at the end.

5.2.1.7.1 Add a new subparagraph (f) with the following:

"(f) dangerous goods in hermetically sealed inner packagings each containing not more than 500 ml.".

**5.2.1.9 Limited quantity mark**

5.2.1.9 A new section "5.2.1.9 – Limited quantity mark" is added as follows:

"**5.2.1.9 Limited quantity mark**

5.2.1.9.1 Packages containing dangerous goods in limited quantities shall be marked according to 3.4.5. The provisions of 5.2.1.2.1 and 5.2.1.2.2 shall be met.".

**5.2.2.1.12** ***Special provisions for the labelling of radioactive material***

5.2.2.1.12.2.2 In the second sentence, insert "(or mass of each fissile nuclide for mixtures when appropriate)" after "the mass of fissile material".

5.2.2.1.12.5 Amend to read as follows:

"5.2.2.1.12.5 In all cases of international transport of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, labelling shall be in accordance with the certificate of the country of origin of design.".

## Chapter 5.3 – Placarding and marking of cargo transport units

### 5.3.1.2 Specifications for placards

5.3.1.2.1.1 At the end of the second sentence after the words "bottom corner" delete the "." and insert a semi-colon ";".

### 5.3.1.3 Fumigated units

5.3.1.3 Delete.

### 5.3.2 Marking of cargo transport units

### 5.3.2.0 Display of Proper Shipping Name

5.3.2.0 Replace the existing text with the following:

"5.3.2.0.1 The Proper Shipping Name of the contents shall be durably marked on at least both sides of:

.1 tank transport units containing dangerous goods;

.2 bulk containers containing dangerous goods; or

.3 any other cargo transport unit containing packaged dangerous goods of a single commodity for which no placard, UN Number or marine pollutant mark is required. Alternatively, the UN Number may be displayed.

5.3.2.0.2 The proper shipping name for the goods shall be displayed in characters not less than 65 mm high. The proper shipping name shall be of the contrasting colour with the background.".

### 5.3.2.1 Display of UN Numbers

5.3.2.1.1.4 Amend to read as follows:

".4 packaged radioactive material with a single UN number in or on a vehicle, or in a freight container, when required to be transported under exclusive use.".

### 5.3.2.4 Limited quantities

5.3.2.4 The existing text is replaced with the following:

"5.3.2.4 Cargo transport units containing dangerous goods in only limited quantities shall not be placarded nor marked according to 5.3.2.0 and 5.3.2.1. They shall, however, be suitably marked on the exterior with the mark in 3.4.5.1 which shall have minimum dimensions of 250 mm x 250 mm in locations indicated in 5.3.1.1.4.1.".

**5.3.2.5 Fumigated units**

5.3.2.5 Delete.

**Chapter 5.4 – Documentation**

Replace existing Note 1 with the following:

"**NOTE 1** The provisions of this Code do not preclude the use of electronic data processing (EDP) and electronic data interchange (EDI) transmission techniques as an alternative to paper documentation. All references to "dangerous goods transport document" in this chapter also include provision of the required information by use of EDP and EDI transmission techniques."

and a new "NOTE 5" is inserted with the following:

"**NOTE 5** In addition to the provisions of this chapter other additional information may be included. However, this information shall not:

.1 divert attention from the safety information required by this chapter or by the competent authority;

.2 contradict the safety information required by this chapter or by the competent authority; or

.3 duplicate information already provided.".

**5.4.1 Dangerous goods transport documentation**

Amend the title to read "**5.4.1 Dangerous goods transport information**".

**5.4.1.1 General**

5.4.1.1 Replace with the following:

"**5.4.1.1 General**

5.4.1.1.1 Except as otherwise provided, the consignor who offers dangerous goods for transport shall give to the carrier the information applicable to those dangerous goods, including any additional information and documentation as specified in this Code. This information may be provided on a dangerous goods transport document or, with the agreement of the carrier, by EDP or EDI techniques.

5.4.1.1.2 When the dangerous goods transport information is given to the carrier by EDP or EDI techniques, the consignor shall be able to produce the information without delay as a paper document, with the information in the sequence required by this chapter.".

**5.4.1.2.5 Example of a dangerous goods transport document**

5.4.1.2.5 In the footnote, replace "Recommendation No. 11 (Documentary aspects of international Transport of Dangerous Goods) (ECE/TRADE/204, edition 96.1 – currently under revision)", with the following:

"Revised Recommendations No.11 (Documentary aspects of international Transport of Dangerous Goods) (ECE/TRADE/C/CEFACT/2008/8)".

**5.4.1.4 Information required on the dangerous goods transport document**

**5.4.1.4.3 Information which supplements the Proper Shipping Name in the dangerous goods description**

5.4.1.4.3.2 At the end of the sentence, replace "Proper Shipping Name" with "dangerous goods description specified in 5.4.1.4.1.1 to .5".

**5.4.1.5 Information required in addition to the dangerous goods description**

5.4.1.5.1 After the existing paragraph, add the following new note:

"**NOTE:** The number, type and capacity of each inner packaging within the outer packaging of a combination packaging is not required to be indicated.".

**5.4.1.5.7** ***Radioactive material***

5.4.1.5.7.1.3 In the second sentence, after "the mass of fissile material" insert "(or mass of each fissile nuclide for mixtures when appropriate)".

5.4.1.5.7.1.10 After the existing sentence, add "For radioactive material for which the $A_2$ value is unlimited, the multiple of $A_2$ shall be zero.".

5.4.1.5.7.3 Replace the existing paragraph with the following:

"5.4.1.5.7.3 In all cases of international transport of packages requiring competent authorities design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, the UN number and proper shipping name required in 5.4.1.4.1 shall be in accordance with the certificate of the country of origin of design.".

**5.4.1.5.11 Special provisions for segregation**

5.4.1.5.11.1 In the last sentence, after "Phosphoric acid", insert ", acetic acid".

**5.4.1.6 Certification**

5.4.1.6.2 Replace the existing paragraph with the following:

"5.4.1.6.2 If the dangerous goods documentation is presented to the carrier by means of EDP or EDI transmission techniques, the signature(s) may be electronic signature(s) or may be replaced by the name(s) (in capitals) of the person authorized to sign.".

5.4.1.6.3 A new paragraph 5.4.1.6.3 is added with the following:

"5.4.1.6.3 When the dangerous goods transport information is given to a carrier by EDP or EDI techniques and subsequently the dangerous goods are transferred to a carrier that requires a paper dangerous goods transport document, the carrier shall ensure that the paper document indicates "Original received electronically" and the name of the signatory shall be shown in capital letters.".

**5.4.2 Container/vehicle packing certificate**

5.4.2.3 Replace the existing paragraph with the following:

"5.4.2.3 If the dangerous goods documentation is presented to the carrier by means of EDP or EDI transmission techniques, the signature(s) may be electronic signature(s) or may be replaced by the name(s) (in capitals) of the person authorized to sign.".

5.4.2.4 A new paragraph 5.4.2.4 is added with the following:

"5.4.2.4 When the dangerous goods transport information is given to a carrier by EDP or EDI techniques and subsequently the dangerous goods are transferred to a carrier that requires a paper dangerous goods transport document, the carrier shall ensure that the paper document indicates "Original received electronically" and the name of the signatory shall be shown in capital letters.".

**5.4.4 Other required information and documentation**

**5.4.4.2 Fumigated units**

5.4.4.2 Delete.

**5.4.6 Retention of dangerous goods transport information**

5.4.6 A new section 5.4.6 is added with the following:

"**5.4.6 Retention of dangerous goods transport information**

5.4.6.1 The consignor and the carrier shall retain a copy of the dangerous goods transport document and additional information and documentation as specified in this Code, for a minimum period of three months.

5.4.6.2 When the documents are kept electronically or in a computer system, the consignor and the carrier shall be able to reproduce them in a printed form.".

**Chapter 5.5 – Special provisions**

5.5 A new "Chapter 5.5 – Special provisions" is added with the following:

"**Chapter 5.5 – Special provisions**

**5.5.1 (**Reserved).

**5.5.2 Special provisions applicable to fumigated cargo transport units (UN 3359)**

**5.5.2.1 General**

5.5.2.1.1 Fumigated cargo transport units (UN 3359) containing no other dangerous goods are not subject to any provisions of this Code other than those of this section.

5.5.2.1.2 When the fumigated cargo transport unit is loaded with dangerous goods in addition to the fumigant, any provision of this Code relevant to these goods (including placarding, marking and documentation) applies in addition to the provisions of this section.

5.5.2.1.3 Only cargo transport units that can be closed in such a way that the escape of gas is reduced to a minimum shall be used for the transport of cargo under fumigation.

5.5.2.1.4 The provisions of 3.2 and 5.4.3 apply to all fumigated cargo transport units (UN 3359).

**5.5.2.2 Training**

Persons engaged in the handling of fumigated cargo transport units shall be trained commensurate with their responsibilities.

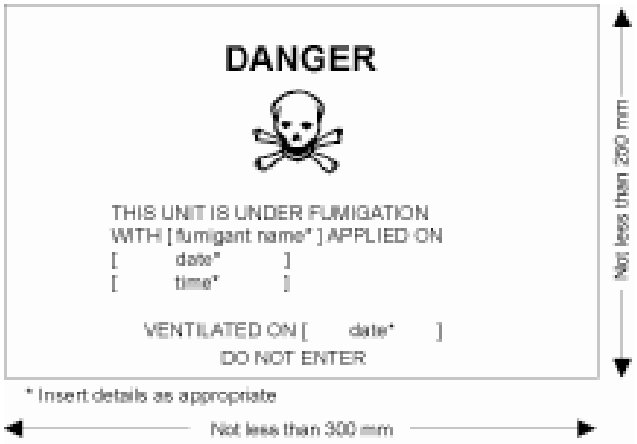
**5.5.2.3 Marking and placarding**

5.5.2.3.1 A fumigated cargo transport unit shall be marked with a warning mark, as specified in 5.5.2.3.2, 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 fumigated cargo transport unit has been ventilated to remove harmful concentrations of fumigant gas; and

(b) The fumigated goods or materials have been unloaded.

5.5.2.3.2 The fumigation warning mark shall be rectangular and shall not be less than 300 mm wide and 250 mm high. The markings shall be in black print on a white background with lettering not less than 25 mm high. An illustration of this mark is given below.




5.5.2.3.3 If the fumigated cargo transport unit has been completely ventilated either by opening the doors of the unit or by mechanical ventilation after fumigation, the date of ventilation shall be marked on the fumigation warning mark.

5.5.2.3.4 When the fumigated cargo transport unit has been ventilated and unloaded, the fumigation warning mark shall be removed.

5.5.2.3.5 Class 9 placards (Model No.9, see 5.2.2.2.2) shall not be affixed to a fumigated cargo transport unit except as required for other Class 9 substances or articles packed therein.

**5.5.2.4 Documentation**

5.5.2.4.1 Documents associated with the transport of cargo transport units that have been fumigated and have not been completely ventilated before transport shall include the following information:

.1 UN 3359, fumigated cargo transport unit, 9, or UN 3359, fumigated cargo transport unit, class 9;

.2 The date and time of fumigation; and

.3 The type and amount of the fumigant used.

5.5.2.4.2 The transport document may be in any form, provided it contains the information required in 5.5.2.4.1. This information shall be easy to identify, legible and durable.

5.5.2.4.3 Instructions for disposal of any residual fumigant including fumigation devices (if used) shall be provided.

A document is not required when the fumigated cargo transport unit has been completely ventilated and the date of ventilation has been marked on the warning mark (see 5.5.2.3.3 and 5.5.2.3.4).”.

**5.5.2.5 Additional provisions**

5.5.2.5.1 Cargo transport units shall be fumigated and handled taking into account the provisions of the MSC.1/Circ….* on Recommendations on the safe use of pesticides in ships applicable to the fumigation of cargo transport units.

5.5.2.5.2 When fumigated cargo transport units are stowed under deck, equipment for detecting fumigant gas(es) shall be carried on the ship with instructions for their use.

5.5.2.5.3 Fumigants shall not be applied to the contents of a cargo transport unit once it has been loaded aboard the ship.

5.5.2.5.4 A fumigated cargo transport unit shall not be allowed on board until a sufficient period has elapsed to attain a reasonable uniform gas concentration throughout the cargo in it. Because of variations due to types and amounts of fumigants and commodities and temperature levels, the period between fumigant application and loading of the fumigated cargo transport unit on board the ship shall be determined by the competent authority. Twenty-four hours is normally sufficient for this purpose. Unless the doors of a fumigated cargo transport unit have been opened to allow the fumigant gas(es) and residues to be completely ventilated or the unit has been mechanically ventilated, the shipment shall conform to the provisions of this Code concerning UN 3359. Ventilated cargo transport units shall be marked with the date of ventilation on the fumigated warning mark. When the fumigated goods or materials have been unloaded, the fumigation warning mark shall be removed.

5.5.2.5.5 The master shall be informed prior to the loading of a fumigated cargo transport unit.".

## PART 6 – CONSTRUCTION AND TESTING OF PACKAGINGS, INTERMEDIATE BULK CONTAINERS (IBCs), LARGE PACKAGINGS, PORTABLE TANKS, MULTIPLE-ELEMENT GAS CONTAINERS (MEGCs) AND ROAD TANK VEHICLES

### Chapter 6.1 – Provisions for the construction and testing of packagings (other than for class 6.2 substances)

#### 6.1.3 Marking

6.1.3.1 (a) Replace the second sentence with the following: "This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant provisions in chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7.".

---

* The draft of the new MSC.1/Circ is expected to be approved at MSC 87, which will supersede the present circular MSC.1/Circ.1265.

6.1.4.0 Add a new subsection 6.1.4.0 with the following:

"**6.1.4.0 General provisions**

Any permeation of the substance contained in the packaging shall not constitute a danger under normal conditions of transport.".

**6.1.5 Test provisions for packagings**

**6.1.5.3 Drop test**

**6.1.5.3.6** ***Criteria for passing the test***

6.1.5.3.6.3 Replace with the following:

"6.1.5.3.6.3 The packaging or outer packaging of a composite or combination packaging shall not exhibit any damage liable to affect safety during transport. Inner receptacles, inner packagings, or articles shall remain completely within the outer packaging and there shall be no leakage of the filling substance from the inner receptacle(s) or inner packaging(s).".

**Chapter 6.2 – Provisions for the construction and testing of pressure receptacles, aerosol dispensers, small receptacles containing gas (gas cartridges) and fuel cell cartridges containing liquefied flammable gas**

After the heading of the chapter, add the following new note:

"**Note:** *Aerosol dispensers, small receptacles containing gas (gas cartridges) and fuel cell cartridges containing liquefied flammable gas are not subject to the provisions of 6.2.1 to 6.2.3.*".

**6.2.1 General provisions**

6.2.1 The note after the heading is deleted.

6.2.1.1.5 At the end of the existing paragraph, add a new sentence with the following:

"The test pressure of a metal hydride storage system shall be in accordance with packing instruction P205.".

6.2.1.1.9 Delete the "s" on the word "receptacles".

**6.2.1.2 Materials**

**6.2.1.2.1** After the word "intended", insert the words "to be transported".

**6.2.1.3 Service equipment**

6.2.1.3.4 After "P200 (1)" insert ", P205".

**6.2.1.5 Initial inspection and test**

6.2.1.5.1 After "cryogenic receptacles" insert "and metal hydride storage systems".

6.2.1.5.3 Add a new paragraph 6.2.1.5.3 to read as follows:

"6.2.1.5.3 For metal hydride storage systems, it shall be verified that the inspections and tests specified in 6.2.1.5.1 .1, .2, .3, .4, .5 if applicable, .6, .7, .8 and .9 have been performed on an adequate sample of the receptacles used in the metal hydride storage system. In addition, on an adequate sample of metal hydride storage systems, the inspections and tests specified in 6.2.1.5.1 .3 and .6 shall be performed, as well as 6.2.1.5.1 .5, if applicable, and inspection of the external conditions of the metal hydride storage system.

Additionally, all metal hydride storage systems shall undergo the initial inspections and tests specified in 6.2.1.5.1 .8 and .9, as well as a leakproofness test and a test of the satisfactory operation of the service equipment.".

**6.2.1.6 Periodic inspection and test**

6.2.1.6.1.4 After the existing paragraph insert the following three **NOTES** with the following:

"**Note 1:** With the agreement of the competent authority, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.

**Note 2:** With the agreement of the competent authority, the hydraulic pressure test of cylinders or tubes may be replaced by an equivalent method based on acoustic emission testing or a combination of acoustic emission testing and ultrasonic examination. ISO 16148:2006 may be used as a guide for acoustic emission testing procedures.

**Note 3:** The hydraulic pressure test may be replaced by ultrasonic examination carried out in accordance with ISO 10461:2005+A1:2006 for seamless aluminium alloy gas cylinders and in accordance with ISO 6406:2005 for seamless steel gas cylinders.".

6.2.1.6.1 At the end, after the subparagraphs, replace the existing "**Note 1** and **Note 2**" with the following:

"**Note:** *For the periodic inspection and test frequencies, see packing instruction P200 of 4.1.4.1.*".

### 6.2.2 Provisions for UN pressure receptacles

#### 6.2.2.1 Design, construction and initial inspection and test

6.2.2.1.1 In the table, add the following three new entries after ISO 7866:1999 standard:

"

| | |
|---|---|
| ISO 4706:2008 | Gas cylinders – Refillable welded steel cylinders – Test pressure 60 bar and below |
| | |
| ISO 18172-1:2007 | Gas cylinders – Refillable welded stainless steel cylinders – Part 1: Test pressure 6 MPa and below |
| ISO 20703:2006 | Gas cylinders – Refillable welded aluminium-alloy cylinders – Design, construction and testing |

"

6.2.2.1.5 Add a new paragraph 6.2.2.1.5 with the following:

"6.2.2.1.5 The following standards apply for the design, construction, and initial inspection and test of UN metal hydride storage systems, except that inspection requirements related to the conformity assessment system and approval shall be in accordance with 6.2.2.5:

| | |
|---|---|
| ISO 16111:2008 | Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride |

"

#### 6.2.2.2 Materials

6.2.2.2 At the beginning, in the text between brackets and after "P200", insert "or P205".

#### 6.2.2.3 Service equipment

6.2.2.3 Replace "ISO 10297:1999" with "ISO 10297:2006"

and at the end of 6.2.2.3, add the following new paragraph:

"For UN metal hydride storage systems, the requirements specified in the following standard apply to closures and their protection:

| | |
|---|---|
| ISO 16111:2008 | Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride |

"

#### 6.2.2.4 Periodic inspection and test

6.2.2.4 At the beginning after "UN cylinders" insert "and UN metal hydride storage systems" and in the table, add the following new entry at the end:

"

| | |
|---|---|
| ISO 16111:2008 | Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride |

"

**6.2.2.7 Marking of refillable UN pressure receptacles**

6.2.2.7 After the heading, add the following new note:

"**Note:** *Marking provisions for UN metal hydride storage systems are given in 6.2.2.9.*".

6.2.2.7.1 Assign paragraph number 6.2.2.7.1 to the first unnumbered paragraph under 6.2.2.7. Renumber subsequent paragraphs and cross-references accordingly.

6.2.2.7.2 (a) (existing 6.2.2.7.1 (a)) Replace the second sentence with the following:

"This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant provisions in chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;".

6.2.2.7.9 Add a new paragraph 6.2.2.7.9 to read as follows:

"6.2.2.7.9 For bundles of cylinders, pressure receptacle marking provisions shall only apply to the individual cylinders of a bundle and not to any assembly structure.".

**6.2.2.8 Marking of non-refillable UN pressure receptacles**

6.2.2.8 Assign paragraph number 6.2.2.8.1 to the first unnumbered paragraph under 6.2.2.8, and renumber the following paragraphs accordingly.

6.2.2.9 Add a new subsection 6.2.2.9 with the following:

"**6.2.2.9 Marking of UN metal hydride storage systems**

6.2.2.9.1 UN metal hydride storage systems shall be marked clearly and legibly with the marks listed below. These marks shall be permanently affixed (e.g., stamped, engraved, or etched) on the metal hydride storage system. The marks shall be on the shoulder, top end or neck of the metal hydride storage system or on a permanently affixed component of the metal hydride storage system. Except for the United Nations packaging symbol, the minimum size of the marks shall be 5 mm for metal hydride storage systems with a smallest overall dimension greater than or equal to 140 mm and 2.5 mm for metal hydride storage systems with a smallest overall dimension less than 140 mm. The minimum size of the United Nations packaging symbol shall be 10 mm for metal hydride storage systems with a smallest overall dimension greater than or equal to 140 mm and 5 mm for metal hydride storage systems with a smallest overall dimension less than 140 mm.

6.2.2.9.2 The following marks shall be applied:

(a) The United Nations packaging symbol 

;

This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;

(b) "ISO 16111" (the technical standard used for design, manufacture and testing);

(c) The character(s) identifying the country of approval as indicated by the distinguishing signs of motor vehicles in international traffic;

(d) The identity mark or stamp of the inspection body that is registered with the competent authority of the country authorizing the marking;

(e) The date of the initial inspection, the year (four digits) followed by the month (two digits) separated by a slash (i.e. "/");

(f) The test pressure of the receptacle in bar, preceded by the letters "PH" and followed by the letters "BAR";

(g) The rated charging pressure of the metal hydride storage system in bar, preceded by the letters "RCP" and followed by the letters "BAR";

(h) The manufacturer's mark registered by the competent authority. When the country of manufacture is not the same as the country of approval, then the manufacturer's mark shall be preceded by the character(s) identifying the country of manufacture as indicated by the distinguishing signs of motor vehicles in international traffic. The country mark and the manufacturer's mark shall be separated by a space or slash;

(i) The serial number assigned by the manufacturer;

(j) In the case of steel receptacles and composite receptacles with steel liner, the letter "H" showing compatibility of the steel (see ISO 11114-1:1997); and,

(k) In the case of metal hydride storage systems having limited life, the date of expiry, denoted by the letters "FINAL" followed by the year (four digits) followed by the month (two digits) separated by a slash (i.e. "/").

The certification marks specified in (a) to (e) above shall appear consecutively in the sequence given. The test pressure (f) shall be immediately preceded by the rated charging pressure (g). The manufacturing marks specified in (h) to (k) above shall appear consecutively in the sequence given.

6.2.2.9.3 Other marks are allowed in areas other than the side wall, provided they are made in low stress areas and are not of a size and depth that will create harmful stress concentrations. Such marks shall not conflict with required marks.

6.2.2.9.4 In addition to the preceding marks, each metal hydride storage system that meets the periodic and test requirements of 6.2.2.4 shall be marked indicating:

(a) The character(s) identifying the country authorizing the body performing the periodic inspection and test, as indicated by the distinguishing sign of motor vehicles in international traffic. This marking is not required if this body is approved by the competent authority of the country approving manufacture;

(b) The registered mark of the body authorized by the competent authority for performing periodic inspection and test;

(c) The date of the periodic inspection and test, the year (two digits) followed by the month (two digits) separated by a slash (i.e. "/" ). Four digits may be used to indicate the year.

The above marks shall appear consecutively in the sequence given.".

**6.2.4 Provisions for aerosol dispensers, small receptacles containing gas (gas cartridges) and fuel cell cartridges containing liquefied flammable gas**

6.2.4.3 Replace with the following:

"6.2.4.3 With the approval of the competent authority, aerosols and receptacles, small, are not subject to 6.2.4.1 and 6.2.4.2, if they are required to be sterile but may be adversely affected by water bath testing, provided:

(a) They contain a non-flammable gas and either

(i) contain other substances that are constituent parts of pharmaceutical products for medical, veterinary or similar purposes;

(ii) contain other substances used in the production process for pharmaceutical products; or

(iii) are used in medical, veterinary or similar applications;

(b) An equivalent level of safety is achieved by the manufacturer's use of alternative methods for leak detection and pressure resistance, such as helium detection and water bathing a statistical sample of at least 1 in 2000 from each production batch; and

(c) For pharmaceutical products according to (a)(i) and (iii) above, they are manufactured under the authority of a national health administration. If required by the competent authority, the principles of Good Manufacturing Practice (GMP) established by the World Health Organization (WHO)[2] shall be followed.".

**Chapter 6.3 – Provisions for the construction and testing of packagings for class 6.2 infectious substances of category A**

**6.3.4 Marking**

6.3.4.2 (a) Replace the second sentence with the following:

"This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant provisions in chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;".

**6.3.5 Test provisions for packagings**

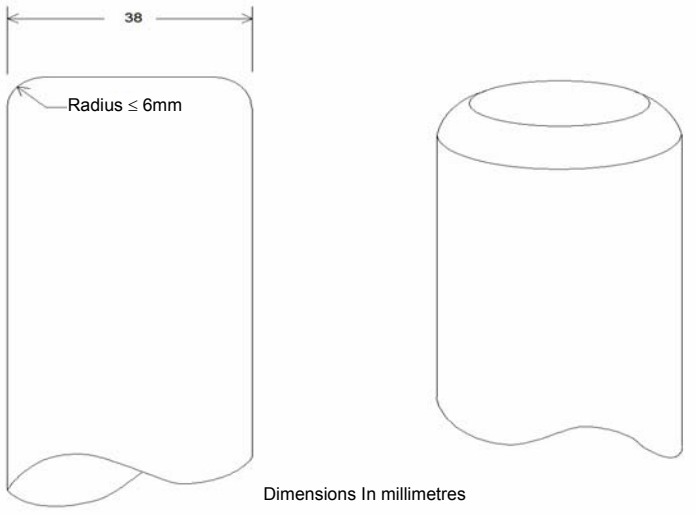
**6.3.5.4 Puncture test**

**6.3.5.4.1** ***Packagings with a gross mass of 7 kg or less***

6.3.5.4.1 In the second sentence, after "not exceeding 6 mm" insert "(see below)".

**6.3.5.4.2** ***Packagings with a gross mass exceeding 7 kg***

6.3.5.4.2 In the third sentence, after "not exceeding 6 mm" insert "(see below)". And at the end, insert the following new figure:




[2] WHO Publication: "Quality assurance of pharmaceuticals. A compendium of guidelines and related materials. Volume 2: Good manufacturing practices and inspection".

## Chapter 6.4 – Provisions for the construction, testing and approval of packages and material of class 7

### 6.4.2 General provisions

6.4.2.9 Delete "otherwise".

### 6.4.5 Provisions for industrial packages

#### 6.4.5.4 Alternative provisions for Type IP-2 and Type IP-3 packages

6.4.5.4.2.3 Replace "an increase of more than 20%" with "more than a 20% increase".

6.4.5.4.3.3 Replace "an increase of more than 20%" with "more than a 20% increase".

6.4.5.4.4 Replace "of a permanent enclosed character" with "with the characteristics of a permanent enclosure". And in subparagraph .3 after "Part 1: General Cargo Containers" insert "and subsequent amendments 1:1993, 2:1998, 3:2005, 4:2006 and 5:2006,".

6.4.5.4.4.3.2 Replace "any increase of more than 20%" with "more than a 20% increase".

6.4.5.4.5.2.2 Replace "any increase of more than 20%" with "more than a 20% increase".

### 6.4.6 Provisions for packages containing uranium hexafluoride

6.4.6.1 Replace "ISO 7195:1993 "Packaging of uranium hexafluoride ($UF_6$) for transport"" with "ISO 7195:2005 "Nuclear Energy – Packaging of uranium hexafluoride ($UF_6$) for transport"".

6.4.6.2.1 Replace "ISO 7195:1993" with "ISO 7195:2005".

6.4.6.4 (a) Replace "ISO 7195:1993" with "ISO 7195:2005".

### 6.4.7 Provisions for Type A packages

**Type A packages to contain liquids**

6.4.7.16.2 (ii) Replace "designed to ensure retention of the liquid contents" by "designed to enclose the liquid contents completely and ensure their retention".

### 6.4.10 Provisions for Type C packages

**6.4.10.2** Replace references "6.4.8.7.2" and "6.4.8.11" with "6.4.8.8.2" and "6.4.8.12".

### 6.4.11 Provisions for packages containing fissile material

6.4.11.5 Replace with the following:

"6.4.11.5 The package, after being subjected to the tests specified in 6.4.15, shall:

(a) Preserve the minimum overall outside dimensions of the package to at least 10 cm; and

(b) Prevent the entry of a 10 cm cube.".

6.4.11.7 (a) Replace "each of which" by "not less than two of which".

### 6.4.13 Testing the integrity of the containment system and shielding and evaluating criticality safety

6.4.13 (c) Replace "6.4.11.12" with "6.4.11.13".

### 6.4.15 Test for demonstrating ability to withstand normal conditions of transport

6.4.15.5 Replace existing subparagraph (a) with the following:

"(a) A total weight equal to 5 times the maximum weight of the package; and".

### 6.4.23 Applications for approval and approvals for radioactive material transport

6.4.23.12 (j) In the second sentence, replace "(for fissile material)" with "(for fissile material or for each fissile nuclide when appropriate)".

6.4.23.13 (j) In the second sentence, replace "(for fissile material)" with "(for fissile material or for each fissile nuclide when appropriate)".

6.4.23.14 (l) In the second sentence, replace "(for fissile material)" with "(for fissile material or for each fissile nuclide when appropriate)".

## Chapter 6.5 – Provisions for the construction and testing of large packagings

### 6.5.1 General requirements

### 6.5.1.4 Designatory code system for IBCs

6.5.1.4.1.2 At the beginning before the list add "Materials".

### 6.5.2 Marking

6.5.2.1.1.1 Replace the second sentence with the following:

"This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant provisions in chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7.".

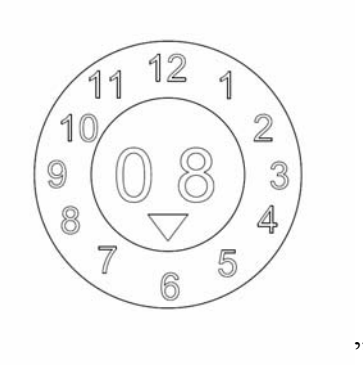
6.5.2.1.1.7 In the footnote replace the existing reference "6.5.4.6.4" with "6.5.6.6.4".

### 6.5.2.2 Additional marking

6.5.2.2.4 Replace the existing paragraph with the following:

"6.5.2.2.4 The inner receptacle of composite IBCs manufactured after 1 January 2011 shall bear the markings indicated in 6.5.2.1.1.2, .3, .4 where this date is that of the manufacture of the plastics inner receptacle, .5 and .6. The UN packaging symbol shall not be applied. The marking shall be applied in the sequence shown in 6.5.2.1.1. It shall be durable, legible and placed in a location so as to be readily visible when the inner receptacle is placed in the outer casing.

The date of the manufacture of the plastics inner receptacle may alternatively be marked on the inner receptacle adjacent to the remainder of the marking. An example of an appropriate marking method is:




".

6.5.2.4 Add a new paragraph 6.5.2.4 to read as follows:

"**6.5.2.4 Marking of remanufactured composite IBCs (31HZ1)**

The marking specified in 6.5.2.1.1 and 6.5.2.2 shall be removed from the original IBC or made permanently illegible and new markings shall be applied to an IBC remanufactured in accordance with these provisions of this Code.".

**6.5.4 Testing, certification and inspection**

**6.5.4.1 Quality assurance**

6.5.4.1 At the beginning, after "manufactured" insert ", remanufactured, repaired". And at the end, after "manufactured" insert ", remanufactured or repaired".

**6.5.4.5 Repaired IBCs**

6.5.4.5.5 Renumber as "6.5.4.4.4".

**6.5.6.7.3 Method of testing and pressure to be applied**

**6.5.6.7.3** The second sentence is replaced with the following:

"The airtightness of the IBC shall be determined by a suitable method such as air-pressure differential test or by immersing the IBC in water, or for metal IBCs, by coating the seams and joints with a soap solution."

**Chapter 6.6 – Provision for the construction and testing of large packagings**

**6.6.1 General**

6.6.1.2 Replace "and tested" with ", tested and remanufactured" and, at the end, after "each manufactured" insert "or remanufactured large".

**6.6.3 Marking**

**6.6.3.1 Primary marking**

6.6.3.1 (a) Replace the second sentence with the following:

"This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant provisions in chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7.".

**6.6.5 Test provisions for large packagings**

**6.6.5.1 Performance and frequency of test**

6.6.5.1.3 Replace "6.6.5.2.3" with "6.6.5.2.4".

**6.6.5.2 Preparation for testing**

6.6.5.2.2 Replace the existing paragraph with the following:

"6.6.5.2.2 In the drop tests for liquids, when another substance is used, it shall be of similar relative density and viscosity to those of the substance being transported. Water may also be used for the liquid drop test under the conditions in 6.6.5.3.4.4.".

**6.6.5.3 Test provisions**

**6.6.5.3.4 *Drop test***

**6.6.5.3.4.4** *Drop height*

6.6.5.3.4.4 Replace the existing paragraph with the following:

"**6.6.5.3.4.4** *Drop height*

**Note:** Large packagings for substances and articles of class 1 shall be tested at the packing group II performance level.

6.6.5.3.4.4.1 For inner packagings containing solid or liquid substances or articles, if the test is performed with the solid, liquid or articles to be transported, or with another substance or article having essentially the same characteristics:

| Packing group I | Packing group II | Packing group III |
|---|---|---|
| 1.8 m | 1.2 m | 0.8 m |

6.6.5.3.4.4.2 For inner packagings containing liquids if the test is performed with water:

(a) Where the substances to be transported have a relative density not exceeding 1.2:

| Packing group I | Packing group II | Packing group III |
|---|---|---|
| 1.8 m | 1.2 m | 0.8 m |

(b) Where the substances to be transported have a relative density exceeding 1.2, the drop height shall be calculated on the basis of the relative density (d) of the substance to be carried, rounded up to the first decimal, as follows:

| Packing group I | Packing group II | Packing group III |
|---|---|---|
| d ×1.5 (m) | d × 1.0 (m) | d × 0.67 (m) |

”

**Chapter 6.7 – Provisions for the design, construction, inspection and testing of portable tanks and multiple-element gas containers (MEGCs)**

**6.7.2 Provisions for the design, construction, inspection and testing of portable tanks intended for the transport of substances of class 1 and classes 3 to 9**

**6.7.2.1 Definitions**

6.7.2.1 In the definition of “Portable tank”, delete the word “transport” in the last but one sentence.

6.7.2.2.12 Replace four times “*” with “1” and amend the footnote accordingly.

**6.7.2.6 Bottom openings**

6.7.2.6.2.1 Replace existing paragraph with the following:

“.1 An external stop-valve, fitted as close to the shell as reasonably practicable, and so designed as to prevent any unintended opening through impact or other inadvertent act; and”.

**6.7.2.8 Pressure relief devices**

6.7.2.8.4 At the end, add the following sentence:

“In addition, fusible elements conforming to 6.7.2.10.1 may also be used.”.

**6.7.2.10 Fusible elements**

6.7.2.10.1 In the first sentence, replace "110°C" with "100°C". In the second sentence, replace "in no case shall they" with "when used for transport safety purposes, they shall not". In the third sentence, replace "utilized" with "used" and at the end of the sentence, add "unless specified by special provision TP36 in Column 14 of the Dangerous Goods List of chapter 3.2.".

**6.7.2.20 Marking**

6.7.2.20.1 Replace existing paragraph with the following:

"6.7.2.20.1 Every portable tank shall be fitted with a corrosion-resistant metal plate permanently attached to the portable tank in a conspicuous place readily accessible for inspection. When for reasons of portable tank arrangements the plate cannot be permanently attached to the shell, the shell shall be marked with at least the information required by the pressure vessel code. As a minimum, at least the following information shall be marked on the plate by stamping or by any other similar method:

(a) Owner information

(i) Owner's registration number;

(b) Manufacturing information

(i) Country of manufacture;
(ii) Year of manufacture;
(iii) Manufacturer's name or mark;
(iv) Manufacturer's serial number;

(c) Approval information

(i) The United Nations packaging symbol 

;

This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;

(ii) Approval country;
(iii) Authorized body for the design approval;
(iv) Design approval number;
(v) Letters 'AA', if the design was approved under alternative arrangements (see 6.7.1.2);
(vi) Pressure vessel code to which the shell is designed;

(d) Pressures

(i) MAWP (in bar gauge or kPa gauge)[2];
(ii) Test pressure (in bar gauge or kPa gauge)[2];
(iii) Initial pressure test date (month and year);
(iv) Identification mark of the initial pressure test witness;
(v) External design pressure[3] (in bar gauge or kPa gauge)[2];
(vi) MAWP for heating/cooling system (in bar gauge or kPa gauge)[2] (when applicable);

(e) Temperatures

(i) Design temperature range (in °C)[2];

(f) Materials

(i) Shell material(s) and material standard reference(s);
(ii) Equivalent thickness in reference steel (in mm)[2]; and
(iii) Lining material (when applicable);

(g) Capacity

(i) Tank water capacity at 20°C (in litres)[2];
This indication is to be followed by the symbol "S" when the shell is divided by surge plates into sections of not more than 7,500 litres capacity;
(ii) Water capacity of each compartment at 20°C (in litres)[2] (when applicable, for multi-compartment tanks).
This indication is to be followed by the symbol "S" when the compartment is divided by surge plates into sections of not more than 7,500 litres capacity;

(h) Periodic inspections and tests

(i) Type of the most recent periodic test (2.5-year, 5-year or exceptional);
(ii) Date of the most recent periodic test (month and year);
(iii) Test pressure (in bar gauge or kPa gauge)[2] of the most recent periodic test (if applicable);
(iv) Identification mark of the authorized body who performed or witnessed the most recent test.

---

[2] The unit used shall be indicated.

[3] See 6.7.2.2.10.

Figure 6.7.2.20.1: Example of identification plate marking

| | | | | |
|---|---|---|---|---|
| Owner's registration number | | | | |
| **MANUFACTURING INFORMATION** | | | | |
| Country of manufacture | | | | |
| Year of manufacture | | | | |
| Manufacturer | | | | |
| Manufacturer's serial number | | | | |
| **APPROVAL INFORMATION** | | | | |
| u n | Approval country | | | |
| | Authorized body for design approval | | | |
| | Design approval number | | | 'AA' *(if applicable)* |
| Shell design code (pressure vessel code) | | | | |
| **PRESSURES** | | | | |
| MAWP | | | | bar *or* kPa |
| Test pressure | | | | bar *or* kPa |
| Initial pressure test date: | *(mm/yyyy)* | Witness stamp: | | |
| External design pressure | | | | bar *or* kPa |
| MAWP for heating/cooling system (*when applicable)* | | | | bar *or* kPa |
| **TEMPERATURES** | | | | |
| Design temperature range | | °C to | | °C |
| **MATERIALS** | | | | |
| Shell material(s) and material standard reference(s) | | | | |
| Equivalent thickness in reference steel | | | | mm |
| Lining material *(when applicable)* | | | | |
| **CAPACITY** | | | | |
| Tank water capacity at 20°C | | | litres | 'S' *(if applicable)* |
| Water capacity of compartment ___ at 20°C *(when applicable, for multi-compartment tanks)* | | | litres | 'S' *(if applicable)* |
| | | | | |

| **PERIODIC INSPECTIONS/TESTS** | | | | | | | |
|---|---|---|---|---|---|---|---|
| Test type | Test date | Witness stamp and test pressure[a] | | Test type | Test date | Witness stamp and test pressure[a] | |
| | *(mm/yyyy)* | | bar *or* kPa | | *(mm/yyyy)* | | bar *or* kPa |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

[a] *Test pressure if applicable*.".

6.7.2.20.2 Insert at the end of the list, "Portable tank instruction in accordance with 4.2.5.2.6".

**6.7.3 Provisions for the design, construction, inspection and testing of portable tanks intended for the transport of non-refrigerated liquefied gases of class 2**

6.7.3.2.9 Replace four times "*" with "1" and amend the footnote accordingly.

6.7.3.8.1.1 Replace "*" with "4" and amend the footnote accordingly.

**6.7.3.16 Marking**

6.7.3.16.1 Replace the existing paragraph with the following:

"6.7.3.16.1 Every portable tank shall be fitted with a corrosion-resistant metal plate permanently attached to the portable tank in a conspicuous place readily accessible for inspection. When for reasons of portable tank arrangements the plate cannot be permanently attached to the shell, the shell shall be marked with at least the information required by the pressure vessel code. As a minimum, at least the following information shall be marked on the plate by stamping or by any other similar method:

(a) Owner information

(i) Owner's registration number;

(b) Manufacturing information

(i) Country of manufacture;
(ii) Year of manufacture;
(iii) Manufacturer's name or mark;
(iv) Manufacturer's serial number;

(c) Approval information

(i) The United Nations packaging symbol 

;

This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;

(ii) Approval country;
(iii) Authorized body for the design approval;
(iv) Design approval number;
(v) Letters 'AA', if the design was approved under alternative arrangements (see 6.7.1.2);
(vi) Pressure vessel code to which the shell is designed;

(d) Pressures

(i) MAWP (in bar gauge or kPa gauge)[2];
(ii) Test pressure (in bar gauge or kPa gauge)[2];
(iii) Initial pressure test date (month and year);
(iv) Identification mark of the initial pressure test witness;
(v) External design pressure[5] (in bar gauge or kPa gauge)[2];

(e) Temperatures

(i) Design temperature range (in °C)[2];
(ii) Design reference temperature (in °C)[2];

(f) Materials

(i) Shell material(s) and material standard reference(s);
(ii) Equivalent thickness in reference steel (in mm)[2];

(g) Capacity

(i) Tank water capacity at 20°C (in litres)[2];

(h) Periodic inspections and tests

(i) Type of the most recent periodic test (2.5-year, 5-year or exceptional);
(ii) Date of the most recent periodic test (month and year);
(iii) Test pressure (in bar gauge or kPa gauge)[2] of the most recent periodic test (if applicable);
(iv) Identification mark of the authorized body who performed or witnessed the most recent test.

---

[2] The unit used shall be indicated.

[5] See 6.7.3.2.8.

Figure 6.7.3.16.1: Example of identification plate marking

| | | | | | |
|---|---|---|---|---|---|
| Owner's registration number | | | | | |
| **MANUFACTURING INFORMATION** | | | | | |
| Country of manufacture | | | | | |
| Year of manufacture | | | | | |
| Manufacturer | | | | | |
| Manufacturer's serial number | | | | | |
| **APPROVAL INFORMATION** | | | | | |
| u n | Approval country | | | | |
| | Authorized body for design approval | | | | |
| | Design approval number | | | | 'AA' *(if applicable)* |
| Shell design code (pressure vessel code) | | | | | |
| **PRESSURES** | | | | | |
| MAWP | | | | | bar *or* kPa |
| Test pressure | | | | | bar *or* kPa |
| Initial pressure test date: | *(mm/yyyy)* | | Witness stamp: | | |
| External design pressure | | | | | bar *or* kPa |
| **TEMPERATURES** | | | | | |
| Design temperature range | | | °C to | | °C |
| Design reference temperature | | | | | °C |
| **MATERIALS** | | | | | |
| Shell material(s) and material standard reference(s) | | | | | |
| Equivalent thickness in reference steel | | | | | mm |
| **CAPACITY** | | | | | |
| Tank water capacity at 20°C | | | | | litres |

| **PERIODIC INSPECTIONS/TESTS** | | | | | | | |
|---|---|---|---|---|---|---|---|
| Test type | Test date | Witness stamp and test pressure[a] | | Test type | Test date | Witness stamp and test pressure[a] | |
| | *(mm/yyyy)* | | bar *or* kPa | | *(mm/yyyy)* | | bar *or* kPa |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

[a] *Test pressure if applicable*.".

6.7.3.16.2 Insert at the end of the list, "Portable tank instruction in accordance with 4.2.5.2.6".

## 6.7.4 Provisions for the design, construction, inspection and testing of portable tanks intended for the transport of refrigerated liquefied gases of class 2

6.7.4.2.12 Replace four times "*" with "1" and amend the footnote accordingly.

6.7.4.7.4 Replace "*" with "6" and amend the footnote accordingly.

**6.7.4.14 Inspection and testing**

6.7.4.14.4 In the first sentence the words "inspection and test" are replaced with "inspections and tests". And the second sentence is replaced with the following:

"In the case of non-vacuum insulated tanks, the jacket and insulation shall be removed during the 2.5-year and the 5-year periodic inspections and tests, but only to the extent necessary for a reliable appraisal."

**6.7.4.15 Marking**

6.7.4.15.1 Replace existing paragraph with the following:

"6.7.4.15.1 Every portable tank shall be fitted with a corrosion-resistant metal plate permanently attached to the portable tank in a conspicuous place readily accessible for inspection. When for reasons of portable tank arrangements the plate cannot be permanently attached to the shell, the shell shall be marked with at least the information required by the pressure vessel code. As a minimum, at least the following information shall be marked on the plate by stamping or by any other similar method:

(a) Owner information

(i) Owner's registration number;

(b) Manufacturing information

(i) Country of manufacture;
(ii) Year of manufacture;
(iii) Manufacturer's name or mark;
(iv) Manufacturer's serial number;

(c) Approval information

(i) The United Nations packaging symbol 

;

This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;

(ii) Approval country;
(iii) Authorized body for the design approval;
(iv) Design approval number;
(v) Letters 'AA', if the design was approved under alternative arrangements (see 6.7.1.2);
(vi) Pressure vessel code to which the shell is designed;

(d) Pressures

(i) MAWP (in bar gauge or kPa gauge)[2];
(ii) Test pressure (in bar gauge or kPa gauge)[2];
(iii) Initial pressure test date (month and year);
(iv) Identification mark of the initial pressure test witness;

(e) Temperatures

(i) Minimum design temperature (in °C)[2];

(f) Materials

(i) Shell material(s) and material standard reference(s);
(ii) Equivalent thickness in reference steel (in mm)[2];

(g) Capacity

(i) Tank water capacity at 20°C (in litres)[2];

(h) Insulation

(i) Either "Thermally insulated" or "Vacuum insulated" (as applicable);
(ii) Effectiveness of the insulation system (heat influx) (in Watts)[2];

(i) Holding times – For each refrigerated liquefied gas permitted to be transported in the portable tank:

(i) Name, in full, of the refrigerated liquefied gas;
(ii) Reference holding time (in days or hours)[2];
(iii) Initial pressure (in bar gauge or kPa gauge)[2];
(iv) Degree of filling (in kg)[2];

(j) Periodic inspections and tests

(i) Type of the most recent periodic test (2.5-year, 5-year or exceptional);
(ii) Date of the most recent periodic test (month and year);
(iii) Identification mark of the authorized body who performed or witnessed the most recent test.

[2] The unit used shall be indicated.

Figure 6.7.4.15.1: Example of identification plate marking

| | | | | | |
|---|---|---|---|---|---|
| Owner's registration number | | | | | |
| **MANUFACTURING INFORMATION** | | | | | |
| Country of manufacture | | | | | |
| Year of manufacture | | | | | |
| Manufacturer | | | | | |
| Manufacturer's serial number | | | | | |
| **APPROVAL INFORMATION** | | | | | |
| u n | Approval country | | | | |
| | Authorized body for design approval | | | | |
| | Design approval number | | | | 'AA' *(if applicable)* |
| Shell design code (pressure vessel code) | | | | | |
| **PRESSURES** | | | | | |
| MAWP | | | | | bar *or* kPa |
| Test pressure | | | | | bar *or* kPa |
| Initial pressure test date: | *(mm/yyyy)* | Witness stamp: | | | |
| **TEMPERATURES** | | | | | |
| Minimum design temperature | | | | | °C |
| **MATERIALS** | | | | | |
| Shell material(s) and material standard reference(s) | | | | | |
| Equivalent thickness in reference steel | | | | | mm |
| **CAPACITY** | | | | | |
| Tank water capacity at 20°C | | | | | litres |
| **INSULATION** | | | | | |
| 'Thermally insulated' or 'Vacuum insulated' *(as applicable)* | | | | | |
| Heat influx | | | | | Watts |

| **HOLDING TIMES** | | | |
|---|---|---|---|
| Refrigerated liquefied gas(es) permitted | Reference holding time | Initial pressure | Degree of filling |
| | days *or* hours | bar *or* kPa | kg |
| | | | |
| | | | |
| | | | |
| | | | |

| **PERIODIC INSPECTIONS / TESTS** | | | | | |
|---|---|---|---|---|---|
| Test type | Test date | Witness stamp | Test type | Test date | Witness stamp |
| | *(mm/yyyy)* | | | *(mm/yyyy)* | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

".

6.7.4.15.2 Insert "Portable tank instruction in accordance with 4.2.5.2.6" at the end of the list.

### 6.7.5 Provisions for the design, construction, inspection and testing of multiple-element gas containers (MEGCs) intended for the transport of non-refrigerated gases

#### 6.7.5.2 General design and construction provisions

6.7.5.2.1 In the last sentence the words "cargo transport unit" are replaced by the word "vehicle".

6.7.5.2.8 Replace four times "*" with "1" and amend the footnote accordingly.

#### 6.7.5.4 Pressure relief devices

6.7.5.4.1 Replace the third sentence with the following:

"If so required by the competent authority of the country of use, MEGCs for other gases shall be fitted with pressure relief devices as specified by that competent authority.".

#### 6.7.5.13 Marking

6.7.5.13.1 Replace the existing paragraph with the following:

"6.7.5.13.1 Every MEGC shall be fitted with a corrosion-resistant metal plate permanently attached to the MEGC in a conspicuous place readily accessible for inspection. The metal plate shall not be affixed to the elements. The elements shall be marked in accordance with chapter 6.2. As a minimum, at least the following information shall be marked on the plate by stamping or by any other similar method:

(a) Owner information

(i) Owner's registration number;

(b) Manufacturing information

(i) Country of manufacture;
(ii) Year of manufacture;
(iii) Manufacturer's name or mark;
(iv) Manufacturer's serial number;

(c) Approval information

(i) The United Nations packaging symbol  ;

This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;

(ii) Approval country;
(iii) Authorized body for the design approval;
(iv) Design approval number;
(v) Letters 'AA', if the design was approved under alternative arrangements (see 6.7.1.2);

(d) Pressures

(i) Test pressure (in bar gauge)[2];
(ii) Initial pressure test date (month and year);
(iii) Identification mark of the initial pressure test witness;

(e) Temperatures

(i) Design temperature range (in °C)[2];

(f) Elements/Capacity

(i) Number of elements;
(ii) Total water capacity (in litres)[2];

(h) Periodic inspections and tests

(i) Type of the most recent periodic test (5-year or exceptional);
(ii) Date of the most recent periodic test (month and year);
(iv) Identification mark of the authorized body who performed or witnessed the most recent test.

[2] The unit used shall be indicated.

Figure 6.7.5.13.1: Example of identification plate marking

| | | | | | |
|---|---|---|---|---|---|
| Owner's registration number | | | | | |
| **MANUFACTURING INFORMATION** | | | | | |
| Country of manufacture | | | | | |
| Year of manufacture | | | | | |
| Manufacturer | | | | | |
| Manufacturer's serial number | | | | | |
| **APPROVAL INFORMATION** | | | | | |
| u n | Approval country | | | | |
| | Authorized body for design approval | | | | |
| | Design approval number | | | 'AA' *(if applicable)* | |
| **PRESSURES** | | | | | |
| Test pressure | | | | bar | |
| Initial pressure test date: | *(mm/yyyy)* | Witness stamp: | | | |
| **TEMPERATURES** | | | | | |
| Design temperature range | | °C to °C | | | |
| **ELEMENTS/CAPACITY** | | | | | |
| Number of elements | | | | | |
| Total water capacity | | litres | | | |
| **PERIODIC INSPECTIONS/TESTS** | | | | | |
| Test type | Test date | Witness stamp | Test type | Test date | Witness stamp |
| | *(mm/yyyy)* | | | *(mm/yyyy)* | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

".

## PART 7 – PROVISIONS CONCERNING TRANSPORT OPERATIONS

### Chapter 7.1 – Stowage

**7.1.1.5** Replace "6.5.4.6.4" with "6.5.6.6.4".

7.1.7.1.1 Add "with complete and rigid surfaces" after permanent structures.

7.1.12.5 Add the following words at the end of the sentence:

"or flooding of the container with water".

### 7.1.14 Stowage of goods of class 7

7.1.14.2 Replace "inland water craft" with "inland waterway craft". And in the heading of the third column, replace "inland water craft" with "inland waterway craft".

**Chapter 7.2 – Segregation**

**7.2.7 Segregation of goods of class 1**

**7.2.7.1 Segregation from dangerous goods of other classes**

7.2.7.1.1 At the end, add the following new note:

"**NOTE:** Alkali metal nitrates include caesium nitrate (UN 1451), lithium nitrate (UN 2722), potassium nitrate (UN 1486), rubidium nitrate (UN 1477) and sodium nitrate (UN 1498). Alkaline earth metal nitrates include barium nitrate (UN 1446), beryllium nitrate (UN 2464), calcium nitrate (UN 1454), magnesium nitrate (UN 1474) and strontium nitrate (UN 1507).".

*Consequential amendment:*

*In the alphabetical index, add the following new entry:*

"Rubidium nitrate, see 5.1 1477".

**7.2.7.1.3 Dangerous goods of extreme flammability**

7.2.7.1.3 Delete all the section.

**7.2.8 Segregation provisions for goods of class 4.1 and class 5.2**

7.2.8 Delete all the section including the title and insert "(Reserved)".

**Chapter 7.4 – Transport of cargo transport units on board ships**

**7.4.3 Fumigated units**

7.4.3 Delete the title "Fumigated units"and the all section and insert "(Reserved)".

**Chapter 7.5 – Packing of cargo transport units**

7.5.4 Insert a new section "7.5.4 – Tracking and monitoring equipment" as follows:

**"7.5.4 – Tracking and monitoring equipment**

7.5.4.1.1 When security devices, beacons or other tracking or monitoring equipment are used, they shall be securely installed to the cargo transport unit and shall be of a certified safe type* for the dangerous goods that will be carried within the cargo transport unit"

and add to the footnote the following:

"* Refer to the Recommendations published by the International Electrotechnical Commission, in particular, to publication IEC 60079.".

**Chapter 7.6 – Transport of dangerous goods in shipborne barges on barges-carrying ships**

**7.6.6 Ventilation and condensation**

7.6.6.3 Replace in the footnote "the Code of Safe practice for Solid Bulk Cargoes, 2004" with "the International Maritime Solid Bulk Cargo Code".

**Appendix A – Class 4.1**

For UN 3344 In column "Proper Shipping Name", add "(PENTAERYTHRITOL TETRANITRATE; PETN) before "MIXTURE".

**Appendix B**

**Glossary**

Insert the following:

"POWDER, SMOKELESS

Substances bases on nitrocellulose use as propellant. The term includes propellants with a single base (nitrocellulose (NC) alone), those with a double base (such as NC and nitroglycerin (NC)) and those with a triple base (such as NC/NG/ nitroguanidine). Cast, pressed or bag-charges of smokeless powder are listed under "CHARGES, PROPELLING" or "CHARGES, PROPELLING FOR CANNON".

**Alphabetical index**

In the entry for "Fuze combination, percussion or time", insert "or FUZES, IGNITING" after "DETONATING".

For SODIUM HYDROSULPHIDE HYDRATED (UN 2949) in the column "Substance, material article" insert "," after "HYDROSULPHIDE".