Organisation intergouvernementale pour les transports internationaux ferroviaires
Zwischenstaatliche Organisation für den internationalen Eisenbahnverkehr
Intergovernmental Organisation for International Carriage by Rail

OTIF/RID/NOT/2023

1 July 2022

Original: English/French/German

Notification

1 January 2023 edition of RID

Texts adopted by the 57th session of the RID Committee of Experts (Berne/hybrid, 24 May 2022)

Tel. +41 (0) 31 359 10 10 Fax +41 (0) 31 359 10 11 info@otif.org Gryphenhübeliweg 30 CH - 3006 Bern

TITLE PAGE

Replace "With effect from 1 January 2021" by:

"With effect from 1 January 2023".

Replace "This text replaces the requirements of 1 January 2019." by:

"This text replaces the requirements of 1 January 2021."

Replace "The following are RID Contracting States (as at 1 November 2020):" by:

"The following are RID Contracting States (as at 1 July 2022):".

Under "RID Contracting States", replace "Turkey" by:

"Türkiye".

TABLE OF CONTENTS

1.1 Insert a new **1.1.4.7** to read as follows:

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

1.2 Amend to read:

"**1.2** **Definitions, units of measurement and abbreviations**".

1.2 Insert a new **1.2.3** to read as follows:

"**1.2.3** List of abbreviations".

1.6.6.1 Replace "2009 and 2012" by:

"2009 or 2012".

1.6.6.2 Replace "2009 and 2012" by:

"2009 or 2012".

1.6.6.4 Replace "2009 and 2012" by:

"2009 or 2012".

1.8.6 Amend to read as follows:

"**1.8.6** Administrative controls for the activities described in 1.8.7 and 1.8.8".

1.8.7 Amend to read as follows:

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

3.2 Amend the whole chapter to read as follows:

"**3.2** **Dangerous goods lists**

3.2.1 **Table A: List of dangerous goods in UN number order**

3.2.2 **Table B: Alphabetical list of dangerous goods**".

4.4 Amend the whole chapter to read as follows:

"**4.4** (Deleted)".

5.1.3 [The amendment in the French and German version does not apply to the English text.]

5.5.2 [The amendment in the German version does not apply to the English text.]

5.5.3.3 After "containing", insert:

"dry ice (UN 1845) or".

5.5.3.4 After "containing", insert:

"dry ice (UN 1845) or".

6.2.2.3 Amend to read as follows:

"**6.2.2.3** Closures and their protection".

6.2.2.7 [The amendment in the German version does not apply to the English text.]

6.2.2.8 Replace "pressure receptacles" by:

"cylinders".

6.2.2.11 becomes **6.2.2.12**.

6.2.2 Insert a new **6.2.2.11** to read as follows:

"**6.2.2.11** Marking of closures for refillable UN pressure receptacles".

6.2.3.9 [The amendment in the German version does not apply to the English text.]

6.2.3.10 Replace "pressure receptacles" by:

"cylinders".

6.4.23 [The amendment in the German version does not apply to the English text.]

6.8.1 Amend to read as follow:

"**6.8.1** Scope and general provisions".

6.8.2.3 Amend to read as follows:

"**6.8.2.3** Type examination and type approval".

6.8.3.3 Amend to read as follows:

"**6.8.3.3** Type examination and type approval".

Amend **Chapter 6.9** to read as follows:

"**6.9** **Requirements for the design, construction, inspection and testing of portable tanks with shells made of fibre-reinforced plastics (FRP) materials**

6.9.1 Application and general requirements

6.9.2 Requirements for the design, construction, inspection and testing of FRP portable tanks

6.9.2.1 Definitions

6.9.2.2 General design and construction requirements

6.9.2.3 Design criteria

6.9.2.4 Minimum wall thickness of the shell

6.9.2.5 Equipment components for portable tanks with FRP shell

6.9.2.6 Design approval

6.9.2.7 Additional provisions applicable to FRP portable tanks

6.9.2.8 Inspection and testing

6.9.2.9 Retention of samples

6.9.2.10 Marking".

PART 1

Chapter 1.1

1.1.3.6.3 In the table, amend the entry for transport category 2 in column (2) as follows:

– After the row for "Class 6.1", insert the following new row:

"Class 6.2: UN 3291".

– Replace the row for "Class 9" to read as follows:

“Class 9: UN Nos. 3090, 3091, 3245, 3480, 3481 and 3536".

1.1.4.4.1 After the third indent, insert the following indent.

"– polymerizing substances of classes 1 to 8 in packagings or IBCs with a self-accelerating decomposition temperature (SAPT) ≤ 50°C and polymerizing substances in tanks with an SAPT ≤ 45 °C, therefore requiring temperature control;".

1.1.4.5.2 In footnote 2, replace "(www.otif.org)" by:

"(http://otif.org/en/?page_id=176)".

1.1.4 Insert the following new **1.1.4.7**:

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

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

1.1.4.7.1 *Import of gases*

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

1.1.4.7.2 *Export of gases and empty uncleaned pressure receptacles*

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

(a) The filling of the pressure receptacle is in accordance with the relevant requirements of the Code of Federal Regulations of the United States of America;

(b) The pressure receptacles shall be marked and labelled in accordance with Chapter 5.2;

(c) The provisions of 4.1.6.12 and 4.1.6.13 shall apply to pressure receptacles. Pressure receptacles shall not be filled after they become due for periodic inspection but may be carried after the expiry of the time-limit for purposes of performing inspection, including the intermediate carriage operations."

1.1.5 Add the end, add the following Note:

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

Chapter 1.2 Amend the title to read:

"**Chapter 1.2 Definitions, units of measurement and abbreviations**".

1.2.1 Delete the definition for *"**ADN**"*.

Delete the definition for *"**ADR**"*.

[The amendment to the definition for *"**Aerosol or aerosol dispenser**"* in the German version does not apply to the English text.]

Delete the definition for *"**Applicant**"*.

Delete the definition for *"**ASTM**"*.

In the definition for *"**Bundle of cylinders**"*, in the first sentence, replace "an assembly of cylinders" by:

"a *pressure receptacle* comprising an assembly of *cylinders* or cylinder shells".

[The amendment to the definition for *"**Cargo transport unit**"* in the German version does not apply to the English text.]

Delete the definition for *"**CGA**"*.

Delete the definition for *"**CIM**"*.

Under the definition for *"**Closure**"*, add the following new note:

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

Delete the definition for *"**CMR**"*.

In the definition for *"**Conformity assessment**"* replace "type approval" by:

"type examination".

Amend the definition for *"**Cryogenic receptacle**"* to read as follows and reorder it alphabetically:

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

Delete the definition for *"**CSC**"*.

In the definition for *"**Cylinder**"*, delete:

"transportable".

Delete the definition for *"**ECM**"*.

Delete the definition for *"**EN**"*.

[The amendment to the definition for *"**Filler**"* in the German and French version does not apply to the English text.]

[The amendment to the definition for *"**Flexiblebulk container**"* in the German version does not apply to the English text.]

Amend the definition for *"**GHS**"* to read:

"***"Globally Harmonized System of Classification and Labelling of Chemicals"*** means the ninth revised edition of the United Nations publication bearing this title (ST/SG/AC.10/30/Rev.9);".

Delete the definition for *"**IAEA**"*.

Delete the definition for *"**IBC**"*.

Delete the definition for *"**ICAO**"*.

[The amendment to the definition for *"**IMDG Code**"* in the German and French version does not apply to the English text.]

Delete the definition for *"**IMO**"*.

Delete the definition for *"**ISO**"*.

Delete the definition for *"**MEGC**"*.

Amend the definition for *"**Manual of Tests and Criteria**"* to read as follows:

"***"Manual of Tests and Criteria"*** means the seventh revised edition of the United Nations publication bearing this title (ST/SG/AC.10/11/Rev.7 and Amend.1);".

In the definition for *"**Metal hydride storage system**"*, replace "receptacle" by:

"*pressure receptacle shell*".

Delete the definition for *"**OTIF**"*.

Amend the definition for *"**Over-moulded cylinder**"* as follows:

– After "coated welded steel inner *cylinder*", insert:

"*shell*".

– After "surface of the steel *cylinder*", insert:

"*shell*".

– [The third amendment in the French version does not apply to the English text.]

[The amendment to the definition for *"**Offshore bulk container**"* in the German version does not apply to the English text.]

In the definition for *"**Packing group**"*, delete the Note.

In the definition for *"**Pressure drum**"*, delete:

"transportable"

In the definition for *"**Pressure receptacle**"*, after "means", insert:

"a transportable *receptacle* intended for holding substances under pressure including its *closure*(s) and other service equipment and is".

In the definition for *"**Receptacle**"*, replace "*"Cryogenic receptacle"*" by:

"*"Closed cryogenic receptacle"*, *"Open cryogenic receptacles"*".

[The amendment to the definition for *"**Reconditioned packaging**"* in the German version does not apply to the English text.]

Amend the definition for *"**Recycled plastics material**"* to read as follows:

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

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

[The amendment to the definition for *"**Routine maintenance of flexible IBCs**"* in the German version does not apply to the English text.]

Delete the definition for *"**SADT**"*.

Delete the definition for *"**SAPT**"*.

Amend the definition for *"**Service equipment**"* as follows:

– [The first amendment in the German version does not apply to the English text.]

– Add a new sub-paragraph (d) at the end to read:

"(d) of a *pressure receptacle*, means *closures*, manifolds, piping, porous, absorbent or adsorbent material and any structural devices, e.g. for handling;".

[The amendment to the definition for *"**Small receptacle containing gas (gas cartridge)**"* in the German version does not apply to the English text.]

Delete the definition for *"**SMGS**"*.

Delete the definition for *"**SMGS Annex 2**"*.

In the definition for *"**Tank**"*, delete the Note at the end.

After the definition of ***"Tank-container"***, insert:

"In addition:

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

In the definition for *"**Tube**"*, delete:

"transportable".

Delete the definition for *"**UIC**"*.

Delete the definition for *"**UNECE**"*.

[The amendment to the definition for *"**Unloader**"* in the German version does not apply to the English text.]

Amend the definition for *"**UN Model Regulations**"* as follows:

– Replace "twenty-first" by:

"twenty-second".

– Replace "(ST/SG/AC.10/1/Rev.21)" by:

"(ST/SG/AC.10/1/Rev.22)".

Amend the definition for *"**Working pressure**"* to read as follows:

*""**Working pressure**"*

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

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

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

(The Note remains unchanged.)"

Insert the following new definitions:

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

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

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

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

1.2.2.1 [The renumbering of the footnotes in the French and German version does not apply to the English text.]

In the table, after the entry for "Power", add the following new row:

Measurement of	SI Unit[8]	Acceptable alternative unit	Relationship between units
Electrical resistance	Ω (ohm)	–	1 Ω = 1 kg · m² / s³ / A²

1.2 Add a new section **1.2.3** to read as follows:

"**1.2.3 List of abbreviations**

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

A

"ADN"[10] means the European Agreement concerning the International *Carriage* of *Dangerous Goods* by Inland Waterways;

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

"ADR"[11] means the Agreement concerning the International *Carriage* of *Dangerous Goods* by Road, including all special agreements signed by those states involved in the transport operation;

[11] The acronym "ADR" corresponds to the French term "Accord relatif au transport international des marchandises dangereuses par route".

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

C

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

"CIM"[12] means the Uniform Rules Concerning the Contract of International Carriage of Goods by Rail (Appendix B to the Convention concerning International Carriage by Rail (COTIF)), as amended;

[12] The acronym "CIM" corresponds to the French term "Contrat de transport international ferroviaire de marchandises".

"CMR"[13] means the Convention on the Contract for the International Carriage of Goods by Road (Geneva, 19 May 1956), as amended;

[13] The acronym "CMR" corresponds to the French term "Convention relative au contrat de transport international de marchandises par route".

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

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

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

E

"ECM" means entity in charge of maintenance (see 1.2.1);

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

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

F

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

G

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

I

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

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

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

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

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

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

L

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

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

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

M

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

N

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

O

"OTIF"[14] means the Intergovernmental Organisation for International Carriage by Rail, Gryphenhübeliweg 30, 3006 Bern, Switzerland, www.otif.org;

[14] The acronym "OTIF" corresponds to the French term "Organisation intergouvernementale pour les transports internationaux ferroviaires".

S

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

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

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

"SMGS" means the Agreement concerning International Goods Transport by Rail of the Organisation for Cooperation between Railways (OSJD) (OSJD, ul. Hoza, 63/67 00-681 Warsaw, Poland), www.en.osjd.org;

"SMGS Annex 2" means provisions for the carriage of dangerous goods as Annex 2 to SMGS;

T

"TI" means transport index (see 1.2.1);

U

"UIC"[15] means the International Union of Railways, 16 rue Jean Rey, 75015 Paris, France, www.uic.org;

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

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

Chapter 1.3

1.3.2.2.2 In paragraph (b), renumber footnote 10 as footnote 16.

Chapter 1.4

1.4.2.1.1 [The amendment in the German version does not apply to the English text.]

1.4.2.2.1 In paragraph (d), replace "deadline" by:

"date specified".

In the last sub-paragraph, renumber footnote 11 as footnote 17.

In footnote 17 (current footnote 11), replace "1 January 2021" by:

"1 January 2023".

1.4.2.2.7 In the last sub-paragraph, renumber footnote 12 as footnote 18.

1.4.3.3 In paragraph (b), replace "date of the next" by:

"date specified for the next".

In the Note, replace "(www.otif.org)" by:

"(http://otif.org/en/?page_id=1103)".

1.4.3.4 In paragraph (c), replace "exceptional check" by:

"exceptional inspection".

1.4.3.5 In the first sub-paragraph, renumber footnote 13 as footnote 19.

In paragraph (b), replace "exceptional check" by:

"exceptional inspection".

1.4.3.7.1 In the Note, replace "(www.otif.org)" by:

"(http://otif.org/en/?page_id=1103)".

Chapter 1.5

1.5.1.1 Renumber footnote 14 as footnote 20.

In footnote 20 (current footnote 14), replace "(www.otif.org)" by:

"(http://otif.org/en/?page_id=176)".

Chapter 1.6

1.6.1.1 Replace "30 June 2021" by

"30 June 2023".

Renumber footnote 15 as footnote 21.

In footnote 21 (current footnote 15), replace "1 January 2019" by:

"1 January 2021".

Replace "31 December 2020" by:

"31 December 2022".

1.6.1.3 Renumber footnote 16 as footnote 22.

1.6.1.4 Renumber footnote 17 as footnote 23.

1.6.1.41 Amend to read as follows:

"**1.6.1.41** (Deleted)".

1.6.1.44 Amend to read as follows:

"**1.6.1.44** (Deleted)".

1.6.1.46 Amend to read as follows:

"**1.6.1.46** (Deleted)".

1.6.1 Add the following new transitional measures:

"**1.6.1.48** (Reserved)"

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

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

1.6.1.51 Adhesives, paint and paint related materials, printing inks and printing ink related materials and resin solutions assigned to UN 3082 environmentally hazardous substance, liquid, n.o.s., packing group III in accordance with 2.2.9.1.10.6 as a consequence of 2.2.9.1.10.5[24] containing 0.025 % or more of the following substances, on their own or in combination:

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

– octhilinone (OIT); and

– zinc pyrithione (ZnPT);

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

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

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

[24] Commission Delegated Regulation (EU) 2020/1182 of 19 May 2020 amending, for the purposes of its adaptation to technical and scientific progress, Part 3 of Annex

VI to Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures (fifteenth ATP to the CLP), applicable from 1 March 2022.

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

1.6.1.53 High consequence dangerous goods of Class 1 carried in packages in a wagon or large container in quantities not exceeding those of 1.1.3.6.3 which, in accordance with 1.10.4 in force until 31 December 2022, could be carried without applying the requirements of Chapter 1.10 may still be carried without applying the requirements of Chapter 1.10 until 31 December 2024."

1.6.2.10 [The amendment in the German version does not apply to the English text.]

1.6.2.16 Amend to read as follows:

"**1.6.2.16** (Deleted)".

1.6.2 Add the following new transitional measures:

"**1.6.2.17** The requirements of Note 3 of 6.2.1.6.1 applicable until 31 December 2022 may continue to be applied until 31 December 2024.

1.6.2.18 Closed cryogenic receptacles constructed before 1 July 2023 which were subject to the initial inspection and test requirements of 6.2.1.5.2 applicable until 31 December 2022 but which do not however conform to the requirements of 6.2.1.5.2 relating to the initial inspection and test applicable as from 1 January 2023, may continue to be used.

1.6.2.19 Acetylene cylinders constructed before 1 July 2023 which are not marked in accordance with 6.2.2.7.3 (k) or (l) applicable from 1 January 2023 may continue to be used until the next periodic inspection and test after 1 July 2023.

1.6.2.20 Closures of refillable pressure receptacles constructed before 1 July 2023 which are not marked in accordance with 6.2.2.11 or 6.2.3.9.8 applicable from 1 January 2023 may continue to be used."

1.6.2.21 Standard EN 14912:2005 referenced in packing instruction P 200 (12) 3.4 of 4.1.4.1 in force up to 31 December 2022 may continue to be used for valve refurbishing or inspection until 31 December 2024.

1.6.2.22 Standard EN ISO 22434:2011 referenced in packing instruction P 200 (13) 3.4 of 4.1.4.1 in force up to 31 December 2022 may continue to be used for valve refurbishing or inspection until 31 December 2024."

1.6.3.3.3 Amend to read as follows:

"**1.6.3.3.3** (Deleted)".

1.6.3.17 Amend to read as follows:

"**1.6.3.17** (Deleted)".

1.6.3.53 Renumber footnote 18 as footnote 25.

1.6.3 Add the following new transitional measures:

"1.6.3.54 Procedures used by the competent authority for the approval of experts performing activities concerning tanks-wagons intendedfor the carriage of substances other than those for which TA 4 and TT 9 of 6.8.4 apply which conform to the requirements of Chapter 6.8 in force up to 31 December 2022 but which do not conform to the requirements of 1.8.6 applicable to inspection bodies from 1 January 2023 may continue to be used until 31 December 2032.

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

1.6.3.55 Type approval certificates issued for tank-wagons intended for the carriage of substances other than those for which TA 4 and TT 9 of 6.8.4 apply, issued before 1 July 2023 in compliance with Chapter 6.8 which not comply with 1.8.7 as applicable f rom 1 January 2023 may continue to be used until the end of their validity.

1.6.3.56 (Reserved)

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

1.6.3.58 Procedures used by the competent authority for the approval of experts, the performance of inspections concerning tank-wagons and the mutual recognition of such inspections in accordance with the requirements of 6.8.2.4.6 in force up to 31 December 2022, but which do not, however, conform to the requirements applicable as from 1 January 2023, may continue to be used until 31 December 2032.

NOTE: During this period the Secretariat of OTIF shall continue to publish a list of recognised experts for performing tests and inspections on the tanks of tank-wagons in accordance with the requirements of 6.8.2.4.6 applicable up to 31 December 2022 separate to the list in accordance with 1.8.6.2.4 applicable as from 1 January 2023.

1.6.3.59 Tank-wagons constructed before 1 July 2023 in accordance with the requirements in force up to 31 December 2022, but which do not, however, meet the requirements of special provision TE 26 of 6.8.4 (b) applicable as from 1 January 2023 may continue to be used.

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

1.6.4.32 Amend to read as follows:

"**1.6.4.32** (Deleted)".

1.6.4.55 After "6.9.6.1", insert a reference to a new footnote 26 which reads as follows:

"[26] RID edition in force from 1 January 2021 until 31 December 2022."

1.6.4 Add the following new transitional measures:

"**1.6.4.56** Tank-containers which do not comply with the requirements of 6.8.3.4.6 (b) applicable from 1 January 2023, may continue to be used if an intermediate inspection takes place at least six years after each periodic inspection performed after 1 July 2023.

1.6.4.57 Except in relation to 6.8.1.5, second paragraph, second indent, procedures used by the competent authority for the approval of experts performing activities concerning tank-containers intended for the carriage of substances other than those for which TA 4 and TT 9 of 6.8.4 apply which conform to the requirements of Chapter 6.8 in force up to 31 December 2022 but which do not conform to the requirements of 1.8.6 applicable to inspection bodies from 1 January 2023 may continue to be used until 31 December 2032.

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

1.6.4.58 Type approval certificates issued for tank-containers intended for the carriage of substances other than those for which TA 4 and TT 9 of 6.8.4 apply, issued before 1 July 2023 in compliance with Chapter 6.8, but which do not comply with 1.8.7 as applicable from 1 January 2023, may continue to be used until the end of their validity.

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

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

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

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

1.6.4.63 Tank-containers constructed before 1 July 2023 in accordance with the requirements in force up to 31 December 2022, but which do not, however, meet the requirements of special provision TE 26 of 6.8.4 (b) applicable as from 1 January 2023 may continue to be used.

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

1.6.6.1 In the heading, replace "2009 and 2012" by:

"2009 or 2012".

1.6.6.2 In the heading, replace "2009 and 2012" by:

"2009 or 2012".

1.6.6.3 In the paragraph under the heading, replace "or (iii) of the 2009 Edition of IAEA Regulations" by:

"or (iii) of the 2009 edition of the IAEA Regulations".

1.6.6.4 In the heading, replace "2009 and 2012" by:

"2009 or 2012".

In the text after the heading, replace "2009 and 2012" by:

"2009 or 2012" (twice).

Chapter 1.7

1.7.1 In Note 1, first sentence, replace "persons" by:

"people".

1.7.1.1 Amend the second sentence to read:

"RID is based on the 2018 edition of the IAEA Regulations for the Safe Transport of Radioactive Material."

At the end, replace "Safety Standard Series" by:

"Safety Standards Series".

1.7.2.5 Replace "persons" by:

"people".

Chapter 1.8

1.8.5.4 In the model for the “Report on occurrences during the carriage of dangerous goods”, section 6, note (3), add the following new entries at the end to read:

"17 MEMU
18 Extra-large tank-container”.

1.8.6 Amend to read as follows:

"**1.8.6 Administrative controls for the activities described in 1.8.7 and 1.8.8**

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

– "approved inspection body" means an inspection body approved by the competent authority to perform different activities according to 1.8.6.1; and

– "recognized inspection body" means an approved inspection body recognized by another competent authority.

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

1.8.6.1 General rules

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

1.8.6.2 Obligations of the competent authority

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

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

The accreditation shall clearly cover the activities of the approval.

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

1.8.6.2.2 *Approval of inspection bodies*

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

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

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

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

1.8.6.2.3 *Monitoring of inspection bodies*

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

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

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

1.8.6.2.4 *Information obligations*

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

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

(a) Name, address(es) of the office(s) of the inspection body;

(b) The scope of activities for which the inspection body is approved;

(c) Confirmation that the inspection body is accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) by the national accreditation body and that the accreditation covers the scope of activities for which the inspection body is approved;

(d) The identity mark or stamp, as specified in Chapters 6.2 and 6.8, of the inspection body and the mark of any in-house inspection service authorized by the inspection body.

A reference to this list shall be made on the OTIF website.

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

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

NOTE: In that context, reciprocal recognition agreements between RID Contracting States shall be respected.

1.8.6.3 Obligations of the inspection bodies

1.8.6.3.1 *General rules*

The inspection body shall:

(a) Have a staff with an organizational structure, capable, trained, competent and skilled, to satisfactorily perform its technical functions;

(b) Have access to suitable and adequate facilities and equipment;

(c) Operate in an impartial manner and be free from any influence which could prevent it from doing so;

(d) Ensure commercial confidentiality of the commercial and proprietary activities of the manufacturer and other bodies;

(e) Maintain clear demarcation between actual inspection body functions and unrelated functions;

(f) Have a documented quality system, equivalent to that set out in EN ISO/IEC 17020:2012 (except clause 8.1.3);

(g) Ensure that the tests and inspections specified in the relevant standards and in RID are performed;

(h) Maintain an effective and appropriate report and record system in accordance with 1.8.7 and 1.8.8;

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

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

NOTE: This is not necessary if the RID Contracting State assumes liability in accordance with domestic law.

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

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

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

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

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

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

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

1.8.6.3.2 *Operational obligations*

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

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

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

1.8.6.3.3 *Delegation of inspection tasks*

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

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

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

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

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

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

1.8.6.3.4 *Information obligations*

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

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

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

(c) Any refusal of inspection certificates;

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

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

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

1.8.7 Amend to read as follows:

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

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

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

1.8.7.1 General provisions

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

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

1.8.7.1.2 Each application for

(a) The type examination in accordance with 1.8.7.2.1;

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

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

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

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

Each application for

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

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

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

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

1.8.7.1.3 The application shall include:

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

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

(c) The relevant technical documentation in 1.8.7.8;

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

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

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

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

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

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

1.8.7.2 Type examination and type approval certificate issue

1.8.7.2.1 *Type examination*

1.8.7.2.1.1 The manufacturer shall:

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

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

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

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

1.8.7.2.1.2 The inspection body shall:

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

(b) Perform the examinations and the tests, or perform the examinations and verify the test conditions and supervise the tests on site, as specified in RID, including the relevant standards, to determine that the provisions have been applied and fulfilled, and the procedures adopted by the manufacturer meet the requirements;

(c) Check the material(s) certificate(s) issued by the manufacturer(s) of the materials against the relevant provisions of RID;

(d) As applicable, approve the procedures for the permanent joining of parts or check that they have been previously approved, and verify that the staff undertaking the permanent joining of parts and the non-destructive tests are qualified or approved;

(e) Agree with the manufacturer the location(s) where the examinations and necessary tests are to be carried out.

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

1.8.7.2.2 *Type approval certificate issue*

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

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

This certificate shall contain:

(a) The name and address of the issuer;

(b) The competent authority under whom the certificate is issued;

(c) The name and address of the manufacturer;

(d) A reference to the version of RID and standards used for the type examination;

(e) Any requirements resulting from the type examination;

(f) The data contained in the documents for the type-examination according to 1.8.7.8.1, necessary for the identification of the type and variation, as defined by the relevant standards. The documents, or a list identifying the documents, containing the data shall be included or annexed to the certificate;

(g) The reference to the type examination report(s);

(h) The maximum period of validity of the type approval; and

(i) Any specific requirements in accordance with Chapters 6.2 and 6.8.

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

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

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

NOTE: The relevant provisions concerning the use, periodic inspection and intermediate inspection of products contained in a type approval which has expired or has been withdrawn shall continue to apply to the products constructed according to that type approval before its expiry or its withdrawal if they may continue to be used.

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

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

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

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

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

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

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

1.8.7.3 Supervision of manufacture

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

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

The relevant body shall:

(a) Verify the conformity with the technical documentation specified in 1.8.7.8.3 and with the applicable provisions of RID and of the type approval certificate and reports;

(b) Verify that the manufacturing process produces products in conformity with the requirements and the documentation which apply to it;

(c) Verify the traceability of materials and check the material(s) certificate(s) against the specifications;

(d) As applicable, verify that the personnel undertaking the permanent joining of parts and the non-destructive tests are qualified or approved;

(e) Agree with the manufacturer on the location where the examinations and necessary tests are to be carried out; and

(f) Provide a written report of the results of the supervision of manufacture.

1.8.7.4 Initial inspection and tests

1.8.7.4.1 The manufacturer shall:

(a) Affix the marks specified in RID; and

(b) Supply to the relevant body the technical documentation specified in 1.8.7.8.4.

1.8.7.4.2 The relevant body shall:

(a) Perform the examinations and the tests, or perform the examinations and verify the test conditions and supervise the tests on site to ensure that the product is manufactured in accordance with the type approval and the relevant provisions;

(b) Check the certificates supplied by the manufacturers of service equipment against the service equipment;

(c) Issue an initial inspection and tests report relating to the detailed tests and verifications carried out and the verified technical documentation;

(d) Issue an initial inspection and tests certificate and affix its mark when the manufacture satisfies the provisions; and

(e) Check if the type approval remains valid after provisions of RID (including the referenced standards) relevant to the type approval have changed. If the type approval is no longer valid, the relevant body shall issue a refusal inspection report and inform the competent authority or the inspection body which issued the type approval certificate.

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

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

(a) The name and address of the inspection body and the name and address of the in-house inspection service when applicable;

(b) The name and address of the manufacturer;

(c) The location of the initial inspection;

(d) A reference to the version of RID and the standards used for the initial inspections and tests;

(e) The results of the inspections and tests;

(f) The data for identification of the inspected product(s), at least the serial number or for non refillable cylinders the batch number;

(g) The type approval number; and

(h) The reference to the certificate of authorization of the in-house inspection service when applicable.

1.8.7.5 Entry into service verification

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

1.8.7.5.2 The inspection body shall review the documentation and:

(a) Perform external checks (e.g. marking, condition);

(b) Verify conformity with the type approval certificate;

(c) Verify the validity of the approvals of the inspection bodies who performed the previous inspections and tests;

(d) Verify that the transitional measures of 1.6.3 or 1.6.4 have been fulfilled.

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

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

The inspection body in charge of the entry into service verification shall, without delay, inform its competent authority of any refusal.[27]

[27] In such a case the competent authority shall also inform the national safety authority (NSA) of the RID Contracting State concerned, which is also a Member State of the European Union, with the aim of evaluating the follow-up actions to be applied by the NSA in accordance with Article 26 of Directive (EU) 2016/797 on the "non-compliance of vehicles or vehicle types with essential requirements" and Article 7(4) of Implementing Regulation (EU) 2018/545 on the "sharing of information related to technical and operational matters relevant for the issuing of a vehicle type authorisation and/or vehicle authorisation for placing on the market".

In RID Contracting States which are also ATMF Contracting States but not Member States of the European Union, the competent authority shall also inform the competent authority in the meaning of Article 5 of the ATMF Uniform Rules, with the aim of evaluating the need for follow-up actions, in particular in accordance with Article 10a of the ATMF Uniform Rules concerning the non-compliance of vehicle or vehicle types and, where relevant, in accordance with Article 8a of the APTU Uniform Rules if deficiencies in the UTP are expected.

1.8.7.6 Periodic inspection, intermediate inspection and exceptional inspection

1.8.7.6.1 The relevant body shall:

(a) Perform the identification and verify the conformity with the documentation;

(b) Perform the inspections and the tests, or perform the inspections and verify the test conditions and supervise the tests on site in order to check that the requirements are met;

(c) Issue reports and certificates, as appropriate, of the results of the inspections and tests, which may cover a number of products; and

(d) Ensure that the required marks are applied.

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

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

1.8.7.7 Surveillance of the in-house inspection service

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

(a) Implement a quality system for the in-house inspection service, including technical procedures, for inspections and tests documented in 1.8.7.8.6 and subject to surveillance;

(b) Fulfil the obligations arising out of the quality system as approved and ensure that it remains satisfactory and efficient in particular:

(i) Authorize trained and competent personnel for the in-house inspection service; and

(ii) Affix the identity mark or stamp, as specified in Chapters 6.2 and 6.8, of the inspection body, and the mark of the in-house inspection service where appropriate on the product to ensure traceability.

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

(a) This audit shall be undertaken at each site to confirm that the inspections and tests performed are in compliance with the requirements of RID;

(b) The inspection body may authorize the in-house inspection service to affix the identity mark or stamp, as specified in Chapter 6.2 and 6.8, of the inspection body to each approved product;

(c) The authorization may be renewed after a satisfactory audit at each site in the last year prior to the expiry. The new period of validity shall begin with the date of expiry of the authorization;

(d) The inspectors of the inspection body undertaking the audits shall be competent to carry out the assessment of conformity of the product covered by the quality system and to assess the quality system itself; and

(e) The in-house inspection service shall be engaged in activities at a frequency which ensures the necessary level of competence.

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

in accordance with its accreditation.

1.8.7.7.3 The certificate of authorization shall contain as a minimum:

(a) The name and address of the inspection body;

(b) The name and address of the manufacturer or testing facility and addresses of all in-house inspection service sites;

(c) A reference to the version of RID used for authorization of the in-house inspection service and standards or recognised technical codes according to 6.2.5 used for initial inspection and tests or periodic inspections;

(d) The reference to the initial audit report;

(e) As necessary, further information to define the scope of the in-house inspection service (e.g. type approvals of the products for initial inspection and tests);

(f) The mark of the in-house inspection service, if applicable; and

(g) The expiry date.

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

(a) The audits shall be carried out no later than every six months;

(b) The inspection body may require additional visits, training, technical changes, modifications of the quality system, restrict or prohibit the inspections and tests to be done by the in-house inspection service;

(c) The inspection body shall assess any changes in the quality system and decide whether the modified quality system still satisfies the requirements of the initial audit or whether a full reassessment is required;

(d) The inspectors of the inspection body undertaking the audits shall be competent to carry out the assessment of conformity of the product covered by the quality system and to assess the quality system itself; and

(e) The inspection body shall provide the manufacturer or the testing facility, as applicable, and the in-house inspection service, with the report of the audit and, if tests have taken place, with a test report.

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

1.8.7.8 Documents

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

1.8.7.8.1 *Documents for the type examination*

The manufacturer shall provide as appropriate:

(a) The list of standards used for the design and manufacture;

(b) A description of the type including all variations;

(c) The instructions according to the relevant column of table A of Chapter 3.2 or a list of dangerous goods to be carried for dedicated products;

(d) A general assembly drawing or drawings;

(e) The detailed drawings, including the dimensions used for the calculations, of the product, the service equipment, the structural equipment, the marking and the labelling necessary to verify the conformity;

(f) The calculation notes, results and conclusions;

(g) The list of the service equipment with the relevant technical data and information on the safety devices including the calculation of the relief capacity if relevant;

(h) The list of material requested in the standard for manufacture used for every part, sub-part, lining, service and structural equipment and the corresponding material specifications or the corresponding declaration of conformity to RID;

(i) The approved qualification of permanent joining processes;

(j) The description of the heat treatment process(es); and

(k) The procedures, descriptions and records of all relevant tests listed in the standards or RID for the type approval and for the manufacture.

1.8.7.8.2 *Documents for the type approval certificate issue*

The manufacturer shall provide as appropriate:

(a) The list of standards used for the design and manufacture;

(b) A description of the type, including all variations;

(c) The instructions according to the relevant column of table A of Chapter 3.2 or a list of dangerous goods to be carried for dedicated products;

(d) A general assembly drawing or drawings;

(e) The list of materials in contact with the dangerous goods;

(f) The list of service equipment;

(g) The type-examination report; and

(h) Further documents mentioned under 1.8.7.8.1 on request of the competent authority or inspection body.

1.8.7.8.3 *Documents for the supervision of manufacture*

The manufacturer shall provide as appropriate:

(a) The documents listed in 1.8.7.8.1 and 1.8.7.8.2;

(b) A copy of the type approval certificate;

(c) The manufacturing procedures including test procedures;

(d) The manufacturing records;

(e) The approved qualifications of permanent joining operators;

(f) The approved qualifications of the non-destructive test operators;

(g) The reports of the destructive and non-destructive tests;

(h) The heat treatment records; and

(i) The calibration records.

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

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

(a) The documents listed in 1.8.7.8.1, 1.8.7.8.2 and 1.8.7.8.3;

(b) The material certificates of the product and any sub-parts including the service equipment;

(c) The certificates of conformity of the service equipment; and

(d) A declaration of conformity including the description of the product and all the variations adopted from the type approval.

1.8.7.8.5 *Documents for periodic inspection, intermediate inspection and exceptional inspection*

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

(a) For pressure receptacles, the documents specifying special requirements when the manufacturing and periodic inspections and tests standards so require;

(b) For tanks:

(i) the tank record; and

(ii) any relevant document mentioned in 1.8.7.8.1 to 1.8.7.8.4 if requested by the inspection body.

1.8.7.8.6 *Documents for the surveillance of in-house inspection service*

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

(a) The organizational structure and responsibilities;

(b) The relevant inspection and test, quality control, quality assurance and process operation instructions, and systematic actions that will be used;

(c) The quality records, such as inspection reports, test data, calibration data and certificates;

(d) The management reviews to ensure the effective operation of the quality system arising from the on-site audits in accordance with 1.8.7.7;

(e) The process describing how customer and regulation requirements are met;

(f) The process for control of documents and their revision;

(g) The procedures for dealing with non-conforming products; and

(h) The training programmes and qualification procedures for relevant personnel."

1.8.8 In paragraph (a), replace "1.8.7.5" by:

"1.8.7.6".

1.8.8.1.1 Amend the first sentence as follows:

– Replace "IS-body approved" by:

"IS authorized".

– Replace "IS bodies" by:

"IS".

1.8.8.1.4 Replace "1.8.7.6 excluding 1.8.7.6.1 (d) and 1.8.7.6.2 (b)" by:

"1.8.7.7 excluding 1.8.7.7.1 (d) and 1.8.7.7.2 (b)".

1.8.8.6 In the first sentence, replace "1.8.7.6 excluding 1.8.7.6.1 (d) and 1.8.7.6.2 (b)" by:

"1.8.7.7 excluding 1.8.7.7.1 (d) and 1.8.7.7.2 (b)".

1.8.8.7 Replace "1.8.7.7.1, 1.8.7.7.2, 1.8.7.7.3 and 1.8.7.7.5" by:

"1.8.7.8.1, 1.8.7.8.2, 1.8.7.8.3, 1.8.7.8.4 and 1.8.7.8.6".

Chapter 1.9

1.9.2 Renumber footnote 19 as footnote 28.

1.9.3 Renumber footnote 20 as footnote 29.

In footnote 29 (current footnote 20), replace "(www.otif.org)" by:

"(http://otif.org/en/?page_id=1103)".

After the reference to footnote 29 (current footnote 20), add a reference to a new footnote 30 to read as follows:

"[30] Multimodal guidelines ("Inland TDG Risk Management Frame-work") may be consulted on the website of the Directorate General for Mobility and Transport of the European Commission (https://ec.europa.eu/transport/themes/dangerous_good/risk_management_framework_en) or directly on the European Union Agency for Railways' website (https://www.era.europa.eu/activities/transport-dangerous-goods/inland-tdg_en)."

Chapter 1.10

1.10.4 Amend the first sentence to read as follows:

"The provisions of 1.10.1, 1.10.2 and 1.10.3 do not apply when the quantities carried in packages in a wagon or large container do not exceed those referred to in 1.1.3.6.3, except for high consequence dangerous goods of Class 1 (in accordance with 1.10.3.1) and except for UN numbers 2910 and 2911 if the activity level exceeds the A_2 value."

1.10.5 Delete footnotes 21 and 22.

After "Convention on Physical Protection of Nuclear Material", insert:

"(INFCIRC/274/Rev.1, IAEA, Vienna (1980))".

After ""Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities"", add_

"(INFCIRC/225/Rev.5, IAEA, Vienna (2011))".

Chapter 1.11

Renumber footnote 23 as footnote 31.

PART 2

Chapter 2.1

2.1.4.3.1 In paragraph (a), number the indents as "(i)", "(ii)", "(iii)" and "(iv)".

In paragraph (b), number the indents as "(i)" and "(ii)".

Chapter 2.2

Section 2.2.1

2.2.1.1.7.5 In Note 3, number the indents as "(a)", "(b)", "(c)" and "(d)".

Section 2.2.2

2.2.2.2.1 At the end, add the following new sentence:

"If temperature control is required to prevent polymerization of a substance (i.e. for a substance in a packaging or IBC with an SAPT of 50 °C or less, or in a tank with an SAPT of 45 °C or less), the substance shall not be accepted for carriage."

2.2.2.2.2 Amend the fifth indent to read:

"– Dissolved gases which cannot be classified under UN Nos. 1001, 1043, 2073 or 3318. For UN No. 1043, see special provision 642;".

2.2.2.3 [The amendment in the German version does not apply to the English text.]

Section 2.2.3

2.2.3.2.2 At the end, add the following new sentence:

"If temperature control is required to prevent polymerization of a substance (i.e. for a substance in a packaging or IBC with an SAPT of 50 °C or less, or in a tank with an SAPT of 45 °C or less), the substance shall not be accepted for carriage."

2.2.3.3 Amend classification code F1 as follows:

– Delete:

"1169 EXTRACTS, AROMATIC, LIQUID".

– Amend the entry for UN number 1197 to read:

"1197 EXTRACTS, LIQUID, for flavour or aroma".

Section 2.2.41

2.2.41.2.3 Amend the last indent to read:

"– Polymerizing substances in packagings or IBCs with an SAPT ≤ 50 °C and polymerizing substances in tanks with an SAPT ≤ 45 °C, therefore requiring temperature control:

UN 3533 POLYMERIZING SUBSTANCE, SOLID, TEMPERATURE CONTROLLED, N.O.S.;

UN 3534 POLYMERIZING SUBSTANCE, LIQUID, TEMPERATURE CONTROLLED, N.O.S."

2.2.41.4 In the fourth sentence, after "The formulations" add:

"not listed in this sub-section but".

In the table, add the following new entry in proper order:

Self-reactive substance	Concentration (%)	Packing method	UN generic entry	Remarks
(7-METHOXY-5-METHYL-BENZOTHIOPHEN-2-YL) BORONIC ACID	88 – 100	OP7	3230	(11)

Under the table, add the following remark (11):

"(11) The technical compound with the specified concentration limits may contain up to 12 % water and up to 1 % organic impurities."

Section 2.2.52

2.2.52.4 In the fourth sentence, after "The formulations" add:

"not listed in this sub-section but".

Amend the table as follows:

– After "ACETYL ACETONE PEROXIDE" insert the following new row:

"

Organic peroxide	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
"	≤ 35	≥ 57			≥ 8	OP8	3107	(32)

"

– After "tert-BUTYLPEROXY ISOPROPYLCARBONATE", insert the following new row:

"

Organic peroxide	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
"	≤ 62		≥ 38			OP7	3105	

"

– After "tert-HEXYL PEROXYPIVALATE", insert the following new row:

"

Organic peroxide	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
" (as a stable dispersion in water)	≤ 52						3117	prohi-bited

"

Under "Remarks (refer to the last column of the Table in 2.2.52.4):" add the following remark at the end:

"(32) Active oxygen ≤ 4.15%."

Section 2.2.61

2.2.61.2.1 At the end, add the following new sentence:

"If temperature control is required to prevent polymerization of a substance (i.e. for a substance in a packaging or IBC with an SAPT of 50 °C or less, or in a tank with an SAPT of 45 °C or less), the substance shall not be accepted for carriage."

Section 2.2.7

2.2.7.1.3 [The amendment in the French and German version does not apply to the English text.]

2.2.7.2.3.1.4 Amend to read as follows:

"**2.2.7.2.3.1.4** (Deleted)".

2.2.7.2.3.1.5 Amend to read as follows:

"**2.2.7.2.3.1.5** (Deleted)".

2.2.7.2.3.4.1 In paragraph (c), in the first sentence, replace "2.2.7.2.3.1.4" by:

"2.2.7.2.3.4.3".

2.2.7.2.3.4.2 In the penultimate sentence, replace "2.2.7.2.3.1.4" by:

"2.2.7.2.3.4.3".

2.2.7.2.3.4.3 becomes **2.2.7.2.3.4.4**.

Replace "2.2.7.2.3.4.1 and 2.2.7.2.3.4.2" by:

"2.2.7.2.3.4.1, 2.2.7.2.3.4.2 and 2.2.7.2.3.4.3".

2.2.7.2.3.4 Insert the following new **2.2.7.2.3.4.3**:

"**2.2.7.2.3.4.3** A solid material sample representing the entire contents of the package shall be immersed for 7 days in water at ambient temperature. The volume of water to be used in the test shall be sufficient to ensure that at the end of the 7-day test period the free volume of the unabsorbed and unreacted water remaining shall be at least 10 % of the volume of the solid test sample itself. The water shall have an initial pH of 6-8 and a maximum conductivity of 1 mS/m at 20 °C. The total activity of the free volume of water shall be measured following the 7-day immersion of the test sample."

Section 2.2.8

2.2.8.1.5.2 In the second sentence, replace "OECD Test Guidelines[7,8,9,10]" by:

"OECD Test Guidelines Nos. 404[7], 435[8], 431[9] or 430[10]".

In the third sentence, replace "OECD Test Guidelines[7,8,9,10]" by:

"one of these or non-classified in accordance with OECD Test Guideline No. 439[11],".

In the fourth sentence, delete:

"*in vitro*".

At the end, add the following new sentence:

"If the test results indicate that the substance or mixture is corrosive, but the test method does not allow discrimination between packing groups, it shall be assigned to packing group I if no other test results indicate a different packing group."

Add a footnote 11 to read as follows:

"[11] OECD Guideline for the testing of chemicals No. 439 "In Vitro Skin Irritation: Reconstructed Human Epidermis Test Method" 2015."

Renumber footnotes 11 to 18 as footnotes 12 to 19.

2.2.8.1.5.3 In paragraph (c) (ii), replace "ISO 3574 or Unified Numbering System (UNS) G10200 or a similar type" by:

"ISO 3574, Unified Numbering System (UNS) G10200".

2.2.8.2.1 At the end, add the following new sentence:

"If temperature control is required to prevent polymerization of a substance (i.e. for a substance in a packaging or IBC with an SAPT of 50 °C or less, or in a tank with an SAPT of 45 °C or less), the substance shall not be accepted for carriage."

Section 2.2.9

2.2.9.1.7 Amend the beginning of paragraph (g) to read as follows:

"Except for button cells installed in equipment (including circuit boards), manufacturers ...".

2.2.9.1.10.3.1 In Table 2.2.9.1.10.3.1, in paragraphs (a) and (b) (iii), replace "hr" by:

"h" (9 times).

2.2.9.1.10.4.3.4 After paragraph (a) (i). insert the following new Note:

"**NOTE:** In this situation, when EC_x or NOEC of the tested mixture > 0.1 mg/l, there is no need to classify for long-term hazard under RID."

2.2.9.3 [The amendment in the German version does not apply to the English text.]

Chapter 2.3

2.3.3.2 Renumber footnote 19 as footnote 20.

PART 3

Chapter 3.2

3.2.1 Amend the title to read:

"**3.2.1 Table A: List of dangerous goods in UN number order**

Explanations".

In the explanatory note for Column (10), insert the following new third sub-paragraph:

"For portable tanks with shells made of fibre-reinforced plastics (FRP) materials, see Chapter 6.9."

In the explanatory note for column (12), amend the last sub-paragraph before the Note to read as follows:

"For vacuum-operated waste tanks, see 4.5.1 and Chapter 6.10.".

Table A

Amend as follows:

For all UN numbers to which special provision "386" is assigned in column (6), insert in column (6):

"676".

(Applies to the following UN Nos.: 1010, 1051, 1060, 1081, 1082, 1085, 1086, 1087, 1092, 1093, 1143, 1167, 1185, 1218, 1246, 1247, 1251, 1301, 1302, 1303, 1304, 1545, 1589, 1614, 1724, 1829, 1860, 1917, 1919, 1921, 1991, 2055, 2200, 2218, 2227, 2251, 2277, 2283, 2348, 2352, 2396, 2452, 2521, 2522, 2527, 2531, 2607, 2618, 2838, 3022, 3073, 3079, 3302, 3531 and 3532.)

UN No.	Col-umn	Amendment
1002	(6)	After "392", insert: "397".
1012	(2)	Amend to read as follows: "BUTYLENE".
	(6)	Before "662", insert: "398".
1038	(13)	After "TE22", insert: "TE26".
1043	(3b)	Insert: "4A".
1052	(13)	Delete: "TT4".
1169, all ent-ries	(1) – (20)	Delete.
1197, all ent-ries	(2)	Replace "EXTRACTS, FLAVOURING, LIQUID" by: "EXTRACTS, LIQUID, for flavour or aroma".
1345	(2)	Add: ", not exceeding 840 microns and rubber content exceeding 45 %".
1786	(13)	Delete: "TT4".
1790 (all ent-ries)	(13)	Delete: "TT4".
1872	(3b)	Replace "OT2" by: "O2".
	(5)	Delete: "+ 6.1".
	(12)	Replace "SGAN" by: "SGAV".
	(17)	Insert: "VC1 VC2 AP6 AP7".
	(18)	Delete: "CW28".
	(20)	Replace "56" by: "50".
1891	(3a)	Replace "6.1" by: "3".
	(3b)	Replace "T1" by: "FT1".
	(5)	Before "6.1", insert: "3+".
	(7a)	Replace "100 ml" by: "1 L".
	(7b)	Replace "E4" by: "E2".
	(9b)	Replace "MP15" by: "MP19".

UN No.	Col-umn	Amendment
	(18)	Delete: "CW31".
	(19)	Replace "CE5" by: "CE7".
	(20)	Replace "60" by: "336".
1944	(2)	[The amendment in the German version does not apply to the English text.]
1961	(13)	After "TE22", insert: "TE26".
1966	(13)	After "TE22", insert: "TE26".
1972	(13)	After "TE22", insert: "TE26".
2015 (first entry)	(2)	Before the existing text, insert: "HYDROGEN PEROXIDE, STABILIZED or".
2037 (all en-tries)	(2)	[The amendment in the German version does not apply to the English text.]
2426	(2)	Amend to read as follows: "AMMONIUM NITRATE, LIQUID (hot concentrated solution)".
2817, PG II	(13)	Delete: "TT4".
3138	(13)	After "TE22", insert: "TE26".
3208, PG II	(7b)	Replace "E0" by: "E2".
3209, PG II	(7b)	Replace "E2" by: "E0".
3269 (all ent-ries)	(7b)	Replace "E0" by: "See SP 340".
3312	(13)	After "TE22", insert: "TE26".
3359	(2)	[The amendment in the German version does not apply to the English text.]
3421, PG II	(13)	Delete: "TT4".
3471, PG II	(13)	Delete: "TT4".
3509	(17)	Before "VC2", insert: "VC1".
3527 (both ent-ries)	(7b)	Replace "E0" by: "See SP 340".
3536	(15)	Replace "-" by: "2".
3538	(6)	After "274", insert: "396".

Add the following new entry:

UN No.	Name and description	Class	Classification code	Packing group	Labels	Special provisions	Limited and excepted quantities		Packaging			Portable tanks and bulk containers		RID Tanks		Transport category	Special provisions for carriage			Colis express (express parcels)	Hazard identification No.
									Packing instructions	Special packing provisions	Mixed packing provisions	Instructions	Special provisions	Tank code	Special provisions		Packages	Bulk	Loading, unloading and handling		
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9a)	(9b)	(10)	(11)	(12)	(13)	(15)	(16)	(17)	(18)	(19)	(20)
3550	COBALT DIHYDROXIDE POWDER, containing not less than 10% respirable particles	6.1	T5	I	6.1		0	E5	P002 IBC07	B20		T6	TP33	S10AH L10CH	TU14 TU15 TU38 TE21 TE22	1	W15		CW13 CW28 CW31		66

Table B

Amend the title to read:

"**3.2.2 Table B: Alphabetical list of dangerous goods**"."

Amend the following entries:

Name and description	UN No.	Amendment
Acetylene tetrabromide: see	2504	Amend the NHM Code in column (4) to read as follows: "29034+".
AIRCRAFT HYDRAULIC POWER UNIT FUEL TANK (containing a mixture of anhydrous hydrazine and methylhydrazine) (M86 fuel)	3165	Amend the NHM Code in column (4) to read as follows: "880730".
ALLYL BROMIDE	1099	Amend the NHM Code in column (4) to read as follows: "29036+".
ALLYL IODIDE	1723	Amend the NHM Code in column (4) to read as follows: "29036+".
AMINOPYRIDINES (o-, m-, p-)	2671	Amend the NHM Code in column (4) to read as follows: "29333+".
AMMONIUM NITRATE, LIQUID, hot concentrated solution, in a concentration of more than 80% but not more than 93%	2426	Amend the name and description in column "Name and description" to read as follows: "AMMONIUM NITRATE, LIQUID (hot concentrated solution)".
BOOSTERS WITH DETONATOR	0225	Amend the NHM Code in column (4) to read as follows: "3603+0".
BOOSTERS WITH DETONATOR	0268	Amend the NHM Code in column (4) to read as follows: "3603+0".
BOOSTERS without detonator	0042	Amend the NHM Code in column (4) to read as follows: "3603+0".
BOOSTERS without detonator	0283	Amend the NHM Code in column (4) to read as follows: "3603+0".
1-BROMOBUTANE	1126	Amend the NHM Code in column (4) to read as follows: "29036+".
2-BROMOBUTANE	2339	Amend the NHM Code in column (4) to read as follows: "29036+".
BROMOFORM	2515	Amend the NHM Code in column (4) to read as follows: "29036+".
1-BROMO-3-METHYLBUTANE	2341	Amend the NHM Code in column (4) to read as follows: "29036+".

Name and description	UN No.	Amendment
BROMOMETHYLPROPANES	2342	Amend the NHM Code in column (4) to read as follows: "29036+".
2-BROMOPENTANE	2343	Amend the NHM Code in column (4) to read as follows: "29036+".
BROMOPROPANES	2344	Amend the NHM Code in column (4) to read as follows: "29036+".
3-BROMOPROPYNE	2345	Amend the NHM Code in column (4) to read as follows: "29036+".
n-Butyl bromide: see	1126	Amend the NHM Code in column (4) to read as follows: "29036+".
1-BUTYLENE	1012	In column "Name and description", replace "1-BUTYLENE" by: "1-Butylene: see".
cis-2-BUTYLENE	1012	In column "Name and description", replace "cis-2-BUTYLENE" by: "cis-Butylene: see".
trans-2-BUTYLENE	1012	In column "Name and description", replace "trans-2-BUTYLENE" by: "trans-2-Butylene: see".
BUTYLENES MIXTURE	1012	In column "Name and description", replace "BUTYLENES MIXTURE" by: "Butylenes mixture: see".
CAMPHOR OIL	1130	Amend the NHM Code in column (4) to read as follows: "151560".
CARBON TETRABROMIDE	2516	Amend the NHM Code in column (4) to read as follows: "29036+".
CHARGES, SHAPED, FLEXIBLE, LINEAR	0237	Amend the NHM Code in column (4) to read as follows: "3603+0".
CHARGES, SHAPED, FLEXIBLE, LINEAR	0288	Amend the NHM Code in column (4) to read as follows: "3603+0".
2-CHLOROPYRIDINE	2822	Amend the NHM Code in column (4) to read as follows: "29333+".
COMPONENTS, EXPLOSIVE TRAIN, N.O.S.	0382	Amend the NHM Code in column (4) to read as follows: "3603+0".
COMPONENTS, EXPLOSIVE TRAIN, N.O.S.	0383	Amend the NHM Code in column (4) to read as follows: "3603+0".
COMPONENTS, EXPLOSIVE TRAIN, N.O.S.	0384	Amend the NHM Code in column (4) to read as follows: "3603+0".

Name and description	UN No.	Amendment
COMPONENTS, EXPLOSIVE TRAIN, N.O.S.	0461	Amend the NHM Code in column (4) to read as follows: "3603+0".
CORD, DETONATING, flexible	0065	Amend the NHM Code in column (4) to read as follows: "3603+0".
CORD, DETONATING, flexible	0289	Amend the NHM Code in column (4) to read as follows: "3603+0".
CORD, DETONATING, metal clad	0102	Amend the NHM Code in column (4) to read as follows: "3603+0".
CORD (FUSE), DETONATING, metal clad	0290	Amend the NHM Code in column (4) to read as follows: "3603+0".
CORD, DETONATING, MILD EFFECT, metal clad	0104	Amend the NHM Code in column (4) to read as follows: "3603+0".
CORD, IGNITER	0066	Amend the NHM Code in column (4) to read as follows: "3603+0".
DETONATOR ASSEMBLIES, NON-ELECTRIC for blasting	0360	Amend the NHM Code in column (4) to read as follows: "3603+0".
DETONATOR ASSEMBLIES, NON-ELECTRIC for blasting	0361	Amend the NHM Code in column (4) to read as follows: "3603+0".
DETONATOR ASSEMBLIES, NON-ELECTRIC for blasting	0500	Amend the NHM Code in column (4) to read as follows: "3603+0".
DETONATORS, ELECTRIC for blasting	0030	Amend the NHM Code in column (4) to read as follows: "360360".
DETONATORS, ELECTRIC for blasting	0255	Amend the NHM Code in column (4) to read as follows: "360360".
DETONATORS, ELECTRIC for blasting	0456	Amend the NHM Code in column (4) to read as follows: "360360".
DETONATORS, ELECTRONIC programmable for blasting	0511	Amend the NHM Code in column (4) to read as follows: "360360".
DETONATORS, ELECTRONIC programmable for blasting	0512	Amend the NHM Code in column (4) to read as follows: "360360".
DETONATORS, ELECTRONIC programmable for blasting	0513	Amend the NHM Code in column (4) to read as follows: "360360".
DETONATORS FOR AMMUNITION	0073	Amend the NHM Code in column (4) to read as follows: "3603+0".
DETONATORS FOR AMMUNITION	0364	Amend the NHM Code in column (4) to read as follows: "3603+0".

Name and description	UN No.	Amendment
DETONATORS FOR AMMUNITION	0365	Amend the NHM Code in column (4) to read as follows: "3603+0".
DETONATORS FOR AMMUNITION	0366	Amend the NHM Code in column (4) to read as follows: "3603+0".
DETONATORS, NON-ELECTRIC for blasting	0029	Amend the NHM Code in column (4) to read as follows: "3603+0".
DETONATORS, NON-ELECTRIC for blasting	0267	Amend the NHM Code in column (4) to read as follows: "3603+0".
DETONATORS, NON-ELECTRIC for blasting	0455	Amend the NHM Code in column (4) to read as follows: "3603+0".
DEUTERIUM, COMPRESSED	1957	Amend the NHM Code in column (4) to read as follows: "2845++".
DIBROMOMETHANE	2664	Amend the NHM Code in column (4) to read as follows: "29036+".
1,1-DIFLUOROETHANE	1030	Amend the NHM Code in column (4) to read as follows: "29034+".
1,1-DIFLUOROETHYLENE	1959	Amend the NHM Code in column (4) to read as follows: "29034+".
DIFLUOROMETHANE	3252	Amend the NHM Code in column (4) to read as follows: "29034+".
ETHYL BROMIDE	1891	Amend the NHM Code in column (4) to read as follows: "29036+".
ETHYLENE DIBROMIDE	1605	Amend the NHM Code in column (4) to read as follows: "290362".
ETHYL FLUORIDE	2453	Amend the NHM Code in column (4) to read as follows: "29034+".
1-ETHYLPIPERIDINE	2386	Amend the NHM Code in column (4) to read as follows: "29333+".
EXTRACTS, AROMATIC, LIQUID	1169	In column "Name and description", replace "EXTRACTS, AROMATIC, LIQUID" by: "Extracts, aromatic, liquid: see".
		In column "UN No.", replace "1169" by: "1197".
		Amend the "NHM Code in column (4) to read as follows: "3302++".

Name and description	UN No.	Amendment
EXTRACTS, FLAVOURING, LIQUID	1197	In column "Name and description", replace "EXTRACTS, FLAVOURING, LIQUID" by: "Extracts, flavouring, liquid: see". Amend the "NHM Code in column (4) to read as follows: "3302++".
FUMIGATED CARGO TRANSPORT UNIT	3359	[The amendment in the German version does not apply to the English text.]
FUSE, DETONATING, metal clad	0102	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUSE, DETONATING, metal clad	0290	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUSE, DETONATING, MILD EFFECT, metal clad	0104	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUSE, IGNITER, tubular, metal clad	0103	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUSE, NON-DETONATING	0101	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUSE, SAFETY	0105	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUZES, DETONATING	0106	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUZES, DETONATING	0107	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUZES, DETONATING	0257	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUZES, DETONATING	0367	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUZES, DETONATING with protective features	0408	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUZES, DETONATING with protective features	0409	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUZES, DETONATING with protective features	0410	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUZES, IGNITING	0316	Amend the NHM Code in column (4) to read as follows: "3603+0".

Name and description	UN No.	Amendment
FUZES, IGNITING	0317	Amend the NHM Code in column (4) to read as follows: "3603+0".
FUZES, IGNITING	0368	Amend the NHM Code in column (4) to read as follows: "3603+0".
GAS CARTRIDGES without a release device, non-refillable	2037	[The amendment in the German version does not apply to the English text.]
GENETICALLY MODIFIED MICROORGANISMS	3245	Amend the NHM Code in column (4) to read as follows: "300249".
HEPTAFLUOROPROPANE	3296	Amend the NHM Code in column (4) to read as follows: "29034+".
HEXAFLUOROETHANE	2193	Amend the NHM Code in column (4) to read as follows: "29034+".
HEXAFLUOROPROPYLENE	1858	Amend the NHM Code in column (4) to read as follows: "29034+".
IGNITERS	0121	Amend the NHM Code in column (4) to read as follows: "3603+0".
IGNITERS	0314	Amend the NHM Code in column (4) to read as follows: "3603+0".
IGNITERS	0315	Amend the NHM Code in column (4) to read as follows: "3603+0".
IGNITERS	0325	Amend the NHM Code in column (4) to read as follows: "3603+0".
IGNITERS	0454	Amend the NHM Code in column (4) to read as follows: "3603+0".
2-IODOBUTANE	2390	Amend the NHM Code in column (4) to read as follows: "29036+".
IODOMETHYLPROPANES	2391	Amend the NHM Code in column (4) to read as follows: "29036+".
IODOPROPANES	2392	Amend the NHM Code in column (4) to read as follows: "29036+".
LIGHTERS, FUSE	0131	Amend the NHM Code in column (4) to read as follows: "3603+0".
MATCHES, SAFETY (book, card or strike on box)	1944	[The amendment in the German version does not apply to the English text.]
METHYL BROMIDE AND ETHYLENE DIBROMIDE MIXTURE, LIQUID	1647	Amend the NHM Code in column (4) to read as follows: "29036+".

Name and description	UN No.	Amendment
METHYL BROMIDE with not more than 2% chloropicrin	1062	Amend the NHM Code in column (4) to read as follows: "29036+".
2-METHYL-5-ETHYLPYRIDINE	2300	Amend the NHM Code in column (4) to read as follows: "29333+".
METHYL FLUORIDE	2454	Amend the NHM Code in column (4) to read as follows: "29036+".
METHYL IODIDE	2644	Amend the NHM Code in column (4) to read as follows: "29036+".
1-METHYLPIPERIDINE	2399	Amend the NHM Code in column (4) to read as follows: "29333+".
Methyl pyridines: see	2313	Amend the NHM Code in column (4) to read as follows: "29333+".
Mixture F1: see	1078	Amend the NHM Code in column (4) to read as follows: "38276+".
Mixture F2: see	1078	Amend the NHM Code in column (4) to read as follows: "38276+".
Mixture F3: see	1078	Amend the NHM Code in column (4) to read as follows: "38276+".
OCTAFLUOROBUT-2-ENE	2422	Amend the NHM Code in column (4) to read as follows: "29034+".
OCTAFLUOROPROPANE	2424	Amend the NHM Code in column (4) to read as follows: "29034+".
PENTAFLUOROETHANE	3220	Amend the NHM Code in column (4) to read as follows: "29034+".
PICOLINES	2313	Amend the NHM Code in column (4) to read as follows: "29333+".
PRIMERS, CAP TYPE	0044	Amend the NHM Code in column (4) to read as follows: "3603+0".
PRIMERS, CAP TYPE	0377	Amend the NHM Code in column (4) to read as follows: "3603+0".
PRIMERS, CAP TYPE	0378	Amend the NHM Code in column (4) to read as follows: "3603+0".
PRIMERS, TUBULAR	0319	Amend the NHM Code in column (4) to read as follows: "3603+0".
PRIMERS, TUBULAR	0320	Amend the NHM Code in column (4) to read as follows: "3603+0".

Name and description	UN No.	Amendment
PRIMERS, TUBULAR	0376	Amend the NHM Code in column (4) to read as follows: "3603+0".
RECEPTACLES, SMALL, CONTAINING GAS without a release device, non-refillable	2037	[The amendment in the German version does not apply to the English text.]
REFRIGERANT GAS R 1132a	1959	Amend the NHM Code in column (4) to read as follows: "29034+".
REFRIGERANT GAS R 116	2193	Amend the NHM Code in column (4) to read as follows: "29034+".
REFRIGERANT GAS R 1216	1858	Amend the NHM Code in column (4) to read as follows: "29034+".
REFRIGERANT GAS R 125	3220	Amend the NHM Code in column (4) to read as follows: "29034+".
REFRIGERANT GAS R 1318	2422	Amend the NHM Code in column (4) to read as follows: "29034+".
REFRIGERANT GAS R 134a	3159	Amend the NHM Code in column (4) to read as follows: "29034+".
REFRIGERANT GAS R 14	1982	Amend the NHM Code in column (4) to read as follows: "29034+".
REFRIGERANT GAS R 143a	2035	Amend the NHM Code in column (4) to read as follows: "29034+".
REFRIGERANT GAS R 152a	1030	Amend the NHM Code in column (4) to read as follows: "29034+".
REFRIGERANT GAS R 161	2453	Amend the NHM Code in column (4) to read as follows: "29034+".
REFRIGERANT GAS R 218	2424	Amend the NHM Code in column (4) to read as follows: "29034+".
REFRIGERANT GAS R 227	3296	Amend the NHM Code in column (4) to read as follows: "29034+".
REFRIGERANT GAS R 23	1984	Amend the NHM Code in column (4) to read as follows: "2903++".
REFRIGERANT GAS R 32	3252	Amend the NHM Code in column (4) to read as follows: "29034+".
REFRIGERANT GAS R 41	2454	Amend the NHM Code in column (4) to read as follows: "29036+".
REFRIGERANT GAS, N.O.S.	1078	Amend the NHM Code in column (4) to read as follows: "38276+".

Name and description	UN No.	Amendment
RELEASE DEVICES, EXPLOSIVE	0173	Amend the NHM Code in column (4) to read as follows: "3603+0".
RUBBER SCRAP, powdered or granulated	1345	In column "Name and description", after "granulated", insert: ", not exceeding 840 microns and rubber content exceeding 45%".
RUBBER SHODDY, powdered or granulated	1345	In column "Name and description", after "granulated", insert: ", not exceeding 840 microns and rubber content exceeding 45%".
TETRABROMOETHANE	2504	Amend the NHM Code in column (4) to read as follows: "29034+".
1,1,1,2-TETRAFLUOROETHANE	3159	Amend the NHM Code in column (4) to read as follows: "29034+".
TETRAFLUOROETHYLENE, STABILIZED	1081	Amend the NHM Code in column (4) to read as follows: "29034+".
TETRAFLUOROMETHANE	1982	Amend the NHM Code in column (4) to read as follows: "29034+".
1,2,3,6-TETRAHYDROPYRIDINE	2410	Amend the NHM Code in column (4) to read as follows: "29333+".
TOXINS, EXTRACTED FROM LIVING SOURCES, LIQUID, N.O.S.	3172	Amend the NHM Code in column (4) to read as follows: "30024+".
TOXINS, EXTRACTED FROM LIVING SOURCES, SOLID, N.O.S.	3462	Amend the NHM Code in column (4) to read as follows: "30024+".
1,1,1-TRIFLUOROETHANE	2035	Amend the NHM Code in column (4) to read as follows: "29034+".
TRIFLUOROMETHANE	1984	Amend the NHM Code in column (4) to read as follows: "2903++".
TRIFLUOROMETHANE, REFRIGERATED LIQUID	3136	Amend the NHM Code in column (4) to read as follows: "29034+".
VINYL BROMIDE, STABILIZED	1085	Amend the NHM Code in column (4) to read as follows: "29034+".
VINYL FLUORIDE, STABILIZED	1860	Amend the NHM Code in column (4) to read as follows: "29034+".
VINYLPYRIDINES, STABILIZED	3073	Amend the NHM Code in column (4) to read as follows: "29333+".
ZIRCONIUM, DRY, finished sheets, strip or coiled wire	2009	Amend the NHM Code in column (4) to read as follows: "8109++".

Name and description	UN No.	Amendment
ZIRCONIUM, DRY, coiled wire, finished metal sheets, strip (thinner than 254 microns but not thinner than 18 microns)	2858	Amend the NHM Code in column (4) to read as follows: "8109++".
ZIRCONIUM POWDER, DRY	2008	Amend the NHM Code in column (4) to read as follows: "8109++".
ZIRCONIUM POWDER, WETTED with not less than 25% water	1358	Amend the NHM Code in column (4) to read as follows: "8109++".
ZIRCONIUM SCRAP	1932	Amend the NHM Code in column (4) to read as follows: "8109++".
ZIRCONIUM SUSPENDED IN A FLAMMABLE LIQUID	1308	Amend the NHM Code in column (4) to read as follows: "8109++".

Insert the following new entries in alphabetical order:

Name and description	UN No.	Note	NHM Code
BUTYLENE	1012		290123
COBALT DIHYDROXIDE POWDER, containing not less than 10% respirable particles	3550		290377
EXTRACTS, LIQUID, for flavour or aroma	1197		3302++
HYDROGEN PEROXIDE, STABILIZED	2015		284700

Chapter 3.3

SP 119 At the end, add a new Note to read as follows:

"**NOTE:** For the purposes of carriage, heat pumps may be considered as refrigerating machines."

SP 188 [The amendment to paragraphs (g) and (h) in the French version does not apply to the English text.]

[The amendment to the last sentence in the German version does not apply to the English text.]

SP 225 After paragraph (a), insert the following new Note:

"**NOTE:** This entry applies to portable fire extinguishers, even if some components that are necessary for their proper functioning (e.g. hoses and nozzles) are temporarily detached, as long as the safety of the pressurized extinguishing agent containers is not compromised and the fire extinguishers continue to be identified as a portable fire extinguisher."

SP 291 At the end, add a new note to read as follows:

"**NOTE:** For the purposes of carriage, heat pumps may be considered as refrigerating machines."

SP 302 [The amendment in the German version does not apply to the English text.]

SP 327 In the first sentence, replace "5.4.1.1.3" by:

"5.4.1.1.3.1".

SP 363 At the end of paragraph (j), insert the following Note:

"**NOTE:** On engines and machinery with a capacity of more than 450 l but containing 60 l of liquid fuel or less, labelling and placarding compliant with the above requirements are permitted."

SP 378 [The amendment in the German version does not apply to the English text.]

SP 386 At the end of the first sentence, delete:

"(see 2.2.41.2.3)".

SP 389 Amend the first sentence to read as follows:

"This entry only applies to lithium ion batteries or lithium metal batteries installed in a cargo transport unit and designed only to provide power external to the cargo transport unit."

"**396 – 499**" Amend to read as follows:

"**399 – 499**".

SP 591 After "the requirements", insert:

"of Class 8".

SP 593 Amend to read as follows:

"**593** This gas, when used for cooling goods not fulfilling the criteria of any class, e.g. medical or biological specimens, if contained in double wall receptacles which comply with the provisions of packing instruction P 203, paragraph (6) for open cryogenic receptacles of 4.1.4.1, is not subject to the requirements of RID except as specified in 5.5.3."

SP 642 At the end, add the following sentence:

"Otherwise, for carriage of ammonia solution, see UN Nos. 2073, 2672 and 3318."

SP 644 Amend to read as follows:

"**644** This substance is admitted for carriage, provided that:

– The pH is between 5 and 7 measured in an aqueous solution of 10% of the substance carried;

– The solution does not contain more than 93 % ammonium nitrate;

– The solution does not contain more than 0.2% combustible material or chlorine compounds in quantities such that the chlorine level exceeds 0.02%."

SP 650 In paragraph (e), replace "5.4.1.1.3" by:

"5.4.1.1.3.1".

SP 654 In the first sentence, replace "5.4.1.1.3" by:

"5.4.1.1.3.1".

SP 655 At the beginning of the first sentence, after "Cylinder" delete:

"and their closures".

SP 663 Amend the first sub-paragraph under "General provisions:" to read as follows:

"Packagings, discarded, empty, uncleaned with residues presenting aprimary or subsidiary hazard of Class 5.1 shall not be loaded in bulk together with packagings, discarded, empty, uncleaned with residues presenting a hazard of other classes. Packagings, discarded, empty, uncleaned with residues presenting aprimary or subsidiary hazard of Class 5.1 shall not be packed with other packagings, discarded, empty, uncleaned with residues presenting hazards of other classes in the same outer packaging."

SP 674 Amend paragraph (a) "General" as follows:

– In the first sentence, replace "welded steel cylinders" by:

"welded steel cylinder shells".

– At the end of the second sentence, after "steel cylinder", insert:

"shell".

– [The second amendment to the second sentence in the French version does not apply to the English text.]

– In the third sentence, after "steel cylinder", insert:

"shell".

In paragraph (b) "Basic population", replace "inner cylinders" by:

"inner steel cylinder shells".

Amend paragraph (d) "Traceability" as follows:

– In the first sentence, after "steel cylinder", insert:

"shell".

– In the second indent, after "steel cylinder", insert:

"shell".

[The amendment to paragraph (i) in the German version does not apply to the English text.]

Add the following new special provisions:

"**396** Large and robust articles may be carried with connected gas cylinders with the valves open regardless of 4.1.6.5 provided:

(a) The gas cylinders contain nitrogen of UN No. 1066 or compressed gas of UN No. 1956 or compressed air of UN No. 1002;

(b) The gas cylinders are connected with the article through pressure regulators and fixed piping in such a way that the pressure of the gas (gauge pressure) in the article does not exceed 35 kPa (0.35 bar);

(c) The gas cylinders are properly secured so that they cannot move in relation to the article and are fitted with strong and pressure resistant hoses and pipes;

(d) The gas cylinders, pressure regulators, piping and other components are protected from damage and impacts during carriage by wooden crates or other suitable means;

(e) The transport document includes the following statement: "TRANSPORT IN ACCORDANCE WITH SPECIAL PROVISION 396";

(f) Cargo transport units containing articles carried with cylinders with open valves containing a gas presenting a risk of asphyxiation are well ventilated and marked in accordance with 5.5.3.6.

397 Mixtures of nitrogen and oxygen containing not less than 19.5% and not more than 23.5% oxygen by volume may be carried under this entry when no other oxidizing gases are present. A Class 5.1 subsidiary hazard label (model No. 5.1, see 5.2.2.2.2) is not required for any concentrations within this limit.

398 This entry applies to mixtures of butylenes, 1-butylene, cis-2-butylene and trans-2-butylene. For isobutylene, see UN No. 1055.

NOTE: For additional information to be added in the transport document, see 5.4.1.2.2 (e).

676 For the carriage of packages containing polymerizing substances the provisions of special provision 386 need not be applied, when carried for disposal or recycling provided the following conditions are met:

(a) Before loading an examination has shown that there is no significant deviation between the outside temperature of the package and the ambient temperature;

(b) The carriage is effected within a period of not more than 24 hours from that examination;

(c) The packages are protected from direct sunlight and from the impact of other sources of heat (e.g. additional loads that are being carried above ambient temperature) during carriage;

(d) The ambient temperatures during the carriage are below 45 °C;

(e) Wagons and containers are adequately ventilated;

(f) The substances are packed in packages with a maximum capacity of 1000 litres.

In assessing the substances for carriage under the conditions of this special provision, additional measures to prevent dangerous polymerization may be considered, for example the addition of inhibitors."

Chapter 3.4

3.4.11 Number the indents as "(a)" and "(b)".

Chapter 3.5

3.5.4.3 Number the indents as "(a)" and "(b)".

PART 4

Chapter 4.1

4.1.1.10 [The amendment in the German version does not apply to the English text.]

4.1.1.14 [The amendment in the German version does not apply to the English text.]

4.1.1.15 At the end, add a Note to read as follows:

"**NOTE:** For composite IBCs the period of use refers to the date of manufacture of the inner receptacle."

4.1.1.20.2 Amend as follows:

– Delete the second sentence ("The maximum size of the placed pressure receptacle is limited to a water capacity of 1 000 litres.").

– In the penultimate sentence, replace "1 000" by:

"3 000".

4.1.1.21.6 Amend the table as follows:

– Delete the row for UN 1169.

– For UN No. 1197, amend the proper shipping name in column (2a) to read as follows:

"**Extracts, liquid**, for flavour or aroma".

4.1.3.3 At the end, add the following sentence:

"Where packagings which need not meet the requirements of 4.1.1.3 (e.g. crates, pallets) are authorized in a packing instruction or the special provisions listed in Table A in Chapter 3.2, these packagings are not subject to the mass or volume limits generally applicable to packagings conforming to the requirements of Chapter 6.1, unless otherwise indicated in the relevant packing instruction or special provision."

4.1.3.6.1 [The amendments in the German version do not apply to the English text.]

4.1.3.6.8 [The amendment in the German version does not apply to the English text.]

4.1.4.1

P 003 Under special packing provision **PP 32**, add a new Note to read as follows:

"**NOTE:** The packagings authorized may exceed a net mass of 400 kg (see 4.1.3.3)."

[The amendment to the special packing provisions specific to RID and ADR RR 9 in the German version does not apply to the English text.]

P 004 At the end, after paragraph (3), add a new Note (left-justified) to read as follows:

"**NOTE:** The packagings authorized in (2) and (3) may exceed a net mass of 400 kg (see 4.1.3.3)."

P 005 In the second row after the heading row, under the second paragraph, add a new Note to read as follows:

"**NOTE:** The packagings authorized may exceed a net mass of 400 kg (see 4.1.3.3)."

P 006 At the end of paragraph (2), add a new Note to read as follows:

"**NOTE:** The packagings authorized may exceed a net mass of 400 kg (see 4.1.3.3)."

P 130 Under special packing provision **PP 67**, add a new Note to read as follows:

"**NOTE:** The packagings authorized may exceed a net mass of 400 kg (see 4.1.3.3)."

P 137 In special packing provision **PP 70**, first sentence, replace "in accordance with 5.2.1.10.1" by:

"as illustrated in figures 5.2.1.10.1.1 or 5.2.1.10.1.2".

P 144 Under special packing provision **PP 77**, add a new Note to read as follows:

"**NOTE:** The packagings authorized may exceed a net mass of 400 kg (see 4.1.3.3)."

P 200 [The amendment to paragraph (3) (f) in the German version does not apply to the English text.]

[The amendments to paragraph (5) (b) in the German version do not apply to the English text.]

[The amendments to paragraph (5) (c) in the German version do not apply to the English text.]

[The amendment to paragraph (8) in the German version does not apply to the English text.]

In paragraph (10), in special packing provision "d", after "steel pressure receptacles", insert:

"or composite pressure receptacles with steel liners".

[The amendments to paragraph (10), special packing provision "v" in the German version do not apply to the English text.]

In paragraph (10), in special packing provision "z", at the end, add the following:

"Mixtures of fluorine and nitrogen with a fluorine concentration below 35% by volume may be filled in pressure receptacles up to a maximum allowable working pressure for which the partial pressure of fluorine does not exceed 3.1 MPa (31 bar) absolute.

$$\text{working pressure (bar)} < \frac{31}{x_F} - 1,$$

in which

x_f = fluorine concentration in % by volume/100.

Mixtures of fluorine and inert gases with a fluorine concentration below 35% by volume may be filled in pressure receptacles up to a maximum allowable working pressure for which the partial pressure of fluorine does not exceed 3.1 MPa (31 bar) absolute, additionally taking the coefficient of nitrogen equivalency in accordance with ISO 10156:2017 into account when calculating the partial pressure.

$$\text{working pressure (bar)} < \frac{31}{x_F}(x_f + K_k \times x_k) - 1,$$

where

x_f = fluorine concentration in % by volume/100;

K_k = coefficient of equivalency of an inert gas relative to nitrogen (coefficient of nitrogen equivalency);

x_k = inert gas concentration in % by volume/100.

However, the working pressure for mixtures of fluorine and inert gases shall not exceed 20 MPa (200 bar). The minimum test pressure of pressure receptacles for mixtures of fluorine and inert gases equals 1.5 times the working pressure or 20 MPa (200 bar), with the greater value to be applied."

[The amendment to paragraph (10), special packing provision "ad" in the German version does not apply to the English text.]

In paragraph (11), amend the reference to standard EN 1439:2017 as follows:
"

Applicable requirements	Reference	Title of document
(7)	EN 1439:2021	LPG equipment and accessories – Procedures for checking transportable refillable LPG cylinders before, during and after filling

"

[The amendment to the first sentence of paragraph (12) in the German version does not apply to the English text.]

In paragraph (12) 1.1, replace "IS bodies" by:

"IS" (twice).

Amend paragraph (12) 2.1 as follows:

– [The first amendment in the German version does not apply to the English text.]

– Replace "EN 1439:2017" by:

"EN 1439:2021 (or until 31 December 2024, EN 1439:2017)".

Amend paragraph (12) 3.4 as follows:

– After "EN ISO 14245:2019," insert:

"EN ISO 14245:2021,".

– Replace "or EN ISO 15995:2019" by:

", EN ISO 15995:2019 or EN ISO 15995:2021".

– Replace "EN 14912:2005" by:

"EN 14912:2022".

– [The amendment to the last sentence in the German version does not apply to the English text.]

In paragraph (13) 1.1, replace "IS bodies" by:

"IS" (twice).

[The amendment to paragraph (13) 2.1 in the German version does not apply to the English text.]

In paragraph (13) 2.4, replace "EN ISO 11114-1:2012 + A1:2017" by:

"EN ISO 11114-1:2020".

In paragraph (13) 3.4, replace "EN ISO 22434:2011" by:

"EN ISO 22434:2022".

Amend Table 2 as follows:

– For UN 1008 BORON TRIFLUORIDE, in column "LC_{50}", replace "387" by:

"864".

– For UN 1008 BORON TRIFLUORIDE, in column "Special packing provisions", in the second row, insert:

"a".

– For UN No. 1012, amend the text in column "Name and description" to read as follows:

"BUTYLENE (Butylenes mixture) or
BUTYLENE (1-Butylene) or
BUTYLENE (cis-2-Butylene) or
BUTYLENE (trans-2-Butylene)".

– For UN 1859 SILICON TETRAFLUORIDE, in column "Special packing provisions", in the second row, insert:

"a".

– For UN 2189 DICHLOROSILANE, in column "Special packing provisions", in the second row, insert:

"a".

– For UN 2196 TUNGSTEN HEXAFLUORIDE in column "LC_{50}", replace "160" by:

"218".

– For UN 2196 TUNGSTEN HEXAFLUORIDE in columns "Tubes" and "Pressure drums", insert:

"X".

– For UN 2196 TUNGSTEN HEXAFLUORIDE in column "Special packing provisions", delete:

"k,".

– For UN 2198 PHOSPHORUS PENTAFLUORIDE in column "LC_{50}", replace "190" by:

"261".

– For UN 2198 PHOSPHORUS PENTAFLUORIDE in columns "Tubes" and "Pressure drums", insert:

"X".

– For UN 2198 PHOSPHORUS PENTAFLUORIDE in column "Special packing provisions", delete:

"k" (twice).

Amend Table 3 as follows:

– For UN 1052 HYDROGEN FLUORIDE, ANHYDROUS in column "LC_{50}", replace "966" by:

"1307".

P 205 In paragraph (5), (6) and (7), replace "ISO 16111:2008" by:

"ISO 16111:2008 or ISO 16111:2018".

In paragraph (7), at the end, add the following sentence:

"See 6.2.2.4 to determine which standard is applicable at the time of periodic inspection and test."

P 206 [The amendment in the German version does not apply to the English text.]

P 208 In paragraph (1), replace "ISO 11513:2011 or ISO 9809-1:2010" by:

"ISO 11513:2011, ISO 11513:2019, ISO 9809-1:2010 or ISO 9809-1:2019".

In paragraph (11), replace "Annex A of ISO 11513:2011" by:

"Annex A of ISO 11513:2011 (applicable until 31 December 2024) or Annex A of ISO 11513:2019".

P 408 At the end of paragraph (2), add a new Note to read as follows:

"**NOTE:** The packagings authorized may exceed a net mass of 400 kg (see 4.1.3.3)."

P 409 [The amendment in the German version does not apply to the English text.]

P 410 [The amendment in the German version does not apply to the English text.]

P 620 [The amendment in the German version does not apply to the English text.]

P 621 Amend paragraph (1) as follows:

– Replace "Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G)" by:

"Drums (1A1, 1A2, 1B1, 1B2, 1N1, 1N2, 1H1, 1H2, 1D, 1G)".

– Replace "Jerricans (3A2, 3B2, 3H2)" by:

"Jerricans (3A1, 3A2, 3B1, 3B2, 3H1, 3H2)".

P 800 [The amendment in the German version does not apply to the English text.]

P 801 After paragraph (2), add a new Note (left-justified) to read as follows:

"**NOTE:** The packagings authorized in (1) and (2) may exceed a net mass of 400 kg (see 4.1.3.3)."

P 903 In paragraph (2), amend the first sentence as follows:

– At the beginning, replace "cells or batteries" by:

"a cell or a battery".

– At the end, delete:

", and assemblies of such cells or batteries".

In paragraphs (4) and (5), in the last sentence before the Note, transfer the phrase "when intentionally active" to the beginning of the sentence to read:

"When intentionally active, devices such as radio frequency identification (RFID) tags, watches and temperature loggers, which are not capable of generating a dangerous evolution of heat, may be carried in strong outer packagings."

At the end, after paragraph (5), add a new Note (left-justified) to read as follows:

"**NOTE:** The packagings authorized in (2), (4) and (5) may exceed a net mass of 400 kg (see 4.1.3.3)."

P 905 In the second row after the heading row, after the first sub-paragraph, add a new Note to read as follows:

"**NOTE:** The packagings authorized may exceed a net mass of 400 kg (see 4.1.3.3)."

P 906 At the end of paragraph (2) (b), add a new Note to read as follows:

"**NOTE:** The packagings authorized may exceed a net mass of 400 kg (see 4.1.3.3)."

Under the last sub-paragraph, before the additional requirement, add a new Note to read as follows:

"**NOTE:** The packagings authorized may exceed a net mass of 400 kg (see 4.1.3.3)."

P 907 At the end, add a new Note to read as follows:

"**NOTE:** The packagings authorized may exceed a net mass of 400 kg (see 4.1.3.3)."

P 909 At the end, after paragraph (4), add a new Note (left-justified) to read as follows:

"**NOTE:** The packagings authorized in (3) and (4) may exceed a net mass of 400 kg (see 4.1.3.3)."

P 910 At the end of paragraph (3), add a new Note to read as follows:

"**NOTE:** The packagings authorized may exceed a net mass of 400 kg (see 4.1.3.3)."

P 911 In tablenote a, at the end, add the following paragraph (i):

"(i) In the case of multiple batteries and multiple items of equipment containing batteries, additional requirements such as the maximum number of batteries and items of equipment, the total maximum energy content of the batteries, and the configuration inside the package, including separations and protections of the parts, shall be considered."

4.1.4.2

IBC 02 In special packing provision **B 15**, replace "of composite IBCs with a rigid plastics inner receptacle" by:

"of rigid plastics inner receptacles of composite IBCs".

In special packing provisions specific to RID and ADR **BB 4**, delete:

"1169,".

IBC 07 [The amendment to the additional requirement 2 in the German version does not apply to the English text.]

Add the following new special packing provision **B 20**:

"**B 20** UN No. 3550 may be carried in flexible IBCs (13H3 or 13H4) with siftproof liners to prevent any egress of dust during carriage."

IBC 08 [The amendments in the German version do not apply to the English text.]

IBC 100 [The amendment in the German version does not apply to the English text.]

IBC 520 In the third sentence, after "The formulations", insert:

"not listed in 2.2.41.4 or in 2.2.52.4 but".

4.1.4.3

LP 02 [The amendment in the German version does not apply to the English text.]

LP 906 Amend the third sentence to read:

"For batteries and items of equipment containing batteries:".

In paragraph (2), amend the second sub-paragraph to read as follows:

"A verification report shall be made available on request. As a minimum requirement, the name of the batteries, their type as defined in Section 38.3.2 .3 of the Manual of Tests and Criteria, the maximum number of batteries, the total mass of batteries, the total energy content of the batteries, the large packaging identification and the test data according to the verification method as specified by the competent authority shall be listed in the verification report. A set of specific instructions describing the way to use the package shall also be part of the verification report."

Add the following paragraph (4):

"(4) The specific instructions for use of the package shall be made available by the packaging manufacturers and subsequent distributors to the consignor. They shall include at least the identification of the batteries and items of equipment that may be contained inside the packaging, the maximum number of batteries contained in the package and the maximum total of the batteries' energy content, as well as the configuration inside the package, including the separations and protections used during the performance verification test."

In tablenote a, add the following paragraph (i):

"(i) In the case of multiple batteries and multiple items of equipment containing batteries, additional requirements such as the maximum number of batteries and items of equipment, the total maximum energy content of the batteries, and the configuration inside the package, including separations and protections of the parts, shall be considered."

4.1.6.4 [The amendment in the German version does not apply to the English text.]

4.1.6.6 At the end of the first sentence, add:

"and taking into account the lowest pressure rating of any component".

Insert the following new second sentence:

"Service equipment having a pressure rating lower than other components shall nevertheless comply with 6.2.1.3.1."

Delete the final sentence.

4.1.6.8 Amend paragraphs (b) and (c) to read as follows:

"(b) Valves are protected by caps or guards. Caps shall possess vent-holes of sufficient cross-sectional area to evacuate the gas if leakage occurs at the valves;

(c) Valves are protected by shrouds or permanent protective attachments;".

4.1.6.9 [The amendment in the German version does not apply to the English text.]

4.1.6.10 Amend the first sentence as follows:

– [The first amendment in the German version does not apply to the English text.]

– Before "cryogenic receptacles", insert:

"closed".

– Replace "P 205 or P 206" by:

"P 205, P 206 or P 208".

[The amendment to the second sentence in the French version does not apply to the English text.]

4.1.6.15 Amend to read as follows:

"**4.1.6.15** For UN pressure receptacles, the ISO standards and EN ISO standards listed in Table 4.1.6.15.1, except EN ISO 14245 and EN ISO 15995, shall be applied. For information on which standard shall be used at the time of manufacturing the equipment, see 6.2.2.3.

For other pressure receptacles, the requirements of section 4.1.6 are considered to have been complied with if the standards in Table 4.1.6.15.1, as relevant, are applied. For information on which standards shall be used for the manufacture of valves with inherent protection, see 6.2.4.1. For information on the applicability of standards for manufacturing valve protection caps and valve guards, see Table 4.1.6.15.2.

Table 4.1.6.15.1: Standards for UN and non-UN pressure receptacles

Applicable paragraphs	Reference	Title of document
4.1.6.2	EN ISO 11114-1:2020	Gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 1: Metallic materials
	EN ISO 11114-2:2013	Gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 2: Non-metallic materials
4.1.6.4	ISO 11621:1997 or EN ISO 11621:2005	Gas cylinders – Procedures for change of gas service
4.1.6.8 Valves with inherent protection	Clause 4.6.2 of EN ISO 10297:2006 or clause 5.5.2 of EN ISO 10297:2014 or clause 5.5.2 of EN ISO 10297:2014 + A1:2017	Gas cylinders – Cylinder valves – Specification and type testing
	Clause 5.3.8 of EN 13152:2001 + A1:2003	Testing and specifications of LPG cylinder valves – Self-closing
	Clause 5.3.7 of EN 13153:2001 + A1:2003	Specifications and testing of LPG cylinder valves – Manually operated

Applicable paragraphs	Reference	Title of document
	Clause 5.9 of EN ISO 14245:2010, clause 5.9 of EN ISO 14245:2019 or clause 5.9 of EN ISO 14245:2021	Gas cylinders – Specifications and testing of LPG cylinder valves – Self-closing
	Clause 5.10 of EN ISO 15995:2010, clause 5.9 of EN ISO 15995:2019 or clause 5.9 of EN ISO 15995:2021	Gas cylinders – Specifications and testing of LPG cylinder valves – Manually operated
	Clause 5.4.2 of EN ISO 17879:2017	Gas cylinders – Self-closing cylinder valves – Specification and type testing
	Clause 7.4 of EN 12205:2001 or clause 9.2.5 of EN ISO 11118:2015 or clause 9.2.5 of EN ISO 11118:2015 + A1:2020	Gas cylinders – Non-refillable metallic gas cylinders – Specification and test methods
4.1.6.8 (b)	ISO 11117:1998 or EN ISO 11117:2008 + Cor 1:2009 or EN ISO 11117:2019	Gas cylinders – Valve protection caps and guards – Design, construction and tests
	EN 962:1996 + A2:2000	Transportable gas cylinders – Valve protection caps and valve guards for industrial and medical gas cylinders – Design, construction and tests
4.1.6.8 (c)	Requirements for shrouds and permanent protection attachments used as valve protection under 4.1.6.8 (c) are given in the relevant pressure receptacle shell design standards (see 6.2.2.3 for UN pressure receptacles and 6.2.4.1 for non-UN pressure receptacles).	
4.1.6.8 (b) and (c)	ISO 16111:2008 or ISO 16111:2018	Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride

Table 4.1.6.15.2: Manufacturing dates applicable to valve protection capsand guards fitted to non-UN pressure receptacles

Reference	Title of document	Applicable for manufacture
ISO 11117:1998	Gas cylinders – Valve protection caps and valve guards for industrial and medical gas cylinders – Design construction and tests	Until 31 December 2014
EN ISO 11117:2008 + Cor 1:2009	Gas cylinders – Valve protection caps and valve guards – Design, construction and tests	Until 31 December 2024
EN ISO 11117:2019	Gas cylinders – Valve protection caps and guards – Design, construction and tests	Until further notice
EN 962:1996 + A2:2000	Transportable gas cylinders – Valve protection caps and valve guards for industrial and medical gas cylinders – Design, construction and tests	Until 31 December 2014

"

4.1.9.1.4 In the first sentence, delete:

", tanks, IBCs".

Chapter 4.2

In Note 1 after the chapter heading, delete:

"for fibre-reinforced plastics tank-containers, see Chapter 4.4;".

4.2.5.2.1 At the end, add:

"or Chapter 6.9".

4.2.5.2.2 In the first sentence, delete:

"(in reference steel)".

4.2.5.2.6 In the second sentence, replace "(in mm reference steel)" by:

"in mm reference steel for shells made of metallic materials or the minimum FRP shell thickness".

T 1 – T 22 In the second row of the table, add the following sentences at the end:

"The instructions for portable tanks with FRP shells apply to substances of classes 1, 3, 5.1, 6.1, 6.2, 8 and 9. Additionally, the requirements of Chapter 6.9 apply."

In the heading of the third column, after "reference steel" add:

"for shells made of metallic materials".

T 23 In the fourth sentence, after "The formulations" add:

"not listed in 2.2.41.4 or in 2.2.52.4 but".

For UN No. 3109 "ORGANIC PEROXIDE, TYPE F, LIQUID", in column "Substance", after the entry for "tert-Butyl hydroperoxide[(a)], not more than 72% with water", insert:

"tert-Butyl hydroperoxide, not more than 56% in diluent type B[(b)]".

After the table, insert the following footnote "(b)":

"[(b)] Diluent type B is tert-Butyl alcohol."

Current footnote (b) becomes footnote (c).

T 50 [The amendment in the German version does not apply to the English text.]

4.2.5.3

TP 32 In paragraph (a), in the first sentence, after "of metal", insert:

"or fibre-reinforced plastics".

Chapter 4.3

In the Note after the chapter heading, delete:

"for fibre-reinforced plastics tank-containers, see Chapter 4.4;".

4.3.2.1.5 Replace "6.8.2.3.1" by:

"6.8.2.3.2".

4.3.2.1.7 Amend the last sub-paragraph as follows:

– Replace "expert" by:

"inspection body".

– Replace "tests, inspections and checks" by:

"tests and inspections".

– Replace "of periodic inspections or exceptional checks" by:

"of periodic or exceptional inspections".

4.3.2.3.7 Amend as follows:

– In the first sub-paragraph, replace "the deadline for the test or inspection required by 6.8.2.4.2, 6.8.3.4.6 and 6.8.3.4.12 has expired" by:

"the date specified for the inspection required by 6.8.2.4.2, 6.8.2.4.3, 6.8.3.4.6 and 6.8.3.4.12".

– In the second sub-paragraph, replace "the date of expiry of the last periodic inspection" by:

"the date specified for the next inspection".

– In paragraph (a), replace "the expiry of these deadlines" by:

"the date specified if the inspection due is a periodic inspection in accordance with 6.8.2.4.2, 6.8.3.4.6 (a) and 6.8.3.4.12".

– In paragraph (b), replace "these deadlines" by:

"the date specified, if the inspection due is a periodic inspection in accordance with 6.8.2.4.2, 6.8.3.4.6 (a) and 6.8.3.4.12".

– At the end of paragraph (b), replace the full stop by a semicolon.

– After paragraph (b), add the following new paragraph (c):

"(c) for a period not to exceed three months after the date specified, if the inspection due is an intermediate inspection in accordance with 6.8.2.4.3, 6.8.3.4.6 (b) and 6.8.3.4.12."

4.3.3.2.3 [The amendment in the German version does not apply to the English text.]

4.3.3.2.5 In the text before the table, replace "the expert approved by the competent authority" by:

"the inspection body" (twice).

In the table, for UN No. 1012, amend the text in column "Name and description" to read as follows:

"BUTYLENE (1-Butylene) or
BUTYLENE (trans-2-Butylene) or
BUTYLENE (cis-2-Butylene) or
BUTYLENE (Butylenes mixture)".

4.3.3.3.2 Amend to read as follows:

"**4.3.3.3.2** (Deleted)".

4.3.3.4.1 In paragraph a), in the second sub-paragraph, replace "that the correct folding panels are visible" by:

"that if folding panels are used, the correct panels are visible".

4.3.4.1.3 In the table, under Class 5.1, amend the name and description for UN number 2426 to read as follows:

"Ammonium nitrate, liquid (hot concentrated solution)".

Chapter 4.4 Amend to read as follows:

"**Chapter 4.4** (Deleted)".

Chapter 4.5

In the Note after the chapter heading, delete:

"; for fibre reinforced plastics tank-containers, see Chapter 4.4".

PART 5

Chapter 5.1

5.1.3 [The amendment in the French and German version does not apply to the English text.]

5.1.3.1 [The amendment in the French and German version does not apply to the English text.]

5.1.5.1.3 Amend the text after the heading to read as follows:

"A competent authority may approve provisions under which consignments that do not satisfy all the applicable requirements of RID may be carried under special arrangement (see 1.7.4)."

5.1.5.2.1 [The amendment in the German version does not apply to the English text.]

Chapter 5.2

5.2.1.6 [The amendment to the introductory sentence in the German version does not apply to the English text.]

Amend footnote 1 as follows:

– At the end of the last indent, replace the full stop by a semicolon.

– Add the following new indent:

"– For UN No. 1012 Butylene: 1-butylene, cis-2-butylene, trans-2-butylene, butylenes mixture."

[The amendment to Note 2 in the German version does not apply to the English text.]

5.2.1.9.2 In figure 5.2.1.9.2, remove the double asterisk.

After the figure, remove the explanation for the double asterisk.

5.2.1.10.1 Number the indents as "(a)", "(b)", "(c)" and "(d)".

In paragraph (c), replace "cryogenic receptacles" by:

"closed or open cryogenic receptacles".

5.2.1.10.2 In paragraph (a), replace "cryogenic receptacles" by:

"closed or open cryogenic receptacles".

5.2.2.2.2 In the table, in the subheading for "Class 9 hazard", delete:

", including environmentally hazardous substances".

Chapter 5.3

5.3.2.1.1 [The amendments in the French and German version do not apply to the English text.]

5.3.2.1.5 Amend the note to read as follows:

"**NOTE:** This paragraph need not be applied to wagons carrying containers for carriage in bulk, tanks and MEGCs with a maximum capacity of 3 000 litres."

5.3.2.1.7 [The amendment in the French and German version does not apply to the English text.]

Chapter 5.4

5.4.1.1.3 Number the text under the heading as **5.4.1.1.3.1**.

Insert a new **5.4.1.1.3.2** to read as follows:

"**5.4.1.1.3.2** If it is not possible to measure the exact quantity of the waste at the place of loading, the quantity according to 5.4.1.1.1 (f) may be estimated for the following cases under the following conditions:

(a) For packagings, a list of packagings including the type and the nominal volume is added to the transport document;

(b) For containers, the estimation is based on their nominal volume and other available information (e.g. type of waste, average density, degree of filling);

(c) For vacuum-operated waste tanks, the estimation is justified (e.g. by means of an estimation provided by the consigner or by wagon equipment).

Such estimation of the quantity is not allowed for:

– Exemptions for which the exact quantity is essential (e.g. 1.1.3.6);

– Waste containing substances mentioned in 2.1.3.5.3 or substances of Class 4.3;

– Tanks other than vacuum-operated waste tanks.

A statement shall be included in the transport document, as follows:

"QUANTITY ESTIMATED IN ACCORDANCE WITH 5.4.1.1.3.2"."

5.4.1.1.5 Amend the paragraph below the heading to read as follows:

"When dangerous goods are carried in salvage packagings in accordance with 4.1.1.19, including large salvage packagings, larger size packagings or large packagings of appropriate type and performance level to be used as a salvage packaging, the words "SALVAGE PACKAGING" shall be added after the description of the goods in the transport document.

When dangerous goods are carried in salvage pressure receptacles in accordance with 4.1.1.20, the words "SALVAGE PRESSURE RECEPTACLE" shall be added after the description of the goods in the transport document."

5.4.1.1.12 Replace "1 JANUARY 2021" by:

"1 JANUARY 2023".

5.4.1.1.15 Amend to read as follows:

"**5.4.1.1.15 Special provisions for the carriage of substances stabilized by chemical stabilization**

Unless already part of the proper shipping name the word " STABILIZED" shall be added to the proper shipping name if stabilization is by chemical stabilization alone (see 3.1.2.6)."

5.4.1.1.16 Amend to read as follows:

"**5.4.1.1.16** (Deleted)".

5.4.1.1.21 Amend to read as follows:

"**5.4.1.1.21 Additional information in the case of the application of special provisions**

Where, in accordance with a special provision in Chapter 3.3, additional information is necessary, this additional information shall be included in the transport document."

5.4.1.1 Add the following new paragraphs:

"**5.4.1.1.22** (Reserved)

5.4.1.1.23 Special provisions for the carriage of substances carried in molten state

When a substance, which is solid in accordance with the definition in 1.2.1, is offered for carriage in the molten state, the qualifying word "MOLTEN" shall be added as part of the proper shipping name, unless it is already part of the proper shipping name (see 3.1.2.5).

5.4.1.1.24 Special provisions for refillable pressure receptacles authorized by the United States of America Department of Transportation

For carriage in accordance with 1.1.4.7, a statement shall be included in the transport document, as follows:

"CARRIAGE IN ACCORDANCE WITH 1.1.4.7.1" or

"CARRIAGE IN ACCORDANCE WITH 1.1.4.7.2", as appropriate."

5.4.1.2.2 Add a new paragraph (e) to read as follows:

"(e) For carriage of UN No. 1012, the transport document shall contain the name of the specific gas carried (see special provision 398 of Chapter 3.3) in brackets after the proper shipping name."

5.4.2 In the first sub-paragraph, replace "with the transport document" by:

"to the maritime carrier by those responsible for packing the container".

In the second sub-paragraph, in the first sentence, replace "; if not, these documents shall be attached" by:

"(see for example 5.4.5)".

[The amendment to the second sentence of the second sub-paragraph in the French version does not apply to the English text.]

Delete the Note after the second sub-paragraph.

In the third sub-paragraph, after "may", insert:

"also".

In footnote 12, amend the following:

– In the first sentence, replace "(Amendment 39-18)" by:

"(Amendment 40-20)".

– In 5.4.2.1.2, delete the commas after "Packages" and after "requirements".

– In 5.4.2.1.4, delete the comma after "loaded".

– In 5.4.2.1.6, delete the comma after "class 1".

– In 5.4.2.1.7, delete the comma after "labelled".

– In 5.4.2.1.9, add a comma after "(of the IMDG Code)".

– In 5.4.2.2, at the end of the first sentence, delete:

"one to the other".

Chapter 5.5

5.5.2 [The amendment in the German version does not apply to the English text.]

5.5.2.1.1 [The amendment in the German version does not apply to the English text.]

5.5.2.1.2 [The amendment in the German version does not apply to the English text.]

5.5.2.1.3 [The amendment in the German version does not apply to the English text.]

5.5.2.2 [The amendment in the German version does not apply to the English text.]

5.5.2.3.1 [The amendment in the German version does not apply to the English text.]

5.5.2.3.3 [The amendment in the German version does not apply to the English text.]

5.5.2.3.4 [The amendment in the German version does not apply to the English text.]

5.5.2.3.5 [The amendment in the German version does not apply to the English text.]

5.5.2.4.1 Amend as follows:

– Number the indents as "(a)", "(b)" and "(c)".

– [The second amendment in the German version does not apply to the English text.]

5.5.2.4.4 [The amendment in the German version does not apply to the English text.]

PART 6

Chapter 6.1

6.1.1.2 In the second sentence, replace "successfully to withstand the tests" by:

"to successfully fulfil the requirements".

6.1.1.4 Amend the Note as follows:

– Replace "ISO 16106:2006" by:

"ISO 16106:2020".

– In the standard’s title, delete "Packaging –".

6.1.4.8.8 Amend to read as follows:

"**6.1.4.8.8** (Deleted)".

6.1.4.13.1 After the first sentence, insert the following new second sentence:

"Except for recycled plastics material as defined in 1.2.1, no used material other than production residues or regrind from the same manufacturing process may be used."

[The amendment to the third sentence in the French version does not apply to the English text.]

6.1.4.13.7 Amend to read as follows:

"**6.1.4.13.7** (Deleted)".

6.1.4.18.2 [The amendment in the German version does not apply to the English text.]

Chapter 6.2

6.2.1.1.1 After "Pressure receptacles" delete:

"and their closures".

At the end of the sentence replace "carriage and use" by:

"carriage and intended use".

6.2.1.1.4 At the end of the sentence, replace "used" by:

"welded".

6.2.1.1.5 In the first sentence, replace "cylinders, tubes, pressure drums" by:

"pressure receptacle shells".

In the last sentence, after "The test pressure of a cylinder", insert:

"shell".

6.2.1.1.6 At the beginning of the first and the second sentences, replace "Pressure receptacles" by:

"Cylinders or cylinder shells".

Amend the last sentence as follows:

– Replace the first "pressure receptacle" by:

"cylinder shell".

– Replace the second "pressure receptacle" by:

"cylinder".

– Replace the third "pressure receptacle" by:

"cylinder".

6.2.1.1.8.2 In the third sentence, replace "pressure receptacle" by:

"inner vessel".

Amend the fourth sentence as follows:

– Replace "pressure receptacle" by:

"inner vessel".

– At the end, replace "fittings" by:

"service equipment".

6.2.1.1.9 At the end of the heading replace "**pressure receptacles for acetylene**" by:

"**acetylene cylinders**".

In the first sentence, replace "Pressure receptacles" by:

"Cylinder shells".

In paragraph (a), replace "pressure receptacle" by:

"cylinder shell".

In the final sentence replace "compatible with the pressure receptacle" by:

"compatible with those parts of the cylinder that are in contact with it".

6.2.1.2.1 After "Construction materials of pressure receptacles", delete:

"and their closures".

6.2.1.2.2 At the beginning of the first sentence, after "Pressure receptacles", delete:

"and their closures".

6.2.1.3.1 Replace "Valves, piping and other fittings" by:

"Service equipment".

Replace "excluding pressure relief devices" by:

"excluding porous, absorbent or adsorbent material, pressure relief devices, pressure gauges or indicators".

6.2.1.3.2 Amend to read as follows:

"**6.2.1.3.2** Service equipment shall be configured or designed to prevent damage and unintended opening that could result in the release of the pressure receptacle contents during normal conditions of handling and carriage. All closures shall be protected in the same manner as is required for valves in 4.1.6.8. Manifold piping leading to shut-off valves shall be sufficiently flexible to protect the shut-off valves and the piping from shearing or releasing the pressure receptacle contents."

6.2.1.3.3 Replace "shall be fitted with devices" by:

"shall be fitted with handling devices".

6.2.1.4.1 Delete the second sentence beginning "Pressure receptacles …".

6.2.1.4 Insert new paragraph **6.2.1.4.3** and **6.2.1.4.4** to read as follows:

"**6.2.1.4.3** Pressure receptacle shells and the inner vessels of closed cryogenic receptacles shall be inspected, tested and approved by an inspection body.

6.2.1.4.4 For refillable cylinders, pressure drums and tubes the conformity assessment of the shell and the closure(s) may be carried out separately. In these cases, an additional assessment of the final assembly is not required.

For bundles of cylinders, the cylinder shells and the valve(s) may be assessed separately, but an additional assessment of the complete assembly is required.

For closed cryogenic receptacles, the inner vessels and the closures may be assessed separately, but an additional assessment of the complete assembly is required.

For acetylene cylinders, conformity assessment shall comprise either:

(a) One assessment of conformity covering both the cylinder shell and the contained porous material; or

(b) A separate assessment of conformity for the empty cylinder shell and an additional assessment of conformity covering the cylinder shell with the contained porous material."

6.2.1.5.1 Amend the first sentence as follows:

– Replace "closed cryogenic receptacles and metal hydride storage systems" by:

"closed cryogenic receptacles, metal hydride storage systems and bundles of cylinders".

– After "the applicable design standards", insert:

"or recognised technical codes".

In the line before paragraph (a), replace "pressure receptacles" by:

"pressure receptacle shells".

In paragraph (d), at the end, delete:

"of the pressure receptacles".

In paragraph (e), replace "neck threads" by:

"threads used to fit closures".

In the line before paragraph (g), replace "all pressure receptacles" by:

"all pressure receptacle shells".

In paragraph (g), replace "pressure receptacles" by:

"pressure receptacle shells".

In paragraph (h), in both sentences, replace "pressure receptacles” by:

"pressure receptacle shells".

In (paragraph (i), replace "pressure receptacles" by:

"pressure receptacle shells".

In paragraph (j), replace "pressure receptacles" by:

"cylinder shells".

After paragraph (j) insert the following new text:

"On an adequate sample of closures:

(k) Verification of materials;

(l) Verification of dimensions;

(m) Verification of cleanliness;

(n) Inspection of completed assembly;

(o) Verification of the presence of marks.

For all closures:

(p) Testing for leakproofness."

6.2.1.5.2 Amend to read as follows:

"**6.2.1.5.2** Closed cryogenic receptacles shall be subjected to testing and inspection during and after manufacture in accordance with the applicable design standards or recognized technical codes including the following:

On an adequate sample of inner vessels:

(a) Testing of the mechanical characteristics of the material of construction;

(b) Verification of the minimum wall thickness;

(c) Inspection of the external and internal conditions;

(d) Verification of the conformance with the design standard or technical code;

(e) Inspection of welds by radiographic, ultrasonic or other suitable non-destructive test method according to the applicable design and construction standard or technical code.

For all inner vessels:

(f) A hydraulic pressure test. The inner vessel shall meet the acceptance criteria specified in the design and construction technical standard or technical code;

NOTE: 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.

(g) Inspection and assessment of manufacturing defects and either repairing them or rendering the inner vessel unserviceable;

(h) An inspection of the marks.

On an adequate sample of closures:

(i) Verification of materials;

(j) Verification of dimensions;

(k) Verification of cleanliness;

(l) Inspection of completed assembly;

(m) Verification of the presence of marks.

For all closures:

(n) Testing for leakproofness.

On an adequate sample of completed closed cryogenic receptacles:

(o) Testing the satisfactory operation of service equipment;

(p) Verification of the conformance with the design standard or technical code.

For all completed closed cryogenic receptacles:

(q) Testing for leakproofness."

6.2.1.5.3 In the first sentence, replace "receptacles" by:

"pressure receptacle shells".

6.2.1.5 Insert the following new **6.2.1.5.4**:

"**6.2.1.5.4** For bundles of cylinders the cylinder shells and closures shall be subjected to initial inspection and tests specified in 6.2.1.5.1. An adequate sample of frames shall be proof load tested to two times the maximum gross weight of the bundles of cylinders.

Additionally, all manifolds of bundle of cylinders shall undergo a hydraulic pressure test and all the completed bundles of cylinders shall undergo a leakproofness test.

NOTE: 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."

6.2.1.6.1 [The amendment to the introductory sentence in the German version does not apply to the English text.]

Replace (c), (d) and (e) and add a new (f) as follows before the Notes:

"(c) Checking of the threads either:

(i) if there is evidence of corrosion; or

(ii) if the closures or other service equipment are removed;

(d) A hydraulic pressure test of the pressure receptacle shell and, if necessary, verification of the characteristics of the material by suitable tests;

(e) Check of service equipment, if to be reintroduced into service. This check may be carried out separately from the inspection of the pressure receptacle shell; and

(f) A leakproofness test of bundles of cylinders after reassembly."

In Note 2, amend the beginning to read:

"For seamless steel cylinder shells and tube shells the check …".

Amend Note 3 to read as follows:

"**3:** The check of internal conditions of 6.2.1.6.1 (b) and the hydraulic pressure test of 6.2.1.6.1 (d) may be replaced by ultrasonic examination carried out in accordance with ISO 18119:2018 for seamless steel and seamless aluminium alloy cylinder shells."

Insert the following new Note 4:

"**4:** For bundles of cylinders the hydraulic test specified in (d) above shall be carried out on the cylinder shells and on the manifolds."

Renumber current Note 4 as Note 5.

6.2.1.6.2 Replace "Pressure receptacles" by:

"Cylinders".

6.2.1.7.2 Amend to read as follows:

"**6.2.1.7.2** A proficiency test of the manufacturers of pressure receptacle shells and the inner vessels of closed cryogenic receptacle shall in all instances be carried out by an inspection body approved by the competent authority of the country of approval. Proficiency testing of manufacturers of closures shall be carried out if the competent authority requires it. This test shall be carried out either during design type approval or during production inspection and certification."

6.2.2 In Note 1, after "UN pressure receptacles", delete:

"and service equipment".

6.2.2.1.1 In the first sentence replace, "UN cylinders" by:

"refillable UN cylinder shells".

Amend the table as follows:

– For "EN ISO 9809-1:2010", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "EN ISO 9809-1:2010", insert the following new row:

"

Reference	Title	Applicable for manufacture
ISO 9809-1:2019	Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 1: Quenched and tempered steel cylinders and tubes with tensile strength less than 1 100 MPa	Until further notice

"

– For "EN ISO 9809-2:2010", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "EN ISO 9809-2:2010", insert the following new row:

"

Reference	Title	Applicable for manufacture
ISO 9809-2:2019	Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 2: Quenched and tempered steel cylinders and tubes with tensile strength greater than or equal to 1 100 MPa	Until further notice

"

– For "EN ISO 9809-3:2010", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "EN ISO 9809-3:2010", insert the following new row:

"

Reference	Title	Applicable for manufacture
ISO 9809-3:2019	Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 3: Normalized steel cylinders and tubes	Until further notice

– Delete the rows for "ISO 11118:1999" and "ISO 11118:2015".

– [The amendment to "ISO 11119-3:2002" in the German version does not apply to the English text.]

– [The amendment to "ISO 11119-3:2013" in the German version does not apply to the English text.]

In Note 1 after the table, replace "composite cylinders" by:

"composite cylinder shells".

Amend Note 2 after the table as follows:

– In the first sentence, replace "Composite cylinders" by:

"Composite cylinder shells".

– In the second sentence, replace "cylinders" by:

"composite cylinder shells".

– In the last sentence, replace "cylinder" by:

"cylinder shell".

6.2.2.1.2 In the first sentence, replace "UN tubes" by:

"UN tube shells".

Amend the table as follows:

– [The amendment to "ISO 11119-3:2013" in the German version does not apply to the English text.]

– In the row for "ISO 11515:2013", in the last column, replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "ISO 11515:2013", insert the following new rows:
"

Reference	Title	Applicable for manufacture
ISO 11515:2013 + Amd 1:2018	Gas cylinders – Refillable composite reinforced tubes of water capacity between 450 *l* and 3000 *l* – Design, construction and testing	Until further notice
ISO 9809-1:2019	Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 1: Quenched and tempered steel cylinders and tubes with tensile strength less than 1 100 MPa	Until further notice
ISO 9809-2:2019	Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 2: Quenched and tempered steel cylinders and tubes with tensile strength greater than or equal to 1 100 MPa	Until further notice
ISO 9809-3:2019	Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 3: Normalized steel cylinders and tubes	Until further notice

In Note 1 after the table, replace "composite tubes" by:

"composite tube shells".

Amend Note 2 after the table as follows:

– In the first sentence, replace "Composite tubes" by:

"Composite tube shells".

– In the second sentence, replace "tubes" by:

"composite tube shells".

– In the last sentence, replace "tube" by:

"tube shell".

6.2.2.1.3 [The amendment to the text before the table in the German version does not apply to the English text.]

Amend the first table as follows:

– For "ISO 9809-1:2010", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "ISO 9809-1:2010", insert the following new row:

"

Reference	Title	Applicable for manufacture
ISO 9809-1:2019	Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 1: Quenched and tempered steel cylinders and tubes with tensile strength less than 1 100 MPa	Until further notice

"

– For "ISO 9809-3:2010", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "ISO 9809-3:2010", insert the following new row:

"

Reference	Title	Applicable for manufacture
ISO 9809-3:2019	Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 3: Normalized steel cylinders and tubes	Until further notice

"

6.2.2.1.4 Replace "UN cryogenic receptacles" by:

"UN closed cryogenic receptacles".

Amend the table as follows:

– For "ISO 21029-1:2004", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "ISO 21029-1:2004", insert the following new row:

"

Reference	Title	Applicable for manufacture
ISO 21029-1:2018 + Amd 1:2019	Cryogenic vessels – Transportable vacuum insulated vessels of not more than 1 000 litres volume – Part 1: Design, fabrication, inspection and tests	Until further notice

"

6.2.2.1.5 Amend the table as follows:

– For "ISO 16111:2008", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "ISO 16111:2008", insert the following new row:
"

Reference	Title	Applicable for manufacture
ISO 16111:2018	Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride	Until further notice

"

6.2.2.1.6 In the first sentence, replace "The standard shown below" by:

"The following standard".

In the second sentence, replace "UN cylinder" by:

"UN cylinder or UN cylinder shell".

Amend the table as follows:

– For "ISO 10961:2010", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "ISO 10961:2010", insert the following new row:
"

Reference	Title	Applicable for manufacture
ISO 10961:2019	Gas cylinders – Cylinder bundles – Design, manufacture, testing and inspection	Until further notice

"

Amend the Note after the table to read as follows:

"**NOTE:** Changing one or more cylinders or cylinder shells of the same design type, including the same test pressure, in an existing UN bundle of cylinders does not require a new conformity assessment of the existing bundle. Service equipment of the bundle of cylinders can also be replaced without requiring a new conformity assessment if it complies with the design type approval."

6.2.2.1.7 Amend the table as follows:

– For "ISO 11513:2011", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "ISO 11513:2011", insert the following new row:
"

Reference	Title	Applicable for manufacture
ISO 11513:2019	Gas cylinders – Refillable welded steel cylinders containing materials for sub-atmospheric gas packaging (excluding acetylene) – Design, construction, testing, use and periodic inspection	Until further notice

"

– For "ISO 9809-1:2010", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "ISO 9809-1:2010", insert the following new row:

"

Reference	Title	Applicable for manufacture
ISO 9809-1:2019	Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 1: Quenched and tempered steel cylinders and tubes with tensile strength less than 1 100 MPa	Until further notice

"

6.2.2.1.8 In the table, in the row for "ISO 21172-1:2015", replace "Until further notice" by:

"Until 31 December 2026".

After the row for "ISO 21172-1:2015", insert the following new row:

"

Reference	Title	Applicable for manufacture
ISO 21172-1:2015 + Amd 1:2018	Gas cylinders – Welded steel pressure drums up to 3 000 litres capacity for the transport of gases – Design and construction – Part 1: Capacities up to 1 000 litres	Until further notice

"

6.2.2.1 Insert the following new **6.2.2.1.9**:

"**6.2.2.1.9** The following standards apply to the design, construction and initial inspection and test of non-refillable UN cylinders except that the inspection requirements related to the conformity assessment system and approval shall be in accordance with 6.2.2.5.

Reference	Title	Applicable for manufacture
ISO 11118:1999	Gas cylinders – Non-refillable metallic gas cylinders – Specification and test methods	Until 31 December 2020
ISO 13340:2001	Transportable gas cylinders – Cylinder valves for non-refillable cylinders – Specification and prototype testing	Until 31 December 2020
ISO 11118:2015	Gas cylinders – Non-refillable metallic gas cylinders – Specification and test methods	Until 31 December 2026
ISO 11118:2015 + Amd 1:2019	Gas cylinders – Non-refillable metallic gas cylinders – Specification and test methods	Until further notice

"

6.2.2.2 In the first sentence delete:

"pressure receptacle".

In the table, add the following heading row:
"

Reference	Title

"

6.2.2.3 Amend the title to read as follows:

"**Closures and their protection**".

Amend the first sentence to read as follows:

"The following standards apply to the design, construction, and initial inspection and test of closures and their protection:".

Amend the first table as follows:

– For "ISO 11117:2008 + Cor.1:2009", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "ISO 11117:2008 + Cor.1:2009", insert the following new row:
"

Reference	Title	Applicable for manufacture
ISO 11117:2019	Gas cylinders – Valve protection caps and guards – Design, construction and tests	Until further notice

"

– Delete the row for ISO 13340:2001.

– For "ISO 17871:2015", in column "Title", add the following new Note:

"**NOTE:** This standard shall not be used for flammable gases."

– For "ISO 17871:2015", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "ISO 17871:2015", insert the following new row:
"

Reference	Title	Applicable for manufacture
ISO 17871:2020	Gas cylinders – Quick-release cylinder valves – Specification and type testing	Until further notice

"

Amend the second table as follows:

– For "ISO 16111:2008", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2026".

– After the row for "ISO 16111:2008", insert the following new row:
"

Reference	Title	Applicable for manufacture
ISO 16111:2018	Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride	Until further notice

"

6.2.2.4 Amend the first sentence to read:

"The following standards apply to periodic inspection and testing of UN pressure receptacles:".

Amend the first table as follows:

– For "ISO 6406:2005", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2024".

– After the row for "ISO 6406:2005", insert the following new row:
"

Reference	Title	Applicable
ISO 18119:2018	Gas cylinders – Seamless steel and seamless aluminium-alloy gas cylinders and tubes – Periodic inspection and testing	Until further notice

"

– For "ISO 10460:2005", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2024".

– After the row for "ISO 10460:2005", insert the following new row:
"

Reference	Title	Applicable
ISO 10460:2018	Gas cylinders – Welded aluminium-alloy, carbon and stainless steel gas cylinders – Periodic inspection and testing	Until further notice

"

– For "ISO 10461:2005 + A1:2006", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2024".

– For "ISO 10462:2013", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2024".

– After the row for "ISO 10462:2013", insert the following new row:
"

Reference	Title	Applicable
ISO 10462:2013 + Amd1:2019	Gas cylinders – Acetylene cylinders – Periodic inspection and maintenance	Until further notice

"

– For "ISO 11513:2011", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2024".

– After the row for "ISO 11513:2011", insert the following new row:
"

Reference	Title	Applicable
ISO 11513:2019	Gas cylinders – Refillable welded steel cylinders containing materials for sub-atmospheric gas packaging (excluding acetylene) – Design, construction, testing, use and periodic inspection	Until further notice

"

– Delete the row for "ISO 11623:2002".

– After the row for "ISO 20475:2018", add the following new row:
"

Reference	Title	Applicable
ISO 23088:2020	Gas cylinders – Periodic inspection and testing of welded steel pressure drums — Capacities up to 1 000 l	Until further notice

"

Amend the second table as follows:

– For "ISO 16111:2008", in column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2024".

– After the row for "ISO 16111:2008", insert the following new row:
"

Reference	Title	Applicable
ISO 16111:2018	Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride	Until further notice

"

6.2.2.5.1 Renumber as **6.2.2.5.0**.

6.2.2.5.0 (current 6.2.2.5.1) After the definition of *"Verify"*, insert the following new Note:

"**NOTE:** In this subsection when separate assessment is used, the term pressure receptacle shall refer to pressure receptacle, pressure receptacle shell, inner vessel of the closed cryogenic receptacle or closure, as appropriate."

6.2.2.5 Insert a new paragraph **6.2.2.5.1** to read as follows:

"**6.2.2.5.1** The requirements of 6.2.2.5 shall be used for the conformity assessments of pressure receptacles. Paragraph 6.2.1.4.4 gives details of which parts of pressure receptacles may be conformity assessed separately. However, the requirements of 6.2.2.5 may be replaced by requirements specified by the competent authority in the following cases:

(a) Conformity assessment of closures;

(b) Conformity assessment of the complete assembly of bundles of cylinders provided the cylinder shells have been conformity assessed in accordance with the requirements of 6.2.2.5; and

(c) Conformity assessment of the complete assembly of closed cryogenic receptacles provided the inner vessel has been conformity assessed in accordance with the requirements of 6.2.2.5."

6.2.2.5.4.9 Amend paragraph (c) to read as follows:

"(c) As required by the pressure receptacle standard or technical code, carry out or supervise the tests of pressure receptacles as required for design type approval;".

Add the following new sentence at the end of the penultimate paragraph:

"If it was not possible to evaluate exhaustively the compatibility of the materials of construction with the contents of the pressure receptacle when the certificate was issued, a statement that compatibility assessment was not completed shall be included in the design type approval certificate."

6.2.2.7 [The amendment to the title in the German version does not apply to the English text.]

Amend the Note as follows:

– Replace "6.2.2.9 and marking" by:

"6.2.2.9, marking".

– At the end, insert:

"and marking requirements for closures are given in 6.2.2.11".

6.2.2.7.1 In the first sentence, replace "pressure receptacles" by:

"pressure receptacle shells and closed cryogenic receptacles".

At the end of the second sentence, delete:

"on the pressure receptacle".

In the third sentence, after "neck of the pressure receptacle", insert:

"shell".

6.2.2.7.2 At the end of paragraph (b), insert the following new Note:

"**NOTE:** For acetylene cylinders the standard ISO 3807 shall also be marked."

At the end of paragraph (e), insert the following new Note:

"**NOTE:** When an acetylene cylinder is conformity assessed in accordance with 6.2.1.4.4 (b) and the inspection bodies for the cylinder shell and the acetylene cylinder are different, their respective marks (d) are required. Only the initial inspection date (e) of the completed acetylene cylinder is required. If the country of approval of the inspection body responsible for the in itial inspection and test is different, a second mark (c) shall be applied."

6.2.2.7.3 In paragraph (g), in the second sentence, replace "mass of valve, valve cap" by:

"mass of closure(s), valve protection cap".

In paragraph (i), at the end, insert the following Note:

"**NOTE:** When a cylinder shell is intended for use as an acetylene cylinder (including the porous material), the working pressure mark is not required until the acetylene cylinder is completed."

In paragraph (j), in the first sentence, replace "liquefied gases and refrigerated liquefied gases" by:

"liquefied gases, refrigerated liquefied gases and dissolved gases".

Amend paragraphs (k) and (l) to read as follows:

"(k) In the case of cylinders for UN No. 1001 acetylene, dissolved:

(i) the tare in kilograms consisting of the total of the mass of the empty cylinder shell, the service equipment (including porous material) not removed during filling, any coating, the solvent and the saturation gas expressed to three significant figures rounded down to the last digit followed by the letters “KG”. At least one decimal shall be shown after the decimal point. For pressure receptacles of less than 1 kg, the mass shall be expressed to two significant figures rounded down to the last digit;

(ii) the identity of the porous material (e.g.: name or trademark); and

(iii) the total mass of the filled acetylene cylinder in kilograms followed by the letters "KG";

(l) In the case of cylinders for UN No. 3374 acetylene, solvent free:

(i) the tare in kilograms consisting of the total of the mass of the empty cylinder shell, the service equipment (including porous material) not removed during filling and any coating expressed to three significant figures rounded down to the last digit followed by the letters "KG". At least one decimal shall be shown after the decimal point. For pressure receptacles of less than 1 kg, the mass shall be expressed to two significant figures rounded down to the last digit;

(ii) the identity of the porous material (e.g.: name or trademark); and

(iii) the total mass of the filled acetylene cylinder in kilograms followed by the letters "KG";".

6.2.2.7.4 In paragraph (n), at the end, insert the following new Note:

"**NOTE:** For acetylene cylinders, if the manufacturer of the acetylene cylinder and the manufacturer of the cylinder shell are different, only the mark of the manufacturer of the completed acetylene cylinder is required."

6.2.2.7.7 [The amendment to the title in the German version does not apply to the English text.]

6.2.2.7.8 Amend to read as follows:

"**6.2.2.7.8** The marks in accordance with 6.2.2.7.7 may be engraved on a metallic ring affixed to the cylinder or pressure drum when the valve is installed, and which is removable only by disconnecting the valve from the cylinder or pressure drum."

6.2.2.8 In the title, replace "**pressure receptacles**" by:

"**cylinders**".

6.2.2.8.1 Amend the first sentence as follows:

– Replace "pressure receptacles" by:

"cylinders".

– Replace "pressure receptacle" by:

"cylinder".

In the second sentence, replace "pressure receptacle" by:

"cylinder".

Amend the third sentence as follows:

– Replace "pressure receptacle" at the first occurrence by:

"cylinder shell".

– Replace "pressure receptacle" at the second occurrence by:

"cylinder".

Amend the fourth sentence as follows:

– [The first amendment in the German version does not apply to the English text.]

– Replace "pressure receptacles" by:

"cylinders" (twice).

In the fifth sentence, replace "pressure receptacles" by:

"cylinders" (twice).

[The amendment to the last sentence in the German version does not apply to the English text.]

6.2.2.8.2 [The amendment in the German version does not apply to the English text.]

6.2.2.8.3 In the Note, replace "pressure receptacles" by:

"cylinders".

6.2.2.10.1 Replace "cylinders" by:

"cylinder shells".

Insert a new second sentence to read as follows:

"Individual closures in a bundle of cylinders shall be marked in accordance with 6.2.2.11."

6.2.2.10.2 [The amendment in the German version does not apply to the English text.]

6.2.2.10.3 Amend paragraph (b) as follows:

– In the first sentence, replace the text in brackets by:

"(cylinder shells and service equipment)".

– In the second sentence, after "tare", delete:

"mass".

6.2.2.11 Renumber as **6.2.2.12**.

6.2.2 Insert a new **6.2.2.11** to read as follows:

"**6.2.2.11 Marking of closures for refillable UN pressure receptacles**

For closures the following permanent marks shall be applied clearly and legibly, (e.g. stamped, engraved or etched):

(a) Manufacturer's identification mark;

(b) Design standard or design standard designation;

(c) Date of manufacture (year and month or year and week) and

(d) The identity mark of the inspection body responsible for the initial inspection and test, if applicable.

The valve test pressure shall be marked when it is less than the test pressure which is indicated by the rating of the valve filling connection."

6.2.2.12 (current 6.2.2.11) Amend to read as follows:

"**6.2.2.12 Equivalent procedures for conformity assessment and periodic inspection and test**

For UN pressure receptacles the requirements of 6.2.2.5 and 6.2.2.6 are considered to have been complied with when the following procedures are applied:

Procedure	**Relevant body**
Type examination and type approval certificate issue (1.8.7.2)[a]	Xa
Supervision of manufacture (1.8.7.3) and initial inspection and tests (1.8.7.4)	Xa or IS
Periodic inspection (1.8.7.6)	Xa or Xb or IS

[a] When an inspection body is designated by the competent authority to issue the type approval certificate, the type examination shall be performed by that inspection body.

Each procedure as defined in the table shall be performed by a single relevant body as indicated in the table.

For separate conformity assessments (e.g. cylinder shell and closure) see 6.2.1.4.4.

Xa means the competent authority or inspection body conforming to 1.8.6.3 and accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) type A.

Xb means inspection body conforming to 1.8.6.3 and accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) type B, working exclusively for the owner or the duty holder responsible for the pressure receptacles.

IS means an in-house inspection service of the manufacturer or an enterprise with a testing facility under the surveillance of an inspection body conforming to 1.8.6.3 and accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) type A. The in-house inspection service shall be independent from design process, manufacturing operations, repair and maintenance.

If an in-house inspection service has been used for the initial inspection and tests, the mark specified in 6.2.2.7.2 (d) shall be supplemented with the mark of the in-house inspection service.

If an in-house inspection service has carried out the periodic inspection, the mark specified in 6.2.2.7.7 (b) shall be supplemented with the mark of the in-house inspection service."

6.2.3.1.2 In the second sub-paragraph, replace "pressure envelope and supporting components" by:

"pressure receptacles or pressure receptacle shells including all permanently attached parts (e.g. neck ring, foot ring, etc.)".

6.2.3.1.5 Amend to read as follows:

"**6.2.3.1.5** Acetylene cylinders shall not be fitted with fusible plugs or any other pressure relief devices."

6.2.3.3.2 Delete the heading "**Openings**".

6.2.3.3.3 Delete the heading "**Fittings**".

Delete paragraph name "(a)".

Paragraph (b) becomes **6.2.3.3.4**.

Paragraph (c) becomes **6.2.3.3.5**.

Paragraph (d) becomes **6.2.3.3.6**.

6.2.3.4.2 In the title, replace "**receptacles**" by:

"**receptacle shells**".

In paragraph (a), replace "receptacles" by:

"receptacle shells".

6.2.3.5.1 In Note 1, after "cylinder", insert:

"shell".

Amend Note 2 as follows:

– Replace "For seamless steel cylinders and tubes" by:

"For seamless steel cylinder shells and tube shells".

– Replace "EN ISO 16148:2016" by:

"EN ISO 16148:2016 + A1:2020".

Amend Note 3 as follows:

– Replace "EN ISO18119:2018" by:

"EN ISO 18119:2018 + A1:2021".

– Replace "cylinders and tubes" by:

"cylinder shells and tube shells" (twice).

6.2.3.5.2 Amend paragraph (a) as follows:

– Before "receptacle", insert:

"pressure".

– Before "equipment", insert:

"service".

6.2.3.6.1 Amend to read as follows:

"**6.2.3.6.1** The procedures for conformity assessment and periodic inspection of section 1.8.7 shall be performed by the relevant body according to the following table.

Procedure	**Relevant body**
Type examination and type approval certificate issue (1.8.7.2)[a]	Xa
Supervision of manufacture (1.8.7.3) and initial inspection and tests (1.8.7.4)	Xa or IS
Periodic inspection (1.8.7.6)	Xa or Xb or IS

[a] The type approval certificate shall be issued by the inspection body that performed the type examination.

Each procedure as defined in the table shall be performed by a single relevant body as indicated in the table.

For separate conformity assessments (e.g. cylinder shell and closure) see 6.2.1.4.4. For non-refillable pressure receptacles, separate type approval certificates for either the cylinder shell or the closure shall not be issued.

Xa means the competent authority or inspection body conforming to 1.8.6.3 and accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) type A.

Xb means inspection body conforming to 1.8.6.3 and accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) type B, working exclus ively for the owner or the duty holder responsible for the pressure receptacles.

IS means an in-house inspection service of the manufacturer or an enterprise with a testing facility under the surveillance of an inspection body conforming to 1.8.6.3 and accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) type A. The in-house inspection service shall be independent from design process, manufacturing operations, repair and maintenance.

If an in-house inspection service has been used for the initial inspection and tests, the mark specified in 6.2.2.7.2 (d) shall be supplemented with the mark of the in-house inspection service.

If an in-house inspection service has carried out the periodic inspection, the mark specified in 6.2.2.7.7 (b) shall be supplemented with the mark of the in-house inspection service."

6.2.3.8 Replace "1.8.6" by:

"1.8.6.3".

6.2.3.9 [The amendment in the German version does not apply to the English text.]

6.2.3.9.3 Add the following sub-paragraphs at the end:

"The requirements of 6.2.2.7.4 (n) shall be replaced by the following:

(n) The manufacturer's mark. 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 sign used on vehicles in international road traffic[5]. The country mark and the manufacturer's mark shall be separated by a space or slash."

6.2.3.9 Insert the following new paragraphs **6.2.3.9.8** and **6.2.3.9.8.1**:

"**6.2.3.9.8 Marking of closures for refillable pressure receptacles**

6.2.3.9.8.1 Marking shall be in accordance with 6.2.2.11."

6.2.3.10 In the heading, replace "**pressure receptacles**" by:

"**cylinders**".

6.2.4.1 Amend the text before the table to read as follows:

"**Design, construction and initial inspection and test**

Since 1 January 2009 the use of the referenced standards has been mandatory. Exceptions are dealt with in 6.2.5.

Type approval certificates shall be issued in accordance with 1.8.7. For the issuance of a type approval certificate, one standard applicable according to the indication in column (4) shall be chosen from the table below. If more than one standard may be applied, only one of them shall be chosen.

Column (3) shows the paragraphs of Chapter 6.2 to which the standard conforms.

Column (5) gives the latest date when existing type approvals shall be withdrawn according to 1.8.7.2.2.2; if no date is shown the type approval remains valid until it expires.

Standards shall be applied in accordance with 1.1.5. They shall be applied in full unless otherwise specified in the table below.

The scope of application of each standard is defined in the scope clause of the standard unless otherwise specified in the table below.

NOTE: The words "cylinder", "tube" and "pressure drum" when used in these standards shall be understood to exclude closures except in the case of non-refillable cylinders."

Amend the table as follows:

– In column (3) of the table, amend the column heading to read as follows:

"Requirements the standard complies with".

– After the sub-heading "***for design and construction***", add:

"***of pressure receptacles or pressure receptacle shells***".

– Replace the sub-heading "***for closures***" by:

"***for design and construction of closures***".

Amend the table, under "***for design and construction of pressure receptacles or pressure receptacle shells***" as follows:

– For "EN ISO 7866:2012 + AC:2014", in column (4), replace "Until further notice" by:

"Between 1 January 2015 and 31 December 2024".

– After the row for "EN ISO 7866:2012 + AC:2014", insert the following new row:
"

(1)	(2)	(3)	(4)	(5)
EN ISO 7866:2012 + A1:2020	Gas cylinders – Refillable seamless aluminium alloy gas cylinders – Design, construction and testing	6.2.3.1 and 6.2.3.4	Until further notice	

"

– For "EN 12245:2002", in column (2), insert the following Note:

"**NOTE:** This standard shall not be used for gases classified as LPG."

– For "EN 12245:2002", in column (5), at the end, insert the following text:

"; 31 December 2023, for cylinders for LPG".

– For "EN 12245:2009 + A1:2011", in column (2), number the existing Note to be “NOTE 1” and insert a new Note as follows:

"**2:**This standard shall not be used for gases classified as LPG.”

– For "EN 12245:2009 + A1:2011", in column (4), replace "Until further notice" by:

"Between 1 January 2013 and 31 December 2024".

– For “EN 12245:2009 + A1:2011”, in column (5), at the end, insert:

"; 31 December 2023, for cylinders for LPG".

– After the row for "EN 12245:2009 + A1:2011", insert the following new row:

(1)	(2)	(3)	(4)	(5)
EN 12245:2022	Transportable gas cylinders – Fully wrapped composite cylinders **NOTE:** This standard shall not be used for gases classified as LPG.	6.2.3.1 and 6.2.3.4	Until further notice	

– For "EN ISO 11118:2015", in column (4), replace "Until further notice" by:

"Between 1 January 2017 and 31 December 2024".

"

– After the row for "EN ISO 11118:2015", insert the following new row:

"

(1)	(2)	(3)	(4)	(5)
EN ISO 11118:2015 + A1:2020	Gas cylinders – Non-refillable metallic gas cylinders – Specification and test methods	6.2.3.1, 6.2.3.3 and 6.2.3.4	Until further notice	

"

– [The amendment to the title in column (2) for "EN 14427:2004" in the French version does not apply to the English text.]

– For "EN 14427:2004 + A1:2005", in column (2), amend the title to read:

"Transportable refillable composite cylinders for LPG – Design and construction".

– For "EN 14427:2004 + A1:2005" in column (5), insert:

"31 December 2023, for cylinders without a liner, manufactured from two parts joined together".

– [The amendment to the title in column (2) for "EN 14427:2014" in the French and German version does not apply to the English text.]

– For "EN 14427:2014", in column (2), add a new Note as follows:

"**NOTE:** This standard shall not be used for cylinders without a liner, manufactured from two parts joined together."

– For "EN 14427:2014", in column (4), replace "Until further notice" by:

"Between 1 January 2015 and 31 December 2024".

– For "EN 14427:2014", in column (5), insert:

"31 December 2023, for cylinders without a liner, manufactured from two parts joined together".

– After the row for "EN 14427:2014", insert the following new row:

"

(1)	(2)	(3)	(4)	(5)
EN 14427:2022	LPG equipment and accessories – Transportable refillable composite cylinders for LPG – Design and construction	6.2.3.1 and 6.2.3.4	Until further notice	

"

– [The amendment to the title of standard "EN 14638-3:2010/AC" in the French version does not apply to the English text.]

– After the row for "EN 14893:2014", insert the following new row:

"

(1)	(2)	(3)	(4)	(5)
EN 17339:2020	Transportable gas cylinders – Fully wrapped carbon composite cylinders and tubes for hydrogen	6.2.3.1 and 6.2.3.3	Until further notice	

"

Amend the table, under "***for design and construction of closures***" as follows:

– For "EN ISO 14245:2019", in column (4), replace "Until further notice" by:

"Between 1 January 2021 and 31 December 2024".

– After the row for "EN ISO 14245:2019", insert the following row:

"

(1)	(2)	(3)	(4)	(5)
EN ISO 14245:2021	Gas cylinders – Specifications and testing of LPG cylinder valves – Self-closing	6.2.3.1 and 6.2.3.3	Until further notice	

"

– For "EN ISO 15995:2019", in column (4), replace "Until further notice" by:

"Between 1 January 2021 and 31 December 2024".

– After the row for "EN ISO 15995:2019", insert the following row:

"

(1)	(2)	(3)	(4)	(5)
EN ISO 15995:2021	Gas cylinders – Specifications and testing of LPG cylinder valves – Manually operated	6.2.3.1 and 6.2.3.3	Until further notice	

"

– For "EN 13175:2019 (except clause 6.1.6)", in column (4), replace "Until further notice" by:

"Between 1 January 2021 and 31 December 2024".

– After the row for "EN 13175:2019 (except clause 6.1.6)", insert the following row:
"

(1)	(2)	(3)	(4)	(5)
EN 13175:2019 + A1:2020	LPG Equipment and accessories – Specification and testing for Liquefied Petroleum Gas (LPG) pressure vessel valves and fittings	6.2.3.1 and 6.2.3.3	Until further notice	

"

– For "EN ISO 17871:2015 + A1:2018", in column (4), replace "Until further notice" by:

"Between 1 January 2019 and 31 December 2024".

– After the row for "EN ISO 17871:2015 + A1:2018", insert the following new row:
"

(1)	(2)	(3)	(4)	(5)
EN ISO 17871:2020	Gas cylinders – Quick-release cylinder valves – Specification and type testing	6.2.3.1, 6.2.3.3 and 6.2.3.4	Until further notice	

"

– For "EN 13953:2015", in column (4), replace "Until further notice" by:

"Between 1 January 2017 and 31 December 2024".

– After the row for "EN 13953:2015", insert the following row:
"

(1)	(2)	(3)	(4)	(5)
EN 13953:2020	LPG Equipment and accessories – Pressure relief valves for transportable refillable cylinders for Liquefied Petroleum Gas (LPG)	6.2.3.1, 6.2.3.3 and 6.2.3.4	Until further notice	

"

– For "EN ISO 14246:2014 + A1:2017", in column (4), replace "Until further notice" by:

"Between 1 January 2019 and 31 December 2024".

– After the row for "EN ISO 14246:2014 + A1:2017", insert the following new row:
"

(1)	(2)	(3)	(4)	(5)
EN ISO 14246:2022	Gas cylinders – Cylinder valves – Manufacturing tests and examinations	6.2.3.1 and 6.2.3.4	Until further notice	

"

– At the end of the table, after the row for "EN 14129:2014 (except the note in clause 3.11)", insert the following row:
"

(1)	(2)	(3)	(4)	(5)
EN ISO 23826:2021	Gas cylinders – Ball valves – Specification and testing	6.2.3.1 and 6.2.3.3	Mandatorily from 1 January 2025	

"

6.2.4.2 Replace the fourth sub-paragraph beginning with "If more than one standard is …" by:

"Standards shall be applied in full unless otherwise specified in the table below. If more than one standard is referenced for the application of the same requirements, only one of them shall be applied."

Amend the table as follows:

– Delete the sub-heading "***for periodic inspection and test***".

– In the row for "EN 1251-3:2000", in column (3), replace "Until further notice" by:

"Until 31 December 2024".

– After the row for "EN 1251-3:2000", insert the following new row:

"

(1)	(2)	(3)
EN ISO 21029-2:2015	Cryogenic vessels – Transportable vacuum insulated vessels of not more than 1 000 litres volume – Part 2: Operational requirements **NOTE:** Notwithstanding clause 14 of this standard, pressure relief valves shall be periodically inspected and tested at intervals not exceeding 5 years.	Mandatorily from 1 January 2025

"

– Delete the row for "EN 1968:2002 + A1:2005 (except Annex B)".

– Delete the row for "EN 1802:2002 (except Annex B)".

– [The amendment to the title of standard "EN ISO 18119:2018" in the French version does not apply to the English text.]

– For "EN ISO 18119:2018", in column (3), replace "Mandatorily from 1 January 2023" by:

"Until 31 December 2024".

– After the row for "EN ISO 18119:2018", insert the following new row:

"

(1)	(2)	(3)
EN ISO 18119:2018 + A1:2021	Gas cylinders – Seamless steel and seamless aluminium-alloy gas cylinders and tubes – Periodic inspection and testing **NOTE:** Notwithstanding clause B.1 of this standard, all cylinders and tubes whose wall thickness is less than the minimum design wall thickness shall be rejected.	Mandatorily from 1 January 2025

"

– Delete the row for "EN ISO 10462:2013".

– In the row for "EN ISO 10462:2013 + A1:2019", in column (3), replace "Mandatorily from 1 January 2023" by:

"Until further notice".

– Delete the row for "EN 1803:2002 (except Annex B)".

– In the row for "EN ISO 10460:2018", in column (3), replace "Mandatorily from 1 January 2023" by:

"Until further notice".

– In the row for "EN ISO 11623:2015", in column (3), replace "Mandatorily from 1 January 2019" by:

"Until further notice".

– In the row for "EN ISO 22434:2011", in column (3), replace "Until further notice" by:

"Until 31 December 2024".

– After the row for "EN ISO 22434:2011", insert the following new row:

"

(1)	(2)	(3)
EN ISO 22434:2022	Gas cylinders – Inspection and maintenance of valves	Mandatorily from 1 January 2025

"

– For "EN 14876:2007", in column (3) replace "Until further notice" by:

"Until 31 December 2024".

– After the row for "EN 14876:2007", insert the following row:

"

(1)	(2)	(3)
EN ISO 23088:2020	Gas cylinders – Periodic inspection and testing of welded steel pressure drums – Capacities up to 1 000 l	Mandatorily from 1 January 2025

"

– For "EN 14912:2015", in column (3), replace "Mandatorily from 1 January 2019" by:

"Until 31 December 2024".

– After the row for "EN 14912:2015", insert the following row:

"

(1)	(2)	(3)
EN 14912:2022	LPG equipment and accessories – Inspection and maintenance of LPG cylinder valves at time of periodic inspection of cylinders	Mandatorily from 1 January 2025

"

– Delete the row for "EN 1440:2016 (except Annex C)".

– In the row for "EN 1440:2016 + A1:2018 + A2:2020 (except Annex C)", in column (3), replace "Mandatorily from 1 January 2022" by:

"Until further notice".

– Delete the row for "EN 16728:2016 (except clause 3.5, Annex F and Annex G)".

– In the row for "EN 16728:2016 + A1:2018 + A2:2020", in column (3), replace "Mandatorily from 1 January 2022" by:

"Until further notice".

– For "EN 15888:2014", in column (3), replace "Until further notice" by:

"Until 31 December 2024".

– After the row for "EN 15888:2014", insert the following row:

"

(1)	(2)	(3)
EN ISO 20475:2020	Gas cylinders – Cylinder bundles – Periodic inspection and testing	Mandatorily from 1 January 2025

"

6.2.5.3 In the first sentence after the heading, after "pressure receptacle", insert:

"shell".

In the sentence immediately after the end of the Note, delete:

"and their closures".

6.2.5.4.1 In the first sentence replace "receptacles" by;

"receptacle shells".

In the sentence preceding the algebraic formulae, after "receptacle", insert:

"shell" (twice).

6.2.5.4.2 At the end, replace "(see also EN 1975:1999 + A1:2003)" by:

"(see also EN ISO 7866:2012 + A1:2020)".

6.2.6.1.5 In the first sentence, replace "exceed neither two-thirds of the test pressure nor" by:

"not exceed".

After the first sentence, insert the following sentence:

"In case of a mixture of several gases, the stricter limit shall apply."

6.2.6.3.2.1 [The amendments in the German version do not apply to the English text.]

Chapter 6.3

6.3.2.1 In the second sentence, replace "successfully to withstand the tests" by:

"to successfully fulfil the requirements".

6.3.2.2 Amend the Note as follows:

– Replace "ISO 16106:2006" by:

"ISO 16106:2020".

– In the standard's title, delete:

"Packaging –".

6.3.5.4.2 In the third sentence, replace "the edges of the upper end a radius" by:

"the edges of its upper end shall have a radius".

Chapter 6.4

6.4.12.1 Amend the first sentence as follows:

– Delete:

"2.2.7.2.3.1.3, 2.2.7.2.3.1.4,".

– After "2.2.7.2.3.4.2,", insert:

"2.2.7.2.3.4.3".

6.4.12.2 Delete:

"2.2.7.2.3.1.3, 2.2.7.2.3.1.4,".

After "2.2.7.2.3.4.2,", insert:

"2.2.7.2.3.4.3".

6.4.23 [The amendment in the German version does not apply to the English text.]

Chapter 6.5

6.5.1.1.2 Amend to read as follows:

"**6.5.1.1.2** The requirements for IBCs in 6.5.3 are based on IBCs currently in use. In order to take into account progress in science and technology, there is no objection to the use of IBCs having specifications different from those in 6.5.3 and 6.5.5, provided that they are equally effective, acceptable to the competent authority and able to successfully fulfil the requirements described in 6.5.4 and 6.5.6. Methods of inspection and testing other than those described in RID are acceptable, provided they are equivalent, and are recognized by the competent authority."

6.5.1.1.3 [The amendment in the German version does not apply to the English text.]

6.5.2.1 Add a new **6.5.2.1.2** to read as follows:

"**6.5.2.1.2** IBCs manufactured from recycled plastics material as defined in 1.2.1 shall be marked "REC". For rigid IBCs this mark shall be placed near the marks prescribed in 6.5.2.1.1. For the inner receptacle of composite IBCs, this mark shall be placed near the marks prescribed in 6.5.2.2.4."

Renumber current **6.5.2.1.2** and **6.5.2.1.3** as **6.5.2.1.3** and **6.5.2.1.4** respectively.

6.5.2.2.4 [The amendments in the German version do not apply to the English text.]

6.5.4.1 Amend the Note as follows:

– Replace "ISO 16106:2006" by:

"ISO 16106:2020".

– In the standard's title, delete:

"Packaging –".

6.5.4.2 [The amendment in the German version does not apply to the English text.]

6.5.5.1.6 In paragraph (a), at the end, add:

"C = capacity in litres;".

6.5.5.1.7 [The amendment in the German version does not apply to the English text.]

6.5.5.3.2 After the first sentence, add the following new sentence:

"Except for recycled plastics material as defined in 1.2.1, no used material other than production residues or regrind from the same manufacturing process may be used."

6.5.5.3.5 Delete.

6.5.5.4.6 After the first sentence, add the following new sentence:

"Except for recycled plastics material as defined in 1.2.1, no used material other than production residues or regrind from the same manufacturing process may be used."

6.5.5.4.9 Delete.

Renumber current **6.5.5.4.10** to **6.5.5.4.26** as **6.5.5.4.9** to **6.5.5.4.25**.

6.5.5.4.19 (current 6.5.5.4.20) Replace "6.5.5.4.9" by:

"6.5.5.4.8".

6.5.6.3.2 Replace "6.5.5.4.9" by:

"6.5.5.4.8".

6.5.6.8.4.2 [The amendment in the German version does not apply to the English text.]

Chapter 6.6

6.6.1.1 Number the indents as "(a)", "(b)" and "(c)".

6.6.1.2 Amend the Note as follows:

– Replace "ISO 16106:2006" by:

"ISO 16106:2020".

– In the standard's title, delete "Packaging –".

6.6.1.3 In the second sentence, replace "successfully to withstand the tests" by:

"to successfully fulfil the requirements".

Chapter 6.7

Number the Note after the chapter heading as Note 1.

In Note 1 (current Note), delete "for fibre-reinforced plastics tank-containers, see Chapter 6.9;".

Insert a new Note 2 to read as follows:

"**2:** The requirements of this Chapter also apply to portable tanks with shells made of fibre-reinforced plastics (FRP) to the extent indicated in Chapter 6.9."

6.7.1.2 [The amendment in the German version does not apply to the English text.]

6.7.2.19.8 [The amendment in the German version does not apply to the English text.]

6.7.2.12.2.1 [The amendment in the German version does not apply to the English text.]

6.7.2.12.2.3 [The amendment in the German version does not apply to the English text.]

6.7.3.8.1.1 Delete footnote 6.

At the end, add a new note with the text of footnote 6, to read as follows:

"**NOTE:** This formula applies only to non-refrigerated liquefied gases which have critical temperatures well above the temperature at the accumulating condition. For gases which have critical temperatures near or below the temperature at the accumulating condition, the calculation of the pressure -relief device delivery capacity shall consider further thermodynamic properties of the gas (see, e.g. CGA S-1.2-2003 Pressure Relief Device Standards – Part 2 – Cargo and Portable Tanks for Compressed Gases)."

Renumber footnotes 7 to 16 as footnotes 6 to 15.

[The amendment to the explanation of "Q" in the German version does not apply to the English text.]

6.7.3.15.8 [The amendment in the German version does not apply to the English text.]

6.7.4.14.8 [The amendment in the German version does not apply to the English text.]

6.7.5.12.6 [The amendment in the German version does not apply to the English text.]

Chapter 6.8

Number the Note after the chapter heading as Note 1.

In Note 1 (current Note), replace "for fibre-reinforced plastics tank-containers, see Chapter 6.9;" by:

"for portable tanks with shells made of fibre-reinforced plastics (FRP) materials, see Chapter 6.9;".

Add a new Note 2 as follows:

"**2:** In this chapter, "inspection body" means a body conforming to 1.8.6."

6.8.1 Amend to read as follows:

"**6.8.1 Scope and general provisions**".

6.8.1 Insert a new sub-section **6.8.1.5** to read as follows:

"**6.8.1.5 Conformity assessment, type approval and inspections procedures**

The following provisions describe how to apply the procedures in 1.8.7.

Note: These provisions apply, subject to the compliance of the inspection bodies with the provisions of 1.8.6, and without prejudice to rights and obligations, in particular notification and recognition, fixed for them by agreements or legal acts (e.g. Directive 2010/35/EU) otherwise binding on RID Contracting States.

For the purpose of this sub-section the term "country of registration" means:

the RID Contracting State of registration of the wagon on which the tank is mounted.	– the RID Contracting State where the owner's or operator's company is registered; – if the owner's or operator's company is not known, the RID Contracting State of the competent authority that approved the inspection body which performed the initial inspection. Notwithstanding 1.6.4.57 these inspection bodies shall be accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) Type A.

The conformity assessment of the tank shall verify that all its components conform to the requirements of RID, irrespective of where they have been manufactured.

6.8.1.5.1 *Type examination according to 1.8.7.2.1*

(a) The manufacturer of the tank shall engage a single inspection body approved or recognized by the competent authority of either the country of manufacture or the first country of registration of the first tank manufactured according to that type to take responsibility for the type examination. If the country of manufacture is not an RID Contracting State, the manufacturer shall engage a single inspection body approved or recognized by the competent authority of the country of registration of the first tank manufactured according to that type to take responsibility for the type examination.

(b) If the type examination of the service equipment is performed separately from the tank according to 6.8.2.3.1, the manufacturer of the service equipment shall engage single inspection body approved or recognized by an RID Contracting State to take responsibility for the type examination.

6.8.1.5.2 *Type approval certificate issue according to 1.8.7.2.2*

Only the competent authority that approved or recognized the inspection body that performed the type examination shall issue the type approval certificate.

However, when an inspection body is designated by the competent authority to issue the type approval certificate the type examination shall be performed by that inspection body.

6.8.1.5.3 *Supervision of manufacture according to 1.8.7.3*

(a) For the supervision of manufacture, the manufacturer of the tank shall engage a single inspection body approved or recognized either by the competent authority of the country of registration or the country of manufacture. If the country of manufacture is not an RID Contracting State, a manufacturer shall engage a single inspection body approved or recognized by the competent authority of the country of registration.

(b) If the type examination of the service equipment is performed separately from the tank, the manufacturer of the service equipment shall engage a single inspection body approved or recognized by the competent authority of an RID Contracting State. The manufacturer may use an in-house inspection service according to 1.8.7.7 to perform the procedures of 1.8.7.3.

6.8.1.5.4 *Initial inspection and tests according to 1.8.7.4*

(a) The manufacturer of the tank shall engage a single inspection body approved or recognized by the competent authority of the country of registration or the country of manufacture to take responsibility for the initial inspection and tests. If the country of manufacture is not an RID Contracting State, a manufacturer shall engage a single inspection body approved or recognized by the competent authority of the country of registration to take responsibility for the initial inspection and tests.

(b) If the service equipment is type approved separately from the tank, the manufacturer of the service equipment shall engage the same single inspection body engaged for the purposes of 6.8.1.5.3 (b) to take responsibility for the initial inspection and tests. The manufacturer may use an in-house inspection service according to 1.8.7.7 to perform the procedures of 1.8.7.4.

6.8.1.5.5 *Entry into service verification according to 1.8.7.5*

The competent authority of the country of first registration may require, on an occasional basis, an entry into service verification of the tank to verify conformity with the applicable requirements.[1]	The competent authority of the country of first registration may require, on an occasional basis, an entry into service verification of the tank to verify conformity with the applicable requirements.
When the country of registration of a tank-wagon is changed, the competent authority of the RID Contracting State to which the tank-wagon is transferred may require, on an occasional basis, an entry into service verification of the tank.	When the country of registration of a tank-container is changed, the competent authority of the RID Contracting State to which the tank-container is transferred may require, on an occasional basis an entry into service verification.

[1] For those tank-wagons that have received a vehicle authorization from the European Union Agency for Railways

(ERA) in accordance with Article 21 of Directive (EU) 2016/797 and Commission Implementing Regulation (EU) 2018/545, this authorization shall be sufficient and no entry into service verification shall be required to confirm the conformity of the tank for the purpose of registering the tank-wagon in the National Vehicle Register (NVR).	

To perform the entry into service verification, the owner or operator of the tank shall engage a single inspection body different to the inspection bodies engaged for the type examination, supervision of manufacture or initial inspection . The inspection body engaged for the entry into service verification shall be approved by the competent authority of the country of registration or, if no such inspection body exists, the inspection body shall be recognized by the competent authority of the country of registration. The entry into service verification shall consider the condition of the tank and shall ensure that the requirements of RID are fulfilled.

Renumber footnotes 1 to 5 as footnotes 2 to 6.

6.8.1.5.6 *Intermediate, periodic or exceptional inspection according to 1.8.7.6*

The intermediate or periodic or exceptional inspection shall be performed

by an inspection body approved or recognized by the competent authority of the country where the inspection takes place or by an inspection body approved or recognized by the competent authority of the country of registration.	by an inspection body approved or recognized by the competent authority of the RID Contracting State where the inspection takes place or by an inspection body approved or recognized by the competent authority of the country of registration.

The owner or operator of the tank, or its authorized representative, shall engage a single inspection body for each intermediate, periodic or exceptional inspection. "

6.8.2.1.10 In the second sub-paragraph, delete the first sentence ("Water-quenched steel may not be used for welded steel shells.").

6.8.2.1.16 In the penultimate sub-paragraph, delete:

"or by a body designated by that authority".

6.8.2.1.18 In the right hand-column, in the third paragraph, after "3 mm" add:

", or 4.5 mm if the tank is an extra-large tank-container".

6.8.2.1.23 Delete the last sentence of the first paragraph and footnote 6.

After the sub-paragraph for "λ = 1", insert the following new sub-paragraph:

"The non-destructive checks of the circumferential, longitudinal and radial welds shall be carried out by radiography or by ultrasound. Other welds allowed in the appropriate design and construction standard shall be tested using alternative methods in accordance with the relevant standard(s) referenced in 6.8.2.6.2. The checks shall confirm that the quality of the welding is appropriate to the stresses."

Insert the following new sub-paragraph immediately before the last sub-paragraph:

"Welds made during repairs or alterations shall be assessed as above and in accordance with the non-destructive tests specified in the relevant standard(s) referenced in 6.8.2.6.2."

6.8.2.2.1 After the first sentence, in the right-hand column, add the following new sentence:

	"Welded elements shall be attached to the shell in such a way that tearing of the shell is prevented."

Amend the text before the three indents in the left-hand column to read as follows:

"Welded elements shall be attached to the shell in such a way that tearing of the shell is prevented. This can be achieved, for example, through the following measures:".	

6.8.2.2.2 At the end of the seventh paragraph, after "clearly apparent", insert a reference to the following footnote:

"[9] The mode of operation of dry break couplings is self -closing. Consequently, an open/closed indicator is not necessary. This type of closure shall only be used as a second or third closure."

Renumber the following footnotes accordingly.

In the last sentence, delete:

"or by a body designated by that authority".

6.8.2.2.4 [The amendment to the left-hand column in the French version does not apply to the English text.]

In the right-hand column, after the first sentence, insert:

	"These openings for extra-large tank-containers intended for the carriage of substances in the liquid state which are not divided by partitions or surge plates into sections of not more than 7 500 litres capacity shall be provided with closures designed for a test pressure of at least 0.4 MPa (4 bar). Hinged dome covers shall not be permitted for extra-large tank-containers with a test pressure of more than 0.6 MPa (6 bar)."

6.8.2.2.10 In the second sub-paragraph, replace "shall be such as to satisfy the competent authority" by:

"satisfy the requirements of 6.8.3.2.9".

6.8.2.3 Amend to read:

"**6.8.2.3 Type examination and type approval**".

Add the following new **6.8.2.3.1** to read as follows:

"**6.8.2.3.1** *Type examination*

The provisions in 1.8.7.2.1 shall be applied.

A manufacturer of service equipment for which a standard is listed in the table in 6.8.2.6.1 or 6.8.3.6 may request a separate type examination. This separate type examination shall be taken into account during the type examination of the tank."

Renumber current **6.8.2.3.1** as **6.8.2.3.2**.

6.8.2.3.2 (current 6.8.2.3.1) Add the following title:

"*Type approval*".

Amend the first sub-paragraph to read as follows:

"The competent authority shall issue in respect of each new type of tank-wagon, tank-container, tank swap body, battery-wagon or MEGC a certificate attesting that the type, including fastenings, which has been examined, is suitable for the purpose for which it is intended and meets the construction requirements of 6.8.2.1, the equipment requirements of 6.8.2.2 and the special conditions for the classes of substances carried."

After "The certificate shall show", add:

"in addition to the items listed in 1.8.7.2.2.1".

Delete the first indent ("– the results of the test;").

After the last indent, insert the following Note:

"**Note:** Annex B of EN 12972:2018 describing the type as well as the list of authorized service equipment for the tank type, or equivalent documents shall be attached to or included in the certificate."

Amend the last sub-paragraph to read as follows:

“When the manufacturer of service equipment had a separate type examination carried out and when the manufacturer requests it, the competent authority shall issue a certificate attesting that the type which has been examined meets the standard listed in the table in 6.8.2.6.1 or 6.8.3.6.”

6.8.2.3.3 Delete.

Renumber current **6.8.2.3.2** as **6.8.2.3.3**.

6.8.2.3.4 Amend the text to read as follows:

"**6.8.2.3.4** In accordance with 1.8.7.2.2.3, the competent authority shall issue a supplementary approval certificate for the modification in the case of a modification of a tank, battery-wagon or MEGC with a valid, expired or withdrawn type approval."

6.8.2.4.1 Amend footnote 13 (current footnote 12) to read:

"[13] In special cases, if agreed by the competent authority, the hydraulic pressure test may be replaced by a pressure test using gas, or if agreed by the inspection body, by using another liquid, where such an operation does not present any danger."

6.8.2.4.2 In the penultimate sub-paragraph, replace "the expert approved by the competent authority" by:

"the inspection body".

6.8.2.4.3 Amend the first sub-paragraph as follows:

– In the first sentence, replace "at least every" by:

"no later than".

– Delete the second sentence ("These intermediate inspections may be performed within three months before or after the specified date.").

Amend the third sub-paragraph as follows:

– Replace "the due date" by:

"the specified date".

– Replace "at the latest" by:

"no later than".

– Replace "after this date" by:

"after this earlier date or alternatively a periodic inspection may be performed in accordance with 6.8.2.4.2".

6.8.2.4.4 Replace "exceptional check" by:

"exceptional inspection" (five times).

6.8.2.4.5 Amend the first sub-paragraph to read as follows:

"Certificates shall be issued by the inspection body referredto in 6.8.1.5.4 or 6.8.1.5.6 and shall show the results of the inspections in accordance with 6.8.2.4.1 to 6.8.2.4.4, even in the case of negative results. These certificates shall refer to the list of the substances permitted for carriage in this tank or to the tank code and the alphanumeric codes of special provisions in accordance with 6.8.2.3.2."

6.8.2.4.6 Delete the title before the paragraph.

Amend to read as follows:

"**6.8.2.4.6** (Deleted)".

6.8.2.5.1 In the tenth indent, replace "stamp of the expert who" by:

"stamp of the inspection body that".

6.8.2.6.1 Amend the text before the table to read as follows:

"**Design and construction**

Since 1 January 2009 the use of the referenced standards has been mandatory. Exceptions are dealt with in 6.8.2.7 and 6.8.3.7.

Type approval certificates shall be issued in accordance with 1.8.7 and 6.8.2.3. For the issuance of a type approval certificate, one standard applicable according to the indication in column (4) shall be chosen from the table below. If more than one standard may be applied, only one of them shall be chosen.

Column (3) shows the paragraphs of Chapter 6.8 to which the standard conforms.

Column (5) gives the latest date when existing type approvals shall be withdrawn according to 1.8.7.2.2.2; if no date is shown the type approval remains valid until it expires.

Standards shall be applied in accordance with 1.1.5. They shall be applied in full, unless otherwise specified in the table below.

The scope of application of each standard is defined in the scope clause of the standard unless otherwise specified in the table below."

In column (3) of the table, amend the column heading to read as follows:

"Requirements the standard complies with".

Amend the table, under "***For design and construction of tanks***" as follows:

– For EN 13094:2015, in the Note in the second column, replace "(www.otif.org)" by:

"(http://otif.org/en/?page_id=1103)".

– For "EN 13094:2015", in column (4), replace "Until further notice" by:

"Between 1 January 2017 and 31 December 2024".

– After the row for "EN 13094:2015", insert the following new row:

"

(1)	(2)	(3)	(4)	(5)
EN 13094:2020 + A1:2022	Tanks for the transport of dangerous goods – Metallic gravity-discharge – Design and construction	6.8.2.1	Until further notice	

"

Amend the table, under "***for equipment***", as follows:

– For "EN 14432:2014", in column (3), replace "6.8.2.3.1" by:

"6.8.2.3.2".

– For "EN 14433:2014", in column (3), replace "6.8.2.3.1" by:

"6.8.2.3.2".

– At the end, add the following row:

"

(1)	(2)	(3)	(4)	(5)
EN ISO 23826:2021	Gas cylinders – Ball valves – Specification and testing	6.8.2.1.1 and 6.8.2.2.1	Mandatorily from 1 January 2025	

"

6.8.2.6.2 Amend the text before the table to read as follows:

"**Type examination, inspection and test**

The use of a referenced standard is mandatory.

One standard applicable according to the indication in column (4) shall be chosen from the table below for the type examination and the inspection and test of tanks.

Column (3) shows the paragraphs of Chapter 6.8 to which the standard conforms.

The standards shall be applied in accordance with 1.1.5.

The scope of application of each standard is defined in the scope clause of the standard unless otherwise indicated in the table below."

Amend the table as follows:

– Amend the heading of column (3) to read as follows:

"Requirements the standard complies with".

– Delete the row for standard "EN 12972:2007".

– In the row for standard "EN 12972:2018", amend the entry in column (3) to read as follows:

"6.8.2.1.23, 6.8.2.4, 6.8.3.4".

– In the row for standard "EN 12972:2018", in column (4), replace "Mandatorily from 1 July 2021" by:

"Until further notice".

6.8.3.1.3 In the second sub-paragraph, replace "footnote 5 to 6.8.2.1.18" by:

"footnote 6 to 6.8.2.1.18".

6.8.3.2.9 Amend to read as follows:

"**6.8.3.2.9**	Tanks intended for the carriage of compressed or liquefied or dissolved gases may be fitted with safety valves.	Tanks intended for the carriage of flammable liquefied gases shall be fitted with safety valves. Tanks intended for the carriage of compressed gases, non-flammable liquefied gases or dissolved gases may be fitted with safety valves.

Safety valves, where fitted, shall meet the requirements of 6.8.3.2.9.1 to 6.8.3.2.9.5.

6.8.3.2.9.1 Safety valves shall be capable of opening automatically under a pressure between 0.9 and 1.0 times the test pressure of the tank to which they are fitted. They shall be of such a type as to resist dynamic stresses, including liquid surge. The use of dead weight or counterweight valves is prohibited. The required capacity of the safety valves shall be calculated in accordance with the formula contained in 6.7.3.8.1.1 and the safety valve shall conform at least to the requirements of 6.7.3.9.

Safety valves shall be designed to prevent or be protected from the entry of water or other foreign matter which may impair their correct functioning. Any protection shall not impair their performance.

6.8.3.2.9.2 If tanks required to be hermetically closed are equipped with safety valves, these shall be preceded by a bursting disc and the following conditions shall be met:

(a) The minimum burst pressure at 20 °C, tolerances included, shall be greater than or equal to 1.0 times the test pressure;

(b) The maximum burst pressure at 20 °C, tolerances included, shall be equal to 1.1 times the test pressure; and

(c) The bursting disc shall not reduce the required discharge capacity or correct operation of the safety valve.

A pressure gauge or another suitable indicator shall be provided in the space between the bursting disc and the safety valve, to enable detection of any rupture, perforation or leakage of the disc.

6.8.3.2.9.3 Safety valves shall be directly connected to the shell or directly connected to the outlet of the bursting disc.

6.8.3.2.9.4 Each safety valve inlet shall be situated on top of the shell in a position as near to the transverse centre of the shell as reasonably practicable. All safety valve inlets shall, under maximum filling conditions, be situated in the vapour space of the shell and the devices shall be so arranged as to ensure that the escaping vapour is discharged unrestrictedly. For flammable liquefied gases, the escaping vapour shall be directed away from the shell in such a manner that it cannot impinge upon the shell. Protective devices which deflect the flow of vapour are permissible provided the required safety valve capacity is not reduced.

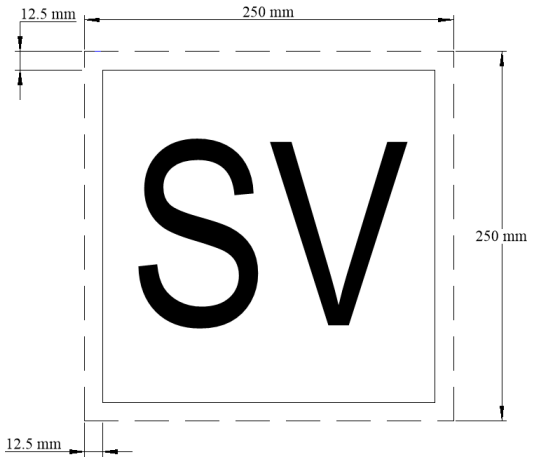
6.8.3.2.9.5 Arrangements shall be made to protect the safety valves from damage caused by the tank overturning or striking overhead obstacles. Where possible, safety valves shall not project outside of the profile of the shell.

6.8.3.2.9.6 Safety valve mark

6.8.3.2.9.6.1 Tanks fitted with safety valves in accordance with 6.8.3.2.9.1 to 6.8.3.2.9.5 shall display the mark as set out in 6.8.3.2.9.6.3 to 6.8.3.2.9.6.6.

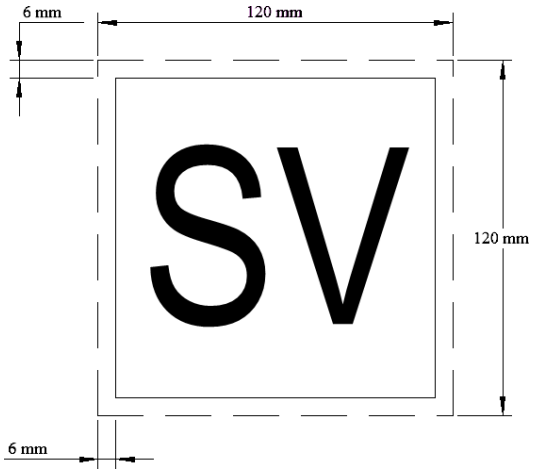
6.8.3.2.9.6.2 Tanks not fitted with safety valves in accordance with 6.8.3.2.9.1 to 6.8.3.2.9.5 shall not display the mark as set out in 6.8.3.2.9.6.3 to 6.8.3.2.9.6.6.

6.8.3.2.9.6.3 The mark shall consist of a white square with minimum dimensions of 250 mm × 250 mm. The line inside the edge shall be black, parallel and approximately 12.5 mm from the outside of that line to the outside edge of the mark. The letters "SV" shall be black, a minimum of 120 mm high and have a minimum stroke thickness of 12 mm.



6.8.3.2.9.6.4 (Reserved)

For tank-containers with a capacity of not more than 3 000 litres the mark may be reduced in size to not less than 120 mm × 120 mm. The line inside the edge shall be black, parallel and approximately 6 mm from the outside of that line to the outside edge of the mark. The letters "SV" shall be black, a minimum of 60 mm high and have a minimum stroke thickness of 6 mm.



6.8.3.2.9.6.5 The material used shall be weather-resistant and it shall be ensured that the mark is durable. The mark shall not become detached from its mount in the event of 15 minutes' engulfment in fire. It shall remain affixed irrespective of the orientation of the tank.

6.8.3.2.9.6.6 The letters "SV" shall be indelible and shall remain legible after 15 minutes' engulfment in fire.

6.8.3.2.9.6.7	The marks shall be displayed on both sides of tank-wagons.	The marks shall be displayed on both sides and both ends of tank-containers. For tank-containers with a capacity of not more than 3 000 litres the marks may be displayed either on both sides or on both ends."

6.8.3.3 Amend the title to read as follows:

"**Type examination and type approval**".

6.8.3.4.4 In the first sentence, replace "an expert approved by the competent authority" by:

"an inspection body".

In the last sentence, replace "an approved expert" by:

"an inspection body".

6.8.3.4.6 Amend to read as follows:

"**6.8.3.4.6** For tanks intended for the carriage of refrigerated liquefied gases:

(a) By derogation from the requirements of 6.8.2.4.2, the periodic inspections shall be performed no later than eight years after the initial inspection and thereafter no later than every 12 years;

(b) By derogation from the requirements of 6.8.2.4.3, the intermediate inspections shall be performed no later than six years after each periodic inspection."

6.8.3.4.7 Replace "the approved expert" by:

"the inspection body".

6.8.3.4.8 Replace "the approved expert" by:

"the inspection body".

6.8.3.4.13 Amend footnote 19 (current footnote 18) to read:

"[19] In special cases, if agreed by the competent authority, the hydraulic pressure test may be replaced by a pressure test using gas, or if agreed by the inspection body, by using another liquid, where such an operation does not present any danger."

6.8.3.4.14 In the second sub-paragraph, in the second sentence, replace "the competent authority or its authorized body" by:

"the competent authority".

6.8.3.4.17 [The amendment in the German version does not apply to the English text.]

6.8.3.4.18 In the first sentence, replace "the expert approved by the competent authority" by:

"the inspection body".

In the third sentence, replace "6.8.2.3.1" by:

"6.8.2.3.2".

6.8.3.5.2 Amend footnote 20 (current footnote 19) as follows:

– At the end of the last but one indent, replace the full stop by a semicolon.

– Add the following new indent:

"– for UN No. 1012 Butylene: 1-butylene, cis-2-butylene, trans-2-butylene, butylenes mixture."

6.8.3.5.6 In paragraph (a), replace "(see 6.8.2.3.1)" by:

"(see 6.8.2.3.2)".

6.8.3.5.7 In the left-hand column, replace "in the case of multi-purpose tanks, the name in full of the particular gas being carried shall be stated together with the load limit on the same moveable panel. The folding panels shall be designed and be capable of being secured so that" by:

"in the case of multi-purpose tanks and if folding panels are used, the name in full of the particular gas being carried shall be stated together with the load limit on the same folding panel. If such panels are used they shall be designed and be capable of being secured so that".

6.8.3.5.10 In the last indent, replace "stamp of the expert who" by:

"stamp of the inspection body that".

6.8.3.5.11 In the left-hand column, in the fifth indent, replace "(see 6.8.2.3.1)" by:

"(see 6.8.2.3.2)".

In the right-hand column, in the fifth indent, replace "(see 6.8.2.3.1)" by:

"(see 6.8.2.3.2)".

6.8.3.6 Amend the text following the Note to read as follows:

"Since 1 January 2009 the use of the referenced standards has been mandatory. Exceptions are dealt with in 6.8.3.7.

Type approval certificates shall be issued in accordance with 1.8.7 and 6.8.2.3. For the issuance of a type approval certificate, one standard applicable according to the indication in column (4) shall be chosen from the table below. If more than one standard may be applied, only one of them shall be chosen.

Column (3) shows the paragraphs of Chapter 6.8 to which the standard conforms.

Column (5) gives the latest date when existing type approvals shall be withdrawn according to 1.8.7.2.2.2; if no date is shown the type approval remains valid until it expires.

Standards shall be applied in accordance with 1.1.5. They shall be applied in full unless otherwise specified in the table below.

The scope of application of each standard is defined in the scope clause of the standard unless otherwise specified in the Table below."

In Column (3) of the table, amend the column heading to read as follows:

"**Requirements the standard complies with**".

At the end of the table, add the following row:

"

(1)	(2)	(3)	(4)	(5)
EN ISO 23826:2021	Gas cylinders – Ball valves – Specification and testing	6.8.2.1.1 and 6.8.2.2.1	Mandato-rily from 1 January 2025	

"

6.8.3.7 Amend the third sub-paragraph to read as follows:

"The procedure for periodic inspections shall be specified in the type approval if the standards referenced in 6.2.2, 6.2.4 or 6.8.2.6 are not applicable or shall not be applied."

6.8.4 (a)

TC 6 Amend to read as follows:

"**TC 6** The wall thickness of tanks made of aluminium not less than 99% pure or aluminium alloy need not exceed 15 mm even where calculation in accordance with 6.8.2.1.17 gives a higher value."

6.8.4 (b)

TE 14 Amend the second sentence to read as follows:

"The thermal insulation directly in contact with the shell and/or components of the heating system shall have an ignition temperature at least 50 °C higher than the maximum temperature for which the tank was designed."

Add a new special provision **TE 26** as follows:

"**TE 26** All filling and discharge connections, including those in the vapour phase, of tanks intended for the carriage of flammable refrigerated liquefied gases shall be equipped with an instant closing automatic stop-valve (see 6.8.3.2.3) as close as possible to the tank."

6.8.4 (c)

TA 4 Amend to read as follows:

"**TA 4** The conformity assessment procedures of section 1.8.7 shall be applied by the competent authority or the inspection body conforming to 1.8.6.3 and accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) type A."

6.8.4 (d)

TT 2 Replace "an expert approved by the competent authority, who" by:

"an inspection body, which".

TT 3 Amend to read as follows:

(Reserved)	By derogation from the requirements of 6.8.2.4.2, periodic inspections shall be performed no later than every eight years and shall include a thickness check using suitable instruments. For such tanks, the leakproofness test and check for which provision is made in 6.8.2.4.3 shall be performed no later than every four years."

TT 4 Amend to read as follows:

"TT 4 (deleted)".

TT 5 Replace "shall take place at least" by:

"shall be performed no later than".

TT 6 In the left-hand column, replace "shall be carried out at least" by:

"shall be performed no later than".

TT 9 Amend to read as follows:

"**TT 9** For inspections and tests (including supervision of the manufacture) the procedures of section 1.8.7 shall be applied by the competent authority or the inspection body conforming to 1.8.6.3 and accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) type A."

TT 10 Amend to read as follows:

"**TT 10** The periodic inspections according to 6.8.2.4.2 shall be performed no later than every four years. | two and a half years."

Chapter 6.9 Amend to read as follows:

"**Chapter 6.9 Requirements for the design, construction, inspection and testing of portable tanks with shells made of fibre-reinforced plastics (FRP) materials**

6.9.1 Application and general requirements

6.9.1.1 The requirements of section 6.9.2 apply to portable tanks with an FRP shell intended for the carriage of dangerous goods of Classes 1, 3, 5.1, 6.1, 6.2, 8 and 9 by all modes of transport. In addition to the requirements of this Chapter, unless otherwise specified, the applicable requirements of the International Convention for Safe Containers (CSC) 1972, as amended, shall be fulfilled by any multimodal portable tank with FRP shell which meets the definition of a "container" within the terms of that Convention.

6.9.1.2 The requirements of this Chapter do not apply to offshore portable tanks.

6.9.1.3 The requirements of Chapter 4.2 and section 6.7.2 apply to FRP portable tank shells except for those concerning the use of metal materials for the construction of a portable tank shell and additional requirements stated in this Chapter.

6.9.1.4 In recognition of scientific and technological advances, the technical requirements of this Chapter may be varied by alternative arrangements. These alternative arrangements shall offer a level of safety not less than that given by the requirements of this Chapter with respect to compatibility with substances carried and the ability of the FRP portable tank to withstand impact, loading and fire conditions. For international carriage, alternative arrangement FRP portable tanks shall be approved by the applicable competent authorities.

6.9.2 Requirements for the design, construction, inspection and testing of FRP portable tanks

6.9.2.1 Definitions

For the purposes of this section, the definitions of 6.7.2.1 apply except for definitions related to metal materials ("Fine grain steel", "Mild steel" and "Reference steel") for the construction of the shell of a portable tank.

Additionally, the following definitions apply to portable tanks with an FRP shell:

External layer means the part of the shell which is directly exposed to the atmosphere;

Fibre-reinforced plastics (FRP), see 1.2.1;

Filament winding means a process for constructing FRP structures in which continuous reinforcements (filament, tape, or other), either previously impregnated with a matrix material or impregnated during winding, are placed over a rotating mandrel. Generally, the shape is a surface of revolution and may include ends (heads);

FRP shell means a closed part of cylindrical shape with an interior volume intended for carriage of chemical substances;

FRP tank means a portable tank constructed with an FRP shell and ends (heads), service equipment, safety relief devices and other installed equipment;

Glass transition temperature (T_g) means a characteristic value of the temperature range over which the glass transition takes place;

Hand layup means a process for moulding reinforced plastics in which reinforcement and resin are placed on a mould;

Liner means a layer on the inner surface of an FRP shell preventing contact with the dangerous goods being carried;

Mat means a fibre reinforcement made of random, chopped or twisted fibres bonded together as sheets of various length and thickness;

Parallel shell-sample means an FRP specimen, which must be representative of the shell, constructed in parallel to the shell construction if it is not possible to use cut-outs from the shell itself. The parallel shell-sample may be flat or curved;

Representative sample means a sample cut out from the shell;

Resin infusion means an FRP construction method by which dry reinforcement is placed into a matched mould, single sided mould with vacuum bag, or otherwise, and liquid resin is supplied to the part through the use of external applied pressure at the inlet and/or application of full or partial vacuum pressure at the vent;

Structural layer means FRP layers of a shell required to sustain the design loads;

Veil means a thin mat with high absorbency used in FRP product plies where polymeric matrix surplus fraction content is required (surface evenness, chemical resistance, leakage-proof, etc.).

6.9.2.2 General design and construction requirements

6.9.2.2.1 The requirements of 6.7.1 and 6.7.2.2 apply to FRP portable tanks. For areas of the shell that are made from FRP, the following requirements of Chapter 6.7 are exempt: 6.7.2.2.1, 6.7.2.2.9.1, 6.7.2.2.13 and 6.7.2.2.14. Shells shall be designed and constructed in accordance with the requirements of a pressure vessel code, applicable to FRP materials, recognized by the competent authority.

In addition, the following requirements apply.

6.9.2.2.2 *Manufacturer's quality system*

6.9.2.2.2.1 The quality system shall contain all the elements, requirements, and provisions adopted by the manufacturer. It shall be documented in a systematic and orderly manner in the form of written policies, procedures, and instructions.

6.9.2.2.2.2 The contents shall in particular include adequate descriptions of:

(a) The organizational structure and responsibilities of personnel with regard to design and product quality;

(b) The design control and design verification techniques, processes, and procedures that will be used when designing the portable tanks;

(c) The relevant manufacturing, quality control, quality assurance and process operation instructions that will be used;

(d) Quality records, such as inspection reports, test data and calibration data;

(e) Management reviews to ensure the effective operation of the quality system arising from the audits in accordance with 6.9.2.2.2.4;

(f) The process describing how customer requirements are met;

(g) The process for control of documents and their revision;

(h) The means for control of non-conforming portable tanks, purchased components, in-process and final materials; and

(i) Training programmes and qualification procedures for relevant personnel.

6.9.2.2.2.3 Under the quality system, the following minimum requirements shall be met for each FRP portable tank manufactured:

(a) Use of an inspection and test plan (ITP);

(b) Visual inspections;

(c) Verification of fibre orientation and mass fraction by means of documented control process;

(d) Verification of fibre and resin quality and characteristics by means of certificates or other documentation;

(e) Verification of liner quality and characteristics by means of certificates or other documentation;

(f) Verification of whichever is applicable of formed thermoplastic resin characteristic or degree of cure of thermoset resin, by direct or indirect means (e.g. Barcol test or differential scanning calorimetry) to be determined in accordance with 6.9.2.7.1.2 (h), or by creep testing of a representative sample or parallel shell-sample in accordance with 6.9.2.7.1.2 (e) for a period of 100 hours;

(g) Documentation of whichever is applicable of thermoplastic resin forming processes or thermoset resin cure and post-cure processes; and

(h) Retention and archiving of shell samples for future inspection and shell verification (e.g. from manhole cut out) for a period of 5 years.

6.9.2.2.2.4 Audit of the quality system

The quality system shall be initially assessed to determine whether it meets the requirements in 6.9.2.2.2.1 to 6.9.2.2.2.3 to the satisfaction of the competent authority.

The manufacturer shall be notified of the results of the audit. The notification shall contain the conclusions of the audit and any corrective actions required.

Periodic audits shall be carried out, to the satisfaction of the competent authority, to ensure that the manufacturer maintains and applies the quality system. Reports of the periodic audits shall be provided to the manufacturer.

6.9.2.2.2.5 Maintenance of the quality system

The manufacturer shall maintain the quality system as approved in order that it remains adequate and efficient.

The manufacturer shall notify the competent authority that approved the quality system of any intended changes. The proposed changes shall be evaluated to determine whether the amended quality system will still satisfy the requirements in 6.9.2.2.2.1 to 6.9.2.2.2.3.

6.9.2.2.3 *FRP Shells*

6.9.2.2.3.1 FRP shells shall have a secure connection with structural elements of the portable tank frame. FRP shell supports and attachments to the frame shall cause no local stress concentrations exceeding the design allowables of the shell structure in accordance with the provisions stated in this Chapter for all operating and test conditions.

6.9.2.2.3.2 Shells shall be made of suitable materials, capable of operating within a minimum design temperature range of -40 °C to +50 °C, unless temperature ranges are specified for specific more severe climatic or operating conditions (e.g. heating elements), by the competent authority of the country where the transport operation is being performed.

6.9.2.2.3.3 If a heating system is installed, it shall comply with 6.7.2.5.12 to 6.7.2.5.15 and with the following requirements:

(a) The maximum operating temperature of the heating elements integrated or connected to the shell shall not exceed the maximum design temperature of the tank;

(b) The heating elements shall be designed, controlled and utilized so that the temperature of the carried substance cannot exceed the maximum design temperature of the tank or a value at which the internal pressure exceeds MAWP; and

(c) Structures of the tank and its heating elements shall allow examination of the shell with respect to possible effects of overheating.

6.9.2.2.3.4 Shells shall consist of the following elements:

– Liner;

– Structural layer;

– External layer.

NOTE: The elements may be combined if all applicable functional criteria are met.

6.9.2.2.3.5 The liner is the inner element of the shell designed as the primary barrier to provide for the long-term chemical resistance in relation to the substances to be carried, to prevent any dangerous reaction with the contents or the formation of dangerous compounds and any substantial weakening of the structural layer owing to the diffusion of products through the liner. Chemical compatibility shall be verified in accordance with 6.9.2.7.1.3.

The liner may be an FRP liner or a thermoplastic liner.

6.9.2.2.3.6 FRP liners shall consist of the following two components:

(a) Surface layer ("gel-coat"): adequate resin rich surface layer, reinforced with a veil, compatible with the resin and contents. This layer shall have a maximum fibre mass content of 30% and have a minimum thickness of 0.25 mm and a maximum thickness of 0.60 mm;

(b) Strengthening layer(s): layer or several layers with a minimum thickness of 2 mm, containing a minimum of 900 g/m² of glass mat or chopped fibres with a mass content in glass of not less than 30% unless equivalent safety is demonstrated for a lower glass content.

6.9.2.2.3.7 If the liner consists of thermoplastic sheets, they shall be welded together in the required shape, using a qualified welding procedure and personnel. Welded liners shall have a layer of electrically conductive media placed against the non-liquid contact surface of the welds to facilitate spark testing. Durable bonding between liner s and the structural layer shall be achieved by the use of an appropriate method.

6.9.2.2.3.8 The structural layer shall be designed to withstand the design loads according to 6.7.2.2.12, 6.9.2.2.3.1, 6.9.2.3.2, 6.9.2.3.4 and 6.9.2.3.6.

6.9.2.2.3.9 The external layer of resin or paint shall provide adequate protection of the structural layers of the tank from environmental and service exposure, including to UV radiation and salt fog, and occasional splash exposure to cargoes.

6.9.2.2.3.10 Resins

The processing of the resin mixture shall be carried out in compliance with the recommendations of the supplier. These resins can be:

– Unsaturated polyester resins;

– Vinyl ester resins;

– Epoxy resins;

– Phenolic resins;

– Thermoplastic resins.

The resin heat distortion temperature (HDT), determined in accordance with 6.9.2.7.1.1 shall be at least 20 °C higher than the maximum design temperature of the shell as defined in 6.9.2.2.3.2, but shall in any case not be lower than 70 °C.

6.9.2.2.3.11 Reinforcement material

The reinforcement material of the structural layers shall be selected such that they meet the requirements of the structural layer.

For the liner glass fibres of at a minimum type C or ECR according to ISO 2078:1993 + Amd 1:2015 shall be used. Thermoplastic veils may only be used for the liner when their compatibility with the intended contents has been demonstrated.

6.9.2.2.3.12 Additives

Additives necessary for the treatment of the resin, such as catalysts, accelerators, hardeners and thixotropic substances as well as materials used to improve the tank, such as fillers, colours, pigments etc. shall not cause weakening of the material, taking into account lifetime and temperature expectancy of the design.

6.9.2.2.3.13 FRP shells, their attachments and their service and structural equipment shall be designed to withstand the loads mentioned in 6.7.2.2.12, 6.9.2.2.3, 6.9.2.3.2, 6.9.2.3.4 and 6.9.2.3.6 without loss of contents (other than quantities of gas escaping through any degassing vents) during the design lifetime.

6.9.2.2.3.14 Special requirements for the carriage of substances with a flash -point of not more than 60 °C

6.9.2.2.3.14.1 FRP tanks used for the carriage of flammable liquids with a flash -point of not more than 60 °C shall be constructed to ensure the elimination of static electricity from the various component parts to avoid the accumulation of dangerous charges.

6.9.2.2.3.14.2 The electrical surface resistance of the inside and outside of the shell as established by measurements shall not be higher than 10^9 Ω. This may be achieved by the use of additives in the resin or interlaminate conducting sheets, such as metal or carbon network.

6.9.2.2.3.14.3 The discharge resistance to earth as established by measurements shall not be higher than 10^7 Ω.

6.9.2.2.3.14.4 All components of the shell shall be electrically connected to each other and to the metal parts of the service and structural equipment of the tank. The electrical resistance between components and equipment in contact with each other shall not exceed 10 Ω.

6.9.2.2.3.14.5 The electrical surface-resistance and discharge resistance shall be measured initially on each manufactured tank or a specimen of the shell in accordance with the procedure recognized by the competent authority. In the event of damage to the shell, requiring repair, the electrical resistance shall be re-measured.

6.9.2.2.3.15 The tank shall be designed to withstand, without significant leakage, the effects of a full engulfment in fire for 30 minutes as specified by the test requirements in 6.9.2.7.1.5. Testing may be waived with the agreement of the competent authority, where sufficient proof can be provided by tests with comparable tank designs.

6.9.2.2.3.16 Construction process for FRP shells

6.9.2.2.3.16.1 Filament winding, hand layup, resin infusion or other appropriate composite production processes shall be used for construction of FRP shells.

6.9.2.2.3.16.2 The weight of the fibre reinforcement shall conform to that set forth in the procedure specification with a tolerance of +10 % and –0 %. One or more of the fibre types specified in 6.9.2.2.3.11 and in the procedure specification shall be used for reinforcement of shells.

6.9.2.2.3.16.3 The resin system shall be one of the resin systems specified in 6.9.2.2.3.10. No filler, pigment or dye additions shall be used which will interfere with the natural colour of the resin except as permitted by the procedure specification.

6.9.2.3 Design criteria

6.9.2.3.1 FRP shells shall be of a design capable of being stress-analysed mathematically or experimentally by resistance strain gauges or by other methods approved by the competent authority.

6.9.2.3.2 FRP shells shall be designed and constructed to withstand the test pressure. Specific provisions are laid down for certain substances in the applicable portable tank instruction indicated in column (10) of Table A of Chapter 3.2 and described in 4.2.5, or by a portable tank special provision indicated in column (11) of Table A of Chapter 3.2 and described in 4.2.5.3. The minimum wall thickness of the FRP shell shall not be less than that specified in 6.9.2.4.

6.9.2.3.3 At the specified test pressure the maximum tensile relative deformation measured in mm/mm in the shell shall not result in the formation of microcracks, and therefore not be greater than the first measured point of elongation based fracture or damage of the resin, measured during tensile tests prescribed under 6.9.2.7.1.2 (c).

6.9.2.3.4 For internal test pressure, external design pressure specified in 6.7.2.2.10, static loads specified in 6.7.2.2.12 and static gravity loads caused by the contents with the maximum density specified for the design and at maximum filling degree, failure criteria (FC) in the longitudinal direction, circumferential direction, and any other in-plane direction of the composite layup shall not exceed the following value:

$$FC \leq \frac{1}{K}$$

where:

$K = K_0 \times K_1 \times K_2 \times K_3 \times K_4 \times K_5$

where:

K shall have a minimum value of 4;

K_0 is a strength factor. For the general design the value for K_0 shall be equal to or more than 1.5. The value of K_0 shall be multiplied by a factor of two, unless the shell is provided with protection against damage consisting of a complete metal skeleton including longitudinal and transverse structural members;

K_1 is a factor related to the deterioration in the material properties due to creep and ageing. It shall be determined by the formula:

$$K_1 = \frac{1}{\alpha \cdot \beta}$$

where α is the creep factor and β is the ageing factor determined in accordance with 6.9.2.7.1.2 (e) and (f), respectively. When used in calculation, factors α and β shall be between 0 and 1.

Alternatively, a conservative value of $K_1 = 2$ may be applied for the purpose of undertaking the numerical validation exercise in 6.9.2.3.4 (this does not remove the need to perform testing to determine α and β);

K_2 is a factor related to the service temperature and the thermal properties of the resin, determined by the following equation, with a minimum value of 1:

$K_2 = 1.25 – 0.0125\ (HDT – 70)$,

where HDT is the heat distortion temperature of the resin, in °C;

K_3 is a factor related to the fatigue of the material; the value of $K_3 = 1.75$ shall be used unless otherwise agreed with the competent authority. For the dynamic design as outlined in 6.7.2.2.12 the value of $K_3 = 1.1$ shall be used;

K_4 is a factor related to resin curing and has the following values:

1.0 where curing is carried out in accordance with an approved and documented process, and the quality system described under 6.9.2.2.2 includes verification of degree of cure for each FRP portable tank using a direct measurement approach, such as differential scanning calor imetry (DSC) determined via ISO 11357-2:2016, as per 6.9.2.7.1.2 (h);

1.1 where thermoplastic resin forming or thermoset resin curing is carried out in accordance with an approved and documented process, and the quality system described under 6.9.2.2.2 includes verification of whichever is applicable formed thermoplastic resin characteristics or degree of cure of thermoset resin, for each FRP portable tank using an indirect measurement approach as per 6.9.2.7.1.2 (h), such as Barcol testing via ASTM D2583:2013-03 or EN 59:2016, HDT via ISO 75-1:2013, thermo-mechanical analysis (TMA) via ISO 11359-1:2014 or dynamic thermo-mechanical analysis (DMA) via ISO 6721-11:2019;

1.5 in other cases.

K_5 is a factor related to the portable tank instruction in 4.2.5.2.6:

1.0 for T 1 to T 19;

1.33 for T 20;

1.67 for T 21 to T 22.

A design validation exercise using numerical analysis and a suitable composite failure criterion is to be undertaken to verify that that the stresses in the plies in the shell are below the allowables. Suitable composite failure criteria include, but are not limited to, Tsai-Wu, Tsai-Hill, Hashin, Yamada-Sun, Strain Invariant Failure Theory, Maximum Strain, or Maximum Stress. Other relations for the strength criteria are allowed upon agreement with the competent authority. The method and results of this design validation exercise are to be submitted to the competent authority.

The allowables are to be determined using experiments to derive parameters required by the chosen failure criteria combined with factor of safety K, the strength values measured as per 6.9.2.7.1.2 (c), and the maximum elongation strain criteria prescribed in 6.9.2.3.5. The analysis of joints is to be undertaken in accordance with the allowables determined in 6.9.2.3.7 and the strength values measured as per 6.9.2.7.1.2 (g). Buckling is to be considered in accordance with 6.9.2.3.6. Design of openings and metallic inclusions is to be considered in accordance with 6.9.2.3.8.

6.9.2.3.5 At any of the stresses as defined in 6.7.2.2.12 and 6.9.2.3.4, the resulting elongation in any direction shall not exceed the value indicated in the following table or one tenth of the elongation at fracture of the resin determined by ISO 527-2:2012, whichever is lower.

Examples of known limits are presented in the table below.

Type of resin	Maximum strain in tension (%)
Unsaturated polyester or phenolic	0.2
Vinylester	0.25
Epoxy	0.3
Thermoplastic	See 6.9.2.3.3

6.9.2.3.6 For the external design pressure the minimum safety factor for linear buckling analysis of the shell shall be as defined in the applicable pressure vessel code but not less than three.

6.9.2.3.7 The adhesive bondlines and/or overlay laminates used in the joints, including the end joints, connection between the equipment and shell, the joints of the surge plates and the partitions with the shell shall be capable of withstanding the loads of 6.7.2.2.12, 6.9.2.2.3.1, 6.9.2.3.2, 6.9.2.3.4 and 6.9.2.3.6. In order to avoid concentrations of stresses in the overlay lamination, the applied taper shall not be steeper than 1:6.

The shear strength between the overlay laminate and the tank components to which it is bonded shall not be less than:

$$\tau = \gamma \frac{Q}{l} \leq \frac{\tau_R}{K}$$

where:

τ_R is the interlaminar shear strength according to ISO 14130:1997 and Cor 1:2003;

Q is the load per unit width of the interconnection;

K is the safety factor determined as per 6.9.2.3.4;

l is the length of the overlay laminate;

γ is the notch factor relating average joint stress to peak joint stress at failure initiation location.

Other calculation methods for the joints are allowed following approval with the competent authority.

6.9.2.3.8 Metallic flanges and their closures are permitted to be used in FRP shells, under design requirements of 6.7.2. Openings in the FRP shell shall be reinforced to provide at least the same safety factors against the static and dynamic stresses as specified in 6.7.2.2.12, 6.9.2.3.2, 6.9.2.3.4 and 6.9.2.3.6 as that for the shell itself. The number of openings shall be minimized. The axis ratio of oval-shaped openings shall be not more than 2.

If metallic flanges or componentry are integrated into the FRP shell using bonding, then the characterisation method stated in 6.9.2.3.7 shall apply to the joint between the metal and FRP. If the metallic flanges or componentry are fixed in an alternative fashion, e.g. threaded fastener connections, then the appropriate provisions of the relevant pressure vessel standard shall apply.

6.9.2.3.9 Check calculations of the strength of the shell shall be performed by finite element method simulating the shell layups, joints within FRP shell, joints between the FRP shell and the container frame, and openings. Treatment of singularities shall be undertaken using an appropriate method according to the applicable pressure vessel code.

6.9.2.4 Minimum wall thickness of the shell

6.9.2.4.1 Minimum thickness of the FRP shell shall be confirmed by check calculations of the strength of the shell considering strength requirements given in 6.9.2.3.4.

6.9.2.4.2 Minimum thickness of the FRP shell structural layers shall be determined in accordance with 6.9.2.3.4, however, in any case the minimum thickness of the structural layers shall be at least 3 mm.

6.9.2.5 Equipment components for portable tanks with FRP shell

Service equipment, bottom openings, pressure relief devices, gauging devices, supports, frameworks, lifting and tie-down attachments of portable tanks shall meet the requirements of 6.7.2.5 to 6.7.2.17. If any other metallic features are required to be integrated into the FRP shell, then the provisions of 6.9.2.3.8 shall apply.

6.9.2.6 Design approval

6.9.2.6.1 Design approval of FRP portable tanks shall be as per 6.7.2.18 requirements. The following additional requirements apply to FRP portable tanks.

6.9.2.6.2 The prototype test report for the purpose of the design approval shall additionally include the following:

(a) Results of the material tests used for FRP shell fabrication in accordance with 6.9.2.7.1 requirements;

(b) Results of the ball drop test in accordance with the requirements of 6.9.2.7.1.4.

(c) Results the fire resistance test in accordance with provisions of 6.9.2.7.1.5.

6.9.2.6.3 A service life inspection programme shall be established, which shall be a part of the operation manual, to monitor the condition of the tank at periodic inspections. The inspection programme shall focus on the critical stress locations identified in the design analysis performed under 6.9.2.3.4. The inspection method shall take into account the potential damage mode at the critical stress location (e.g. tensile stress or interlaminate stress). The inspection shall be a combination of visual and non-destructive testing (e.g. acoustic emissions, ultrasonic evaluation, thermographic). For heating elements, the service life inspection programme shall allow an examination of the shell or its representative locations to take into account the effects of overheating.

6.9.2.6.4 A representative prototype tank shall be subjected to tests as specified below. For this purpose, service equipment may be replaced by other items if necessary.

6.9.2.6.4.1 The prototype shall be inspected for compliance with the design type specification. This shall include an internal and external inspection and measurement of the main dimensions.

6.9.2.6.4.2 The prototype, equipped with strain gauges at all locations of high strain, as identified by the design validation exercise in accordance with 6.9.2.3.4, shall be subj ected to the following loads and the strain shall be recorded:

(a) Filled with water to the maximum filling degree. The measuring results shall be used to calibrate the design calculations according to 6.9.2.3.4;

(b) Filled with water to the maximum filling degree and subjected to static loads in all three directions mounted by the base corner castings without additional mass applied external to the shell. For comparison with the design calculation according to 6.9.2.3.4 the strains recorded shall be extrapolated in relation to the quotient of the accelerations required in 6.7.2.2.12 and measured;

(c) Filled with water and subjected to the specified test pressure. Under this load, the shell shall exhibit no visual damage or leakage.

The stress corresponding to the measured strain level shall not exceed the minimum factor of safety calculated in 6.9.2.3.4 under any of these loading conditions.

6.9.2.7 Additional provisions applicable to FRP portable tanks

6.9.2.7.1 *Material testing*

6.9.2.7.1.1 Resins

Resin tensile elongation shall be determined in accordance with ISO 527 -2:2012. The heat distortion temperature (HDT) of the resin shall be determined in accordance with ISO 75-1:2013.

6.9.2.7.1.2 Shell-samples

Prior to testing, all coatings shall be removed from the samples. If shell samples are not possible then parallel shell-samples may be used. The tests shall cover:

(a) The thickness of the laminates of the central shell wall and the ends;

(b) The mass content and composition of composite reinforcement by ISO 1172:1996 or ISO 14127:2008, as well as orientation and arrangement of reinforcement layers;

(c) The tensile strength, elongation at fracture and modulus of elasticity according to ISO 527-4:1997 or ISO 527-5:2009 for the circumferential and longitudinal directions of the shell. For areas of the FRP shell, tests shall be performed on representative laminates in accordance with ISO 527-4:1997 or ISO 527-5:2009, to permit evaluation of the suitability of safety f actor (K). A minimum of six specimens per measure of tensile strength shall be used, and the tensile strength shall be taken as the average minus two standard deviations;

(d) The bending deflection and strength established by the three-point or four-point bending test according to ISO 14125:1998 + Amd 1:2011 using a sample with a minimum width of 50 mm and a support distance of at least 20 times the wall thickness. A minimum of five specimens shall be used.

(e) The creep factor α determined by taking the average result of at least two specimens with the configuration described in (d), subject to creep in three-point or four-point bending, at the maximum design temperature nominated under 6.9.2.2.3.2, for a period of 1 000 hours. The following test is to be undertaken for each specimen:

(i) Place specimen into bending apparatus, unloaded, in oven set to maximum design temperature and allow to acclimatise for a period of not less than 60 minutes;

(ii) Load specimen bending in accordance with ISO 14125:1998 + Amd 1:2011 at flexural stress equal to the strength determined in (d) divided by four. Maintain mechanical load at maximum design temperature without interruptionfor not less than 1 000 hours;

(iii) Measure the initial deflection six minutes after full load application in (e) (ii). Specimen shall remain loaded in test rig;

(iv) Measure the final deflection 1 000 hours after full load application in (e) (ii); and

(v) Calculate the creep factor α by dividing the initial deflection from (e) (iii) by the final deflection from (e) (iv);

(f) The ageing factor β determined by taking the average result of at least two specimens with the configuration described in (d), subject to loading in static three-point or four-point bending, in conjunction with immersion in water at the maximum design temperature nominated under 6.9.2.2.3.2 for aperiod of 1 000 hours. The following test is to be undertaken for each specimen:

(i) Prior to testing or conditioning, specimens shall be dried in an oven at 80 °C for a period of 24 hours;

(ii) The specimen shall be loaded in three-point or four-point bending at ambient temperature, in accordance with ISO 14125:1998 + Amd 1:2011, at the flexural stress level equal to the strength determinedin (d) divided by four. Measure the initial deflection six minutes after full load application. Remove specimen from test rig;

(iii) Immerse unloaded specimen in water at the maximum design temperature for a period of not less than 1 000 hours without interruption to the water conditioning period. When conditioning period has lapsed, remove specimens, keep damp at ambient temperature, and complete (f) (iv) within three days;

(iv) The specimen shall be subject to second round of static loading, in a manner identical to (f) (ii). Measure the final deflection six minutes after full load application. Remove specimen from test rig; and

(v) Calculate the ageing factor β by dividing the initial deflection from (f) (ii) by the final deflection from (f) (iv);

(g) The interlaminar shear strength of the joints measured by testing representative samples in accordance with ISO 14130:1997;

(h) The efficiency of whichever is applicable of thermoplastic resin forming characteristics or thermoset resin cure and post-cure processes for laminates determined using one or more of the following methods:

(i) Direct measurement of formed thermoplastic resin characteristics or thermoset resin degree of cure: glass transition temperature (T_g) or melting temperature (T_m) determined using differential scanning calorimetry (DSC) via ISO 11357-2:2016; or

(ii) Indirect measurement of formed thermoplastic resin characteristics or thermoset resin degree of cure:

– HDT via ISO 75-1:2013;

– T_g or T_m using thermo-mechanical analysis (TMA) via ISO 11359-1:2014;

– Dynamic thermo-mechanical analysis (DMA) via ISO 6721-11:2019;

– Barcol testing via ASTM D2583:2013-03 or EN 59:2016.

6.9.2.7.1.3 The chemical compatibility of the liner and chemical contact surfaces of service equipment with the substances to be carried shall be demonstrated by one of the following methods. This demonstration shall account for all aspects of the compatibility of the materials of the shell and its equipment with the substances to be carried, including chemical deterioration of the shell, initiation of critical reactions of the contents and dangerous reactions between both.

(a) In order to establish any deterioration of the shell, representative samples taken from the shell, including any liners with welds, shall be subjected to the chemical compatibility test according to EN 977:1997 for a period of 1 000 hours at 50 °C or the maximum temperature at which a particular substance is approved for carriage. Compared with a virgin sample, the loss of strength and elasticity modulus measured by the bending test according to EN 978:1997 shall not exceed 25 %. Cracks, bubbles, pitting effects as well as separation of layers and liners and roughness shall not be acceptable;

(b) Certified and documented data of positive experiences on the compatibility of filling substances in question with the materials of the shell with which they come into contact at given temperatures, times and other relevant service conditions;

(c) Technical data published in relevant literature, standards or other sources, acceptable to the competent authority;

(d) Upon agreement with the competent authority other methods of chemical compatibility verification may be used.

6.9.2.7.1.4 Ball drop test as per EN 976-1:1997

The prototype shall be subjected to the ball drop test according to EN 976-1:1997, No. 6.6. No visible damage inside or outside the tank shall occur.

6.9.2.7.1.5 Fire resistance test

6.9.2.7.1.5.1 A representative prototype tank with its service and structural equipment in place and filled to 80 % of its maximum capacity with water, shall be exposed to a full engulfment in fire for 30 minutes, caused by an open heating oil pool fire or any other type of fire with the same effect. The fire shall be equivalent to a theoretical fire with a flame temperature of 800 °C, emissivity of 0.9 and to the tank a heat transfer coefficient of 10 W/(m^2K) and surface absorptivity of 0.8. A minimum net heat flux of 75 kW/m^2 shall be calibrated according to ISO 21843:2018. The dimensions of the pool shall exceed those of the tank by at least 50 cm to each side and the distance between fuel level and tank shall be between 50 cm and 80 cm. The rest of the tank below liquid level, including openings and closures, shall remain leakproof except for drips.

6.9.2.8 Inspection and testing

6.9.2.8.1 Inspection and testing of portable FRP tanks shall be carried out as per provisions of 6.7.2.19. In addition, welded thermoplastic liners shall be spark tested under a suitable standard, after pressure tests performed in accordance with the periodic inspections specified in 6.7.2.19.4.

6.9.2.8.2 In addition, the initial and periodic inspections shall follow the service life inspec tion programme and any associated inspection methods per 6.9.2.6.3.

6.9.2.8.3 The initial inspection and test shall verify that construction of the tank is made in accordance with the quality system required by 6.9.2.2.2.

6.9.2.8.4 Additionally, during inspection of the shell the position of the areas heated by heating elements shall be indicated or marked, be available on design drawings or shall be made visible by a suitable technique (e.g. infrared). Examination of the shell shall take into account the effects of overheating, corrosion, erosion, overpressure and mechanical overloading.

6.9.2.9 Retention of samples

Shell samples (e.g. from manhole cut out) for each tank manufactured shall be maintained for future inspection and shell verification for a period of five years from the date of the initial inspection and test and until successful completion of the required five-year periodic inspection.

6.9.2.10 Marking

6.9.2.10.1 The requirements of 6.7.2.20.1 apply to portable tanks with an FRP shell except those of 6.7.2.20.1 (f) (ii).

6.9.2.10.2 The information required in 6.7.2.20.1 (f) (i) shall be:

"Shell structural material: Fibre-reinforced plastic", the reinforcement fibre e.g. "Reinforcement: E-glass" and resin e.g. "Resin: Vinyl Ester".

6.9.2.10.3 Requirements of provision 6.7.2.20.2 apply to portable tank with an FRP shell."

Chapter 6.10

In Note 1 under the title, replace "for fibre-reinforced plastics tank-containers, see Chapter 6.9" by:

"for portable tanks with shells made of fibre-reinforced plastics (FRP) materials, see Chapter 6.9".

6.10.4 Before "every two and a half years", replace "at least" by:

"no later than".

PART 7

Chapter 7.1

7.1.4 Amend to read as follows:

"**7.1.4** (Deleted)".

Chapter 7.2

7.2.4 Add a new special provision **W 15** to read as follows:

"**W 15** IBCs shall be carried in closed wagons or in closed containers."

Chapter 7.3

7.3.1.13 Replace indents (a) to (i) with the following indents (a) to (c):

"(a) Bends, cracks or breaks in the structural or supporting members, or any damage to service or operational equipment that affect the integrity of the bulk container, container or of the body of the wagon;

(b) Any distortion of the overall configuration or any damage to lifting attachments or handling equipment interface features great enough to prevent proper alignment of handling equipment, mounting and securing on a chassis or wagon or vehicle, or insertion into ships' cells; and, where applicable

(c) Door hinges, door seals and hardware that are seized, twisted, broken, missing, or otherwise inoperative."

Chapter 7.4

7.4 Amend the first sentence to read as follows:

"Dangerous goods may only be carried in tanks when a portable tank instruction is shown in column (10) or when a tank code is shown in column (12) of Table A of Chapter 3.2, or when a competent authority has issued an approval in accordance with the conditions specified in 6.7.1.3."

In the second sentence, delete:

", 4.4".

Chapter 7.5

7.5.1.2 Amend the last sentence as follows:

– Replace "The interior and exterior" by:

"The interior and the exterior".

– Replace "packages" by:

"cargo".

Add the following new sub-paragraphs at the end:

"The cargo transport unit shall be checked to ensure it is structurally serviceable, that it is free of possible residues incompatible with the cargo and that the interior floor, walls and ceiling, where applicable, are free from protrusions or deterioration that could affect the cargo inside and that large containers are free of damages that affect the weather-tight integrity of the container, when required.

Structurally serviceable means that the cargo transport unit is free from major defects in its structural components. Structural components of cargo transport units for multi-modal purpose are e.g. top and bottom side rails, top and bottom end rails, corner posts, corner fittings and, for large containers, door sill, door header and floor cross members.

Major defects include:

(a) Bends, cracks or breaks in structural or supporting members and any damage to service or operational equipment that affect the integrity of the cargo transport unit;

(b) Any distortion of the over-all configuration or any damage to lifting attachments or handling equipment interface features great enough to prevent proper alignment of handling equipment, mounting and securing on a chassis or wagon or vehicle, or insertion into ships' cells; and, where applicable;

(c) Door hinges, door seals and hardware that are seized, twisted, broken, missing or otherwise inoperative."