



OTIF/RID/CE/GTP/2017/15

3 November 2017

Original: English/French

RID: 8th Session of the RID Committee of Experts' standing working group
(Utrecht, 20 to 24 November 2017)

Subject: Consolidated texts adopted by the Joint Meeting in 2016 and 2017 and by the
RID Committee of Experts' standing working group in November 2016

Information from the Secretariat

This document sets out the draft amendments to RID adopted by the Joint Meeting at its sessions in 2016 and 2017 and by the RID Committee of Experts' standing working group at its session in November 2016.

These draft amendments have been taken from the following documents:

- ECE/TRANS/WP.15/AC.1/142/Add.2, Annex IV (OTIF/RID/RC/2016-A/Add.2, Annex IV)
- ECE/TRANS/WP.15/AC.1/144, Annex III (OTIF/RID/RC/2016-B, Annex III),
- ECE/TRANS/WP.15/AC.1/146, Annex II (OTIF/RID/RC/2017-A, Annex II),
- ECE/TRANS/WP.15/AC.1/148/Add.1 (OTIF/RID/RC/2017-B/Add.1),
- ECE/TRANS/WP.15/AC.1/2017/26/Add.1 (OTIF/RID/RC/2017/26/Add.1),
- OTIF/RID/CE/GTP/2016-B Annex I.

TITLE PAGE

Replace "With effect from 1 January 2017" by:

"With effect from 1 January 2019".

Replace "This text replaces the requirements of 1 January 2015." by:

"This text replaces the requirements of 1 January 2017."

Replace "The following are RID Contracting States (as at 1 July 2016):" by:

"The following are RID Contracting States (as at 1 July 2018):".

[Under the RID Contracting States, insert:]

Table of Contents

2.1.5 becomes **2.1.6**.

2.1 Insert the following row:

"**2.1.5** Classification of articles as articles containing dangerous goods, n.o.s."

2.2.8.1 Amend to read as follows:

"**2.2.8.1** Definition, general provisions and criteria".

5.3.1.2 After "large containers,", insert:

"bulk containers,".

5.3.1.3 After "large containers,", insert:

"bulk containers,".

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

Chapter 1.1

1.1.3.1 Amend paragraph (b) to read as follows:

"(b) (Deleted)".

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

1.1.3.6.3 In the Table, for transport category 4, amend the information in column (2) to read as follows:

| | |
|------------|---|
| "Class 1: | 1.4S |
| Class 2: | UN Nos. 3537 to 3539 |
| Class 3: | UN No. 3540 |
| Class 4.1: | UN Nos. 1331, 1345, 1944, 1945, 2254, 2623 and 3541 |
| Class 4.2: | UN Nos. 1361 and 1362 packing group III and UN No. 3542 |
| Class 4.3: | UN No. 3543 |

Class 5.1: UN No. 3544
 Class 5.2: UN No. 3545
 Class 6.1: UN No. 3546
 Class 7: UN Nos. 2908 to 2911
 Class 8: UN No. 3547
 Class 9: UN Nos. 3268, 3499, 3508, 3509 and 3548
 and empty, uncleaned packagings having contained dangerous goods, except for those classified in transport category 0."

In the text after the Table, in the first indent, replace "gross mass in kilograms" by:

"total mass in kilograms of the articles without their packagings".

1.1.4.2.1 In the first sentence, after "containers," insert:

"bulk-containers,".

In paragraph (c), after "containers," insert:

"bulk-containers,".

1.1.4.3 In footnote 1, replace "DSC.1/Circ.12 and Corrigenda" by:

"CCC.1/Circ.3".

1.1.4.4.5 Amend the end to read as follows:

"..., the hazard identification number shall be entered in the transport document before the letters "UN" preceding the UN number (see 5.4.1.1.1 (a))."

Chapter 1.2

1.2.1 In the definition of "***Animal material***", replace "or animal foodstuffs" by:

"foodstuffs or feedstuffs derived from animals".

[The amendment to "***Bundle of cylinders***" in the German version does not apply to the English text.]

[The amendment to "***Cryogenic receptacle***" in the German version does not apply to the English text.]

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

In the definition of "***Control temperature***", replace "or the self-reactive substance" by:

", the self-reactive substance or the polymerizing substance".

[The amendment to "***Filling ratio***" in the German version does not apply to the English text.]

In the definition of "**GHS**", replace "sixth" by:

"seventh" and replace "ST/SG/AC.10/30/Rev.6" by

"ST/SG/AC.10/30/Rev.7".

Amend the definition of "**Hermetically closed tank**" to read as follows:

"**Hermetically closed tank**" means a *tank* that:

- is not equipped with *safety valves*, bursting discs, other similar safety devices or *vacuum valves* or *self-operating ventilation valves*; or
- is equipped with *safety valves* preceded by a bursting disc according to 6.8.2.2.10, but is not equipped with *vacuum valves* or *self-operating ventilation valves*.

A tank intended for the *carriage* of *liquid substances* with a *calculation pressure* of at least 4 bar or intended for the *carriage* of *solid substances* (powdery or granular) regardless of its *calculation pressure* is also considered hermetically closed if it:

- is equipped with *safety valves* preceded by a bursting disc according to 6.8.2.2.10 and *vacuum valves* or *self-operating ventilation valves*, in accordance with the requirements of 6.8.2.2.3; or,
- is not equipped with *safety valves*, bursting discs or other similar safety devices, but is equipped with *vacuum valves* or *self-operating ventilation valves*, in accordance with the requirements of 6.8.2.2.3."

[The amendment to "**Inspection body**" in the German version does not apply to the English text.]

In the definition of "**Manual of Tests and Criteria**", after "ST/SG/AC.10/11/Rev.6", insert:

"and Amend.1".

[The amendment to "**Pressure drum**" in the German version does not apply to the English text.]

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

In the definition of "**UN Model Regulations**", replace "nineteenth" by:

"twentieth" and replace "(ST/SG/AC.10/1/Rev.19)" by:

"(ST/SG/AC.10/1/Rev.20)".

Add the following new definitions in alphabetical order:

"**Diameter**" (for *shells* of *tanks*) means the internal diameter of the *shell*."

"**Protective lining**" (for *tanks*) means a lining or coating protecting the metallic *tank* material against the substances to be carried;

NOTE: This definition does not apply to a lining or coating used only to protect the substance to be carried."

"***Over-moulded cylinder***" means a *cylinder* intended for the *carriage* of *LPG* with a water capacity not exceeding 13 litres made of a coated welded steel inner cylinder with an over-moulded protective case made from cellular plastic, which is non-removable and bonded to the outer surface of the steel cylinder wall;".

Chapter 1.4

1.4.2.2.2 Add the following new sentence at the end:

"In the case of 1.4.2.2.1 (c) he may rely on what is certified in the "container/vehicle packing certificate" provided in accordance with 5.4.2."

Chapter 1.6

1.6.1.1 Replace "30 June 2017" by:

"30 June 2019".

Replace "31 December 2016" by:

"31 December 2018".

In footnote 15, replace "1 January 2015" by:

"1 January 2017".

1.6.1.25 Amend to read as follows:

"**1.6.1.25** (Deleted)".

1.6.1.37 Amend to read as follows:

"**1.6.1.37** (Deleted)".

1.6.1.39 Amend to read as follows:

"**1.6.1.39** (Deleted)".

1.6.1.40 Amend to read as follows:

"**1.6.1.40** (Deleted)".

1.6.1.42 Amend to read as follows:

"**1.6.1.42** (Deleted)".

1.6.1.43 Replace "240, 385 and 669" by:

"388 and 669".

Replace "the requirement of 2.2.9.1.7" by:

"the provisions of 2.2.9.1.7".

1.6.1 Add the following new transitional measures:

"1.6.1.44 Undertakings which participate in the carriage of dangerous goods only as consignors and which did not have to appoint a safety adviser on the basis of the provisions applicable until 31 December 2018 shall, by derogation from the provisions of 1.8.3.1 in force from 1 January 2019, appoint a safety adviser no later than 31 December 2022.

1.6.1.45 Contracting States may, until 31 December 2020, continue to issue training certificates for dangerous goods safety advisers conforming to the model applicable until 31 December 2018, instead of those conforming to the requirements of 1.8.3.18 applicable from 1 January 2019. Such certificates may continue in use to the end of their five-year validity.

1.6.1.46 The carriage of machinery or equipment not specified in RID and which happen to contain dangerous goods in their internal or operational equipment and which are therefore assigned to UN Nos 3363, 3537, 3538, 3539, 3540, 3541, 3542, 3543, 3544, 3545, 3546, 3547 or 3548, which was exempted from the provisions of RID according to 1.1.3.1 (b) applicable until 31 December 2018, may continue to be exempted from the provisions of RID until 31 December 2022 provided that measures have been taken to prevent any leakage of contents in normal conditions of carriage."

1.6.3.15 Amend to read as follows:

"1.6.3.15 (Deleted)".

1.6.3.42 Amend to read as follows:

"1.6.3.42 (Deleted)".

1.6.3 Add the following new transitional measures:

"1.6.3.47 Tank-wagons built before 1 July 2019, fitted with safety valves meeting the requirements in force up to 31 December 2018 but which do not meet the requirements of 6.8.3.2.9 last sub-paragraph concerning their design or protection applicable from 1 January 2019 may continue to be used until the next intermediate or periodic inspection after 1 January 2021.

1.6.3.48 Notwithstanding the requirements of special provision TU 42 of 4.3.5 applicable from 1 January 2019, tank-wagons with a shell constructed of aluminium alloy, including those with protective lining, which were used before 1 January 2019 for the carriage of substances with a pH value less than 5.0 or more than 8.0, may continue to be used for the carriage of such substances until 31 December 2026.

1.6.3.49 Tank-wagons constructed before 1 July 2019 in accordance with the requirements in force up to 31 December 2018 but which do not conform to the requirements of 6.8.2.2.10 concerning the nominal pressure of the bursting disc applicable as from 1 January 2019 may continue to be used.

1.6.3.50 Tank-wagons constructed before 1 July 2019 in accordance with the requirements of 6.8.2.2.3 in force up to 31 December 2018 but which however do not conform to the requirements of 6.8.2.2.3 last but one paragraph concerning the flame arresters on breather devices applicable from 1 January 2019 may continue to be used.

- 1.6.3.51** Tank-wagons constructed before 1 July 2019 in accordance with the requirements in force up to 31 December 2018 but which do not however conform to the requirements of 6.8.2.1.23 concerning the check of the welds in the knuckle area of the tank ends applicable as from 1 January 2019 may continue to be used.
- 1.6.3.52** Tank-wagons constructed before 1 July 2019 in accordance with the requirements in force up to 31 December 2018 but which however do not conform to the requirements of 6.8.2.2.11 applicable from 1 January 2019 may continue to be used.
- 1.6.3.53** Type approval certificates issued for tank-wagons and battery-wagons before 1 July 2019 in accordance with the requirements of 6.8.2.3.1 in force up to 31 December 2018 but which do not, however, conform to the requirements of 6.8.2.3.1 to show the distinguishing sign used on vehicles in international road traffic¹⁸ of the state whose territory the approval was granted and a registration number applicable as from 1 January 2019 may continue to be used.

¹⁸ Distinguishing sign of the state of registration used on motor vehicles and trailers in international road traffic, e.g. in accordance with the Geneva Convention on Road Traffic of 1949 or the Vienna Convention on Road Traffic of 1968."

Renumber footnotes 18 to 22 as footnotes 19 to 23.

- 1.6.4.15** Amend to read as follows:
- "**1.6.4.15** (Deleted)".
- 1.6.4.38** Amend to read as follows:
- "**1.6.4.38** (Deleted)".
- 1.6.4.44** Amend to read as follows:
- "**1.6.4.44** (Deleted)".
- 1.6.4.45** Amend to read as follows:
- "**1.6.4.45** (Deleted)".
- 1.6.4** Add the following new transitional measures:
- "**1.6.4.49** Tank-containers built before 1 July 2019, fitted with safety valves meeting the requirements in force up to 31 December 2018 but which do not meet the requirements of 6.8.3.2.9 last sub-paragraph concerning their design or protection applicable from 1 January 2019 may continue to be used until the next intermediate or periodic inspection after 1 January 2021.
- 1.6.4.50** Notwithstanding the requirements of special provision TU 42 of 4.3.5 applicable from 1 January 2019, tank-containers with a shell constructed of aluminium alloy, including those with a protective lining, which were used before 1 January 2019 for the carriage of substances with a pH value less than 5.0 or more than 8.0, may continue to be used for the carriage of such substances until 31 December 2026.
- 1.6.4.51** Tank-containers constructed before 1 July 2019 in accordance with the requirements in force up to 31 December 2018 but which do not conform to the requirements of 6.8.2.2.10 concerning the nominal pressure of the bursting disc applicable as from 1 January 2019 may continue to be used.

- 1.6.4.52** Tank-containers constructed before 1 July 2019 in accordance with the requirements of 6.8.2.2.3 in force up to 31 December 2018 but which however do not conform to the requirements of 6.8.2.2.3 last paragraph concerning the flame arresters on breather devices applicable from 1 January 2019 may continue to be used.
- 1.6.4.53** Tank-containers constructed before 1 July 2019 in accordance with the requirements in force up to 31 December 2018 but which do not however conform to the requirements of 6.8.2.1.23 concerning the check of the welds in the knuckle area of the tank ends applicable as from 1 January 2019 may still be used.
- 1.6.4.54** Tank-containers constructed before 1 July 2019 in accordance with the requirements in force up to 31 December 2018 but which however do not conform to the requirements of 6.8.2.2.11 applicable from 1 January 2019 may continue to be used."

Chapter 1.7

- 1.7.1.1** [The amendment in the French and German version does not apply to the English text.]
- 1.7.1.2** [The amendment in the French version does not apply to the English text.]
- 1.7.5** In the first sentence, replace "subsidiary risk" by:
"subsidiary hazard".

Chapter 1.8

- 1.8.1.3** [The amendment in the German version does not apply to the English text.]
- 1.8.3.1** Before "carriage", insert:
"consigning,".
- 1.8.3.2** In paragraph (b), replace "smaller than those" by:
"not exceeding those".
- 1.8.3.3** In the ninth indent of the third subparagraph, before "carriage", insert:
"consigning,".
- [The amendment to the thirteenth indent in the German version does not apply to the English text.]
- 1.8.3.18** In the eighth entry of the certificate ("Valid until ..."), before "packing", insert:
"consigning,".
- 1.8.3** Insert the following new sub-section **1.8.3.19**:
- "1.8.3.19 Extension of the certificate**
- Where an adviser extends the scope of his certificate during its period of validity by meeting the requirements of 1.8.3.16.2, the period of validity of a new certificate shall remain that of the previous certificate."

Chapter 1.10

1.10.3 After the heading, insert the following note:

"NOTE: In addition to the security provisions of RID, competent authorities may implement further security provisions for reasons other than safety during carriage (see also Article 3 of Appendix C to COTIF). In order to not impede international and multimodal carriage by different explosives security marks, it is recommended that such marks be formatted consistent with an internationally harmonized standard (e.g. European Union Commission Directive 2008/43/EC)."

1.10.3.1.2 In the Table, in the column for "Substance or article", amend the text of the first line for Class 2 to read as follows:

"Flammable, non-toxic gases (classification codes including only letters F or FC)".

1.10.3.1.5 Replace "subsidiary risk" by:

"subsidiary hazard".

Chapter 2.1

2.1.2.1 In the last sentence, replace "subsidiary risk(s)" by:

"subsidiary hazard(s)" and replace "those risks" by:

"those hazards".

2.1.2.5 In the second and in the third sentence, replace "subsidiary risk" by:

"subsidiary hazard".

2.1.2.8 [The amendment to the first indent in the French version does not apply to the English text.]

In the second indent, replace "subsidiary risk(s)" by:

"subsidiary hazard(s)".

2.1.3.3 In the last paragraph, replace "subsidiary risks" by:

"subsidiary hazards".

[2.1.3.5.5 Amend the footnote 1 to read as follows:

² Such legislation is for instance the Commission Decision No 2014/955/EU of 18 December 2014 amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European Parliament and of the Council (Official Journal of the European Union No. L 370 of 30 December 2014, pages 44 to 86) and Commission Regulation (EU) No 1357/2014 of 18 December 2014 replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives (Official Journal of the European Union No. L 365 of 19 December 2014, pages 89 to 96).]

2.1.3.7 In the first sentence, replace "subsidiary risk" by:

"subsidiary hazard".

At the end, add:

"For solid ammonium nitrate based fertilizers, see also 2.2.51.2.2, thirteenth and fourteenth indent and Manual of Tests and Criteria, Part III, Section 39."

2.1.4 Add the following new sub-section **2.1.4.3**:

"2.1.4.3 *Samples of energetic materials for testing purposes*

2.1.4.3.1 Samples of organic substances carrying functional groups listed in Tables A6.1 and/or A6.3 in Appendix 6 (Screening Procedures) of the Manual of Tests and Criteria may be carried under UN No. 3224 (self-reactive solid type C) or UN No. 3223 (self-reactive liquid type C), as applicable, of Class 4.1 provided that:

(a) The samples do not contain any:

- Known explosives;
- Substances showing explosive effects in testing;
- Compounds designed with the view of producing a practical explosive or pyrotechnic effect; or
- Components consisting of synthetic precursors of intentional explosives;

(b) For mixtures, complexes or salts of inorganic oxidizing substances of Class 5.1 with organic material(s), the concentration of the inorganic oxidizing substance is:

- Less than 15%, by mass, if assigned to packing group I (high hazard) or II (medium hazard); or
- Less than 30%, by mass, if assigned to packing group III (low hazard);

(c) Available data do not allow a more precise classification;

(d) The sample is not packed together with other goods; and

(e) The sample is packed in accordance with packing instruction P 520 and special packing provisions PP 94 or PP 95 of 4.1.4.1, as applicable."

2.1.5 becomes **2.1.6**.

2.1 Insert the following new section **2.1.5**:

"2.1.5 Classification of articles as articles containing dangerous goods, n.o.s.

NOTE 1: For articles which do not have an existing proper shipping name and which contain only dangerous goods within the permitted limited quantity amounts specified in Column (7a) of Table A of Chapter 3.2, see UN No. 3363 and special provisions 301 and 672 of Chapter 3.3.

[2: The term "existing proper shipping name" in Note 1 above excludes specific n.o.s. entries for UN Nos. 3537 to 3548.]

2.1.5.1 Articles containing dangerous goods may be classified as otherwise provided by RID under the proper shipping name for the dangerous goods they contain or in accordance with this section.

For the purposes of this section "article" means machinery, apparatus or other devices containing one or more dangerous goods (or residues thereof) that are an integral element of the article, necessary for its functioning and that cannot be removed for the purpose of carriage.

An inner packaging shall not be an article.

2.1.5.2 Such articles may in addition contain batteries. Lithium batteries that are integral to the article shall be of a type proven to meet the testing requirements of the Manual of Tests and Criteria, part III, sub-section 38.3, except when otherwise specified by RID (e.g. for pre-production prototype articles containing lithium batteries or for a small production run, consisting of not more than 100 such articles).

2.1.5.3 This section does not apply to articles for which a more specific proper shipping name already exists in Table A of Chapter 3.2.

2.1.5.4 This section does not apply to dangerous goods of Class 1, Class 6.2, Class 7 or radioactive material contained in articles.

2.1.5.5 Articles containing dangerous goods shall be assigned to the appropriate Class determined by the hazards present using, where applicable, the Table of precedence of hazard in 2.1.3.10 for each of the dangerous goods contained in the article. If dangerous goods classified as Class 9 are contained within the article, all other dangerous goods present in the article shall be considered to present a higher hazard.

2.1.5.6 Subsidiary hazards shall be representative of the primary hazards posed by the other dangerous goods contained within the article. When only one item of dangerous goods is present in the article, the subsidiary hazard(s), if any, shall be the subsidiary hazard(s) identified by the subsidiary hazard label(s) in column (5) of Table A of Chapter 3.2. If the article contains more than one item of dangerous goods and these could react dangerously with one another during carriage, each of the dangerous goods shall be enclosed separately (see 4.1.1.6)."

Chapter 2.2

Section 2.2.1

2.2.1.1.1 In paragraph (c), replace "practical effect by explosion or a pyrotechnic effect" by:
"practical explosive or pyrotechnic effect".

2.2.1.1.5 For "Division 1.4", in the first sentence, replace "risk" by:
"hazard".

For "Division 1.6", in the Note, replace "risk" by:
"hazard".

[The other amendments in the French version do not apply to the English text.]

2.2.1.1.6 For "Compatibility group L", replace "risk" by:

"hazard".

2.2.1.1.7.1 In paragraph (a), replace "giving a positive result when tested in one of the HSL Flash composition tests in Appendix 7 of the Manual of Tests and Criteria" by:

"containing flash composition (see Note 2 of 2.2.1.1.7.5)".

2.2.1.1.7.5 Amend Note 2 to read as follows:

"2: "Flash composition" in this Table refers to pyrotechnic substances in powder form or as pyrotechnic units as presented in the fireworks that are used in waterfalls, or to produce an aural effect or used as a bursting charge, or propellant charge unless:

- (a) The time taken for the pressure rise in the HSL Flash Composition Test in Appendix 7 of the Manual of Tests and Criteria is demonstrated to be more than 6 ms for 0.5 g of pyrotechnic substance; or
- (b) The pyrotechnic substance gives a negative "-" result in the US Flash Composition Test in Appendix 7 of the Manual of Tests and Criteria."

[The first amendment to the Table in the French version does not apply to the English text.]

In the Table, amend the entry for "waterfall" as follows:

- For classification 1.1G, amend the entry under "Specification" to read:
"containing flash composition regardless of the results of Test Series 6 (see 2.2.1.1.7.1 (a))".
- For classification 1.3G, amend the entry under "Specification" to read:
"not containing flash composition".

2.2.1.1.8.2 In Note 2, at the end, replace "risk" by:

"hazard".

2.2.1.1.9.4 [The amendments to paragraphs (e) and (j) in the German version do not apply to the English text.]

2.2.1.4 [The amendments in the French version do not apply to the English text.]

Section 2.2.2

2.2.2.1.5 For "Toxic gases", in the Note, replace "risk" by:

"hazard".

For "Corrosive gases", in the first and second sentences, replace "risk" by:

"hazard".

2.2.2.3 In the Table, amend the entry for "Other articles containing gas under pressure" as follows:

– For classification code "6A", add:

"3538 ARTICLES CONTAINING NON-FLAMMABLE, NON TOXIC GAS, N.O.S."

– For "6F", add:

"3537 ARTICLES CONTAINING FLAMMABLE GAS, N.O.S."

– At the end of the Table, add the following new entry

"

| | |
|------------|--|
| 6 T | 3539 ARTICLES CONTAINING TOXIC GAS, N.O.S. |
|------------|--|

"

Section 2.2.3

2.2.3.1.2 For "Subdivision F", replace "risk" by:

"hazard".

2.2.3.1.3 In the last paragraph, replace "risk(s)" by "hazard(s)" (twice).

2.2.3.1.6 Replace "risk" by:

"hazard".

2.2.3.3 For "F", replace "risk" by:

"hazard".

For "FT2", in the Note after the entries, replace "risks" by:

"hazards".

In the list of collective entries, for "Flammable liquids and articles containing such substances", for "F3", add:

"3540 ARTICLES CONTAINING FLAMMABLE LIQUID, N.O.S."

Section 2.2.41

2.2.41.1.2 For "F", replace "risk" by:

"hazard".

For "D", replace "risk" by:

"hazard".

2.2.41.1.7 Replace "risk" by:

"hazard".

2.2.41.1.12 At the end of the first paragraph, replace "risks" by:

"hazards".

2.2.41.3 In the list of collective entries, for "Flammable solids" and for "Solid desensitized explosives", replace "without subsidiary risk" by:

"without subsidiary hazard".

In the list of collective entries, for "Flammable solids", for "F4", add:

"3541 ARTICLES CONTAINING FLAMMABLE SOLID, N.O.S.".

2.2.41.4 At the end of the first paragraph, replace "4.2.5.2" by:

"4.2.5.2.6".

At the end, add a new sentence to read as follows:

"The formulations listed in packing instruction IBC 520 of 4.1.4.2 and in portable tank instruction T 23 of 4.2.5.2.6 may also be carried packed in accordance with packing method OP8 of packing instruction P 520 of 4.1.4.1."

In the Table, insert a new entry to read as follows:

| Self-reactive substance | Concentration (%) | Packing method | UN generic entry | Remarks |
|--|--------------------|----------------|------------------|---------|
| PHOSPHOROTHIOIC ACID, O-[(CYANOPHENYL METHYLENE) AZANYL] O,O-DIETHYL ESTER | 82 – 91 (Z isomer) | OP8 | 3227 | (10) |

In remark (2) after the Table, replace "risk" by:

"hazard".

After the Table, add a new remark (10) to read as follows:

"(10) This entry applies to the technical mixture in n-butanol within the specified concentration limits of the (Z) isomer."

Section 2.2.42

2.2.42.1.2 Amend the title of subdivision "S" to read:

"Substances liable to spontaneous combustion, without subsidiary hazard".

For "S Substances liable to spontaneous combustion, without subsidiary hazard", insert the following new entry:

"S6 Articles".

2.2.42.1.5 In Note 3, replace "risks" by:

"hazards".

2.2.42.1.6 Replace "risk" by:

"hazard".

2.2.42.3 In the list of collective entries, for "S", replace "risk" by:

"hazard".

In the list of collective entries, for "S Substances liable to spontaneous combustion, without subsidiary hazard", insert the following new entry:

"

| | | |
|-----------------|-----------|---|
| Articles | S6 | 3542 ARTICLES CONTAINING A SUBSTANCE LIABLE TO SPONTANEOUS COMBUSTION, N.O.S. |
|-----------------|-----------|---|

"

Section 2.2.43

2.2.43.1.2 In the title of subdivision "W" replace "without subsidiary risk" by:

"without subsidiary hazard".

2.2.43.1.5 In the Note, replace "risks" by:

"hazards".

2.2.43.1.6 Replace "risk" by:

"hazard".

2.2.43.3 In the list of collective entries, for "W", replace "risk" by:

"hazard".

For "Substances which, in contact with water, emit flammable gases, without subsidiary hazard", for "articles W3", add the following new entry:

"3543 ARTICLES CONTAINING A SUBSTANCE WHICH EMITS FLAMMABLE GAS IN CONTACT WITH WATER, N.O.S."

Section 2.2.51

2.2.51.1.2 In the title of subdivision "O" replace "without subsidiary risk" by:

"without subsidiary hazard".

2.2.51.1.3 Replace "2.2.51.1.9" by:

"2.2.51.1.10".

At the end of the second sentence, add:

"or, for solid ammonium nitrate based fertilizers, Section 39 subject to the restrictions of 2.2.51.2.2, thirteenth indent".

2.2.51.1.4 Replace "risk" by:

"hazard".

2.2.51.1.5 In the first sentence, after "Section 34.4", insert:

"or, for solid ammonium nitrate based fertilizers, Section 39,".

Replace "2.2.51.1.9" by:

"2.2.51.1.10".

2.2.51.1 Insert a new **2.2.51.1.7** to read as follows:

"2.2.51.1.7 By exception, solid ammonium nitrate based fertilizers shall be classified in accordance with the procedure as set out in the Manual of Tests and Criteria, Part III, Section 39."

2.2.51.1.7 –

2.2.51.1.9 become **2.2.51.1.8 – 2.2.51.1.10**.

2.2.51.2.2 Replace the thirteenth indent by the following indents:

– ammonium nitrate based fertilizers with compositions that lead to exit boxes 4, 6, 8, 15, 31, or 33 of the flowchart of paragraph 39.5.1 of the Manual of Tests and Criteria, Part III, Section 39, unless they have been assigned a suitable UN number in Class 1;

– ammonium nitrate based fertilizers with compositions that lead to exit boxes 20, 23 or 39 of the flowchart of paragraph 39.5.1 of the Manual of Tests and Criteria, Part III, Section 39, unless they have been assigned a suitable UN number in Class 1 or, provided that the suitability for carriage has been demonstrated and that this has been approved by the competent authority, in Class 5.1 other than UN No. 2067;".

2.2.51.3 In the list of collective entries, for "O", replace:

"risk" by "hazard".

For "O Oxidizing substances and articles containing such substances, without subsidiary hazard", for "articles O3", add the following new entry:

"3544 ARTICLES CONTAINING OXIDIZING SUBSTANCE, N.O.S."

Section 2.2.52

2.2.52.1.7 At the end of the first paragraph, replace "risks" by:

"hazards".

"2.2.52.1.15 –

2.2.52.1.18 (Reserved)" to be replaced by:

"2.2.52.1.15 –

2.2.52.1.16 (Reserved)".

2.2.52.3 At the end of P1, add the following new entry:

"3545 ARTICLES CONTAINING ORGANIC PEROXIDE, N.O.S."

At the end of P2, add the following new entry:

"3545 ARTICLES CONTAINING ORGANIC PEROXIDE, N.O.S."

2.2.52.4

At the end of the first paragraph, replace "4.2.5.2" by:
"4.2.5.2.6".

At the end of the first paragraph, add a new sentence to read as follows:

"The formulations listed in packing instruction IBC 520 of 4.1.4.2 and in portable tank instruction T 23 of 4.2.5.2.6 may also be carried packed in accordance with packing method OP8 of packing instruction P 520 of 4.1.4.1."

In the Table header, last column, replace "risks" by:

"hazards".

In the Table, insert the following new entries:

| Organic peroxide | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|--|------|-----|------|-----|-----|-----|------|------------|
| DIISOBUTYRYL PEROXIDE (as a stable dispersion in water) | ≤ 42 | | | | | OP8 | 3119 | prohibited |
| DI-(4-TERT-BUTYLCYCLO- HEXYL) PEROXYDICARBON- ATE (as a paste) | ≤ 42 | | | | | OP7 | 3116 | prohibited |
| 1-PHENYLETHYL HYDRO- PEROXIDE | ≤ 38 | | ≥ 62 | | | OP8 | 3109 | |

In Table Notes 3, 13, 18 and 27, replace "risk" by:

"hazard".

Section 2.2.61

2.2.61.1.2 In the title of subdivision "T" replace "without subsidiary risk" by:

"without subsidiary hazard".

For "Toxic substances without subsidiary hazard" add the following new subdivision:

"T10 Articles".

2.2.61.1.7.2 Replace "(see 2.2.8.1.5)" by:

"(see 2.2.8.1.4.5)".

2.2.61.1.11 In the second sentence, replace "risks" by:

"hazards".

2.2.61.1.11.2 Replace "risks" by:

"hazards".

2.2.61.1.12 Replace "risk" by:

"hazard".

2.2.61.3 In the list of collective entries, in all the headings, replace "risk(s)" by:

"hazard(s)".

In the list of collective entries, for "Toxic substances without subsidiary hazard", add the following new row:

"

| | | |
|-----------------|------------|---|
| Articles | T10 | 3546 ARTICLES CONTAINING TOXIC SUBSTANCE, N.O.S. |
|-----------------|------------|---|

"

In the list of collective entries, for "Toxic substances with subsidiary hazard(s)", for TF3, add:

"3535 TOXIC SOLID, FLAMMABLE, INORGANIC, N.O.S."

Section 2.2.62

2.2.62.1.3 In the definition of "*Patient specimens*", after "*Patient specimens are*" replace "human or animal materials," by:

"those".

2.2.62.1.12.2 Amend to read as follows:

"2.2.62.1.12.2 (Deleted)".

Section 2.2.8

2.2.8 Amend to read as follows:

"2.2.8 Class 8: Corrosive substances

2.2.8.1 Definition, general provisions and criteria

2.2.8.1.1 *Corrosive substances* are substances which, by chemical action, will cause irreversible damage to the skin, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport. The heading of this class also covers other substances which form a corrosive liquid only in the presence of water, or which produce corrosive vapour or mist in the presence of natural moisture of the air.

2.2.8.1.2 For substances and mixtures that are corrosive to skin, general classification provisions are provided in 2.2.8.1.4. Skin corrosion refers to the production of irreversible damage to the skin, namely, visible necrosis through the epidermis and into the dermis occurring after exposure to a substance or mixture.

2.2.8.1.3 Liquids and solids which may become liquid during carriage, which are judged not to be skin corrosive shall still be considered for their potential to cause corrosion to certain metal surfaces in accordance with the criteria in 2.2.8.1.5.3 (c) (ii).

2.2.8.1.4 General classification provisions

2.2.8.1.4.1 [Text of existing 2.2.8.1.2]

- 2.2.8.1.4.2** Substances and mixtures of Class 8 are divided among the three packing groups according to their degree of danger in carriage:
- (a) Packing group I: very dangerous substances and mixtures;
 - (b) Packing group II: substances and mixtures presenting medium danger;
 - (c) Packing group III: substances and mixtures that present minor danger.
- 2.2.8.1.4.3** Allocation of substances listed in Table A of Chapter 3.2 to the packing groups in Class 8 has been made on the basis of experience taking into account such additional factors as inhalation risk (see 2.2.8.1.4.5) and reactivity with water (including the formation of dangerous decomposition products).
- 2.2.8.1.4.4** New substances and mixtures can be assigned to packing groups on the basis of the length of time of contact necessary to produce irreversible damage of intact skin tissue in accordance with the criteria in 2.2.8.1.5. Alternatively, for mixtures, the criteria in 2.2.8.1.6 can be used.
- 2.2.8.1.4.5** A substance or mixture meeting the criteria of Class 8 having an inhalation toxicity of dusts and mists (LC₅₀) in the range of packing group I, but toxicity through oral ingestion or dermal contact only in the range of packing group III or less, shall be allocated to Class 8 (see 2.2.61.1.7.2).
- 2.2.8.1.5 Packing group assignment for substances and mixtures**
- 2.2.8.1.5.1** Existing human and animal data including information from single or repeated exposure shall be the first line of evaluation, as they give information directly relevant to effects on the skin.
- 2.2.8.1.5.2** In assigning the packing group in accordance with 2.2.8.1.4.4, account shall be taken of human experience in instances of accidental exposure. In the absence of human experience the assignment shall be based on data obtained from experiments in accordance with OECD Test Guideline 404⁶ or 435⁷. A substance or mixture which is determined not to be corrosive in accordance with OECD Test Guideline 430⁸ or 431⁹ may be considered not to be corrosive to skin for the purposes of RID without further testing.
- ⁶ OECD Guideline for the testing of chemicals No. 404 "Acute Dermal Irritation/Corrosion" 2015.
- ⁷ OECD Guideline for the testing of chemicals No. 435 "In Vitro Membrane Barrier Test Method for Skin Corrosion" 2015.
- ⁸ OECD Guideline for the testing of chemicals No. 430 "In Vitro Skin Corrosion: Transcutaneous Electrical Resistance Test (TER)" 2015.
- ⁹ OECD Guideline for the testing of chemicals No. 431 "In Vitro Skin Corrosion: Human Skin Model Test" 2015.
- 2.2.8.1.5.3** Packing groups are assigned to corrosive substances in accordance with the following criteria (see Table 2.2.8.1.5.3):
- (a) Packing group I is assigned to substances that cause irreversible damage of intact skin tissue within an observation period up to 60 minutes starting after the exposure time of three minutes or less;

- (b) Packing group II is assigned to substances that cause irreversible damage of intact skin tissue within an observation period up to 14 days starting after the exposure time of more than three minutes but not more than 60 minutes;
- (c) Packing group III is assigned to substances that:
- (i) Cause irreversible damage of intact skin tissue within an observation period up to 14 days starting after the exposure time of more than 60 minutes but not more than 4 hours; or
 - (ii) Are judged not to cause irreversible damage of intact skin tissue but which exhibit a corrosion rate on either steel or aluminium surfaces exceeding 6.25 mm a year at a test temperature of 55 °C when tested on both materials. For the purposes of testing steel, type S235JR+CR (1.0037 resp. St 37-2), S275J2G3+CR (1.0144 resp. St 44-3), ISO 3574 or Unified Numbering System (UNS) G10200 or a similar type or SAE 1020, and for testing aluminium, non-clad, types 7075-T6 or AZ5GU-T6 shall be used. An acceptable test is prescribed in the Manual of Tests and Criteria, Part III, Section 37.

NOTE: Where an initial test on either steel or aluminium indicates the substance being tested is corrosive the follow up test on the other metal is not required.

Table 2.2.8.1.5.3: Table summarizing the criteria in 2.2.8.1.5.3

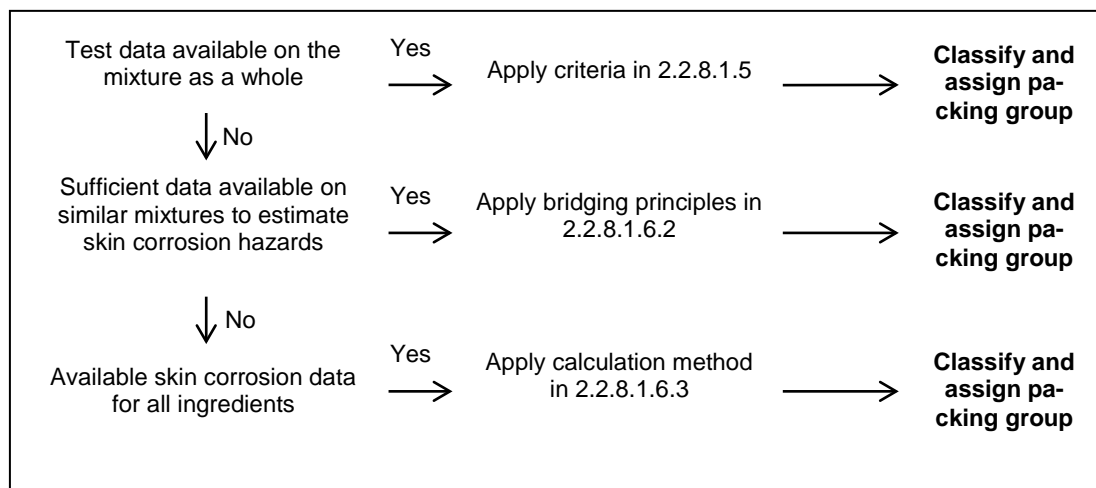
| Packing group | Exposure time | Observation period | Effect |
|---------------|------------------|--------------------|--|
| I | ≤ 3 min | ≤ 60 min | Irreversible damage of intact skin |
| II | > 3 min ≤ 1 h | ≤ 14 d | Irreversible damage of intact skin |
| III | > 1 h ≤ 4 h | ≤ 14 d | Irreversible damage of intact skin |
| III | – | – | Corrosion rate on either steel or aluminium surfaces exceeding 6.25 mm a year at a test temperature of 55 °C when tested on both materials |

2.2.8.1.6 Alternative packing group assignment methods for mixtures: Step-wise approach

2.2.8.1.6.1 General provisions

For mixtures it is necessary to obtain or derive information that allows the criteria to be applied to the mixture for the purpose of classification and assignment of packing groups. The approach to classification and assignment of packing groups is tiered, and is dependent upon the amount of information available for the mixture itself, for similar mixtures and/or for its ingredients. The flow chart of Figure 2.2.8.1.6.1 below outlines the process to be followed.

Figure 2.2.8.1.6.1: Step-wise approach to classify and assign packing group of corrosive mixtures



2.2.8.1.6.2 Bridging principles

Where a mixture has not been tested to determine its skin corrosion potential, but there are sufficient data on both the individual ingredients and similar tested mixtures to adequately classify and assign a packing group for the mixture, these data will be used in accordance with the following bridging principles. This ensures that the classification process uses the available data to the greatest extent possible in characterizing the hazards of the mixture.

- (a) **Dilution:** If a tested mixture is diluted with a diluent which does not meet the criteria for Class 8 and does not affect the packing group of other ingredients, then the new diluted mixture may be assigned to the same packing group as the original tested mixture.

NOTE: In certain cases, diluting a mixture or substance may lead to an increase in the corrosive properties. If this is the case, this bridging principle cannot be used.

- (b) **Batching:** The skin corrosion potential of a tested production batch of a mixture can be assumed to be substantially equivalent to that of another untested production batch of the same commercial product when produced by or under the control of the same manufacturer, unless there is reason to believe there is significant variation such that the skin corrosion potential of the untested batch has changed. If the latter occurs, a new classification is necessary.
- (c) **Concentration of mixtures of packing group I:** If a tested mixture meeting the criteria for inclusion in packing group I is concentrated, the more concentrated untested mixture may be assigned to packing group I without additional testing.
- (d) **Interpolation within one packing group:** For three mixtures (A, B and C) with identical ingredients, where mixtures A and B have been tested and are in the same skin corrosion packing group, and where untested mixture C has the same Class 8 ingredients as mixtures A and B but has concentrations of Class 8 ingredients intermediate to the concentrations in mixtures A and B, then mixture C is assumed to be in the same skin corrosion packing group as A and B.

- (e) Substantially similar mixtures: Given the following:
- (i) Two mixtures: (A+B) and (C+B);
 - (ii) The concentration of ingredient B is the same in both mixtures;
 - (iii) The concentration of ingredient A in mixture (A+B) equals the concentration of ingredient C in mixture (C+B);
 - (iv) Data on skin corrosion for ingredients A and C are available and substantially equivalent, i.e. they are the same skin corrosion packing group and do not affect the skin corrosion potential of B.

If mixture (A+B) or (C+B) is already classified based on test data, then the other mixture may be assigned to the same packing group.

2.2.8.1.6.3 Calculation method based on the classification of the substances

2.2.8.1.6.3.1 Where a mixture has not been tested to determine its skin corrosion potential, nor is sufficient data available on similar mixtures, the corrosive properties of the substances in the mixture shall be considered to classify and assign a packing group.

Applying the calculation method is only allowed if there are no synergistic effects that make the mixture more corrosive than the sum of its substances. This restriction applies only if packing group II or III would be assigned to the mixture.

2.2.8.1.6.3.2 When using the calculation method, all Class 8 ingredients present at a concentration of $\geq 1\%$ shall be taken into account, or $< 1\%$ if these ingredients are still relevant for classifying the mixture to be corrosive to skin.

2.2.8.1.6.3.3 To determine whether a mixture containing corrosive substances shall be considered a corrosive mixture and to assign a packing group, the calculation method in the flow chart in Figure 2.2.8.1.6.3 shall be applied.

2.2.8.1.6.3.4 When a specific concentration limit (SCL) is assigned to a substance following its entry in Table A of Chapter 3.2 or in a special provision, this limit shall be used instead of the generic concentration limits (GCL). This appears where 1% is used in the first step for the assessment of the packing group I substances, and where 5% is used for the other steps respectively in Figure 2.2.8.1.6.3.

2.2.8.1.6.3.5 For this purpose, the summation formula for each step of the calculation method shall be adapted. This means that, where applicable, the generic concentration limit shall be substituted by the specific concentration limit assigned to the substance(s) (SCL_i), and the adapted formula is a weighted average of the different concentration limits assigned to the different substances in the mixture:

$$\frac{PG x_1}{GCL} + \frac{PG x_2}{SCL_2} + \dots + \frac{PG x_i}{SCL_i} \geq 1,$$

where:

$PG x_i$ = concentration of substance 1, 2 ... i in the mixture, assigned to packing group x (I, II or III)

GCL = generic concentration limit

SCL_i = specific concentration limit assigned to substance i

The criterion for a packing group is fulfilled when the result of the calculation is ≥ 1 . The generic concentration limits to be used for the evaluation in each step of the calculation method are those found in Figure 2.2.8.1.6.3.

Examples for the application of the above formula can be found in the note below.

NOTE: Examples for the application of the above formula

Example 1: A mixture contains one corrosive substance in a concentration of 5% assigned to packing group I without a specific concentration limit:

$$\text{Calculation for packing group I: } \frac{5}{5(\text{GCL})} = 1$$

→ assign to Class 8, packing group I.

Example 2: A mixture contains three substances corrosive to skin; two of them (A and B) have specific concentration limits; for the third one (C) the generic concentration limit applies. The rest of the mixture needs not to be taken into consideration:

| Substance X in the mixture and its packing group assignment within Class 8 | Concentration (conc) in the mixture in % | Specific concentration limit (SCL) for packing group I | Specific concentration limit (SCL) for packing group II | Specific concentration limit (SCL) for packing group III |
|--|--|--|---|--|
| A, assigned to packing group I | 3 | 30% | none | none |
| B, assigned to packing group I | 2 | 20% | 10% | none |
| C, assigned to packing group III | 10 | none | none | none |

Calculation for packing group I:

$$\frac{3(\text{conc A})}{30(\text{SCL PG I})} + \frac{2(\text{conc B})}{20(\text{SCL PG I})} = 0.2 < 1$$

The criterion for packing group I is not fulfilled.

Calculation for packing group II:

$$\frac{3(\text{conc A})}{30(\text{GCL PG II})} + \frac{2(\text{conc B})}{10(\text{SCL PG II})} = 0.8 < 1$$

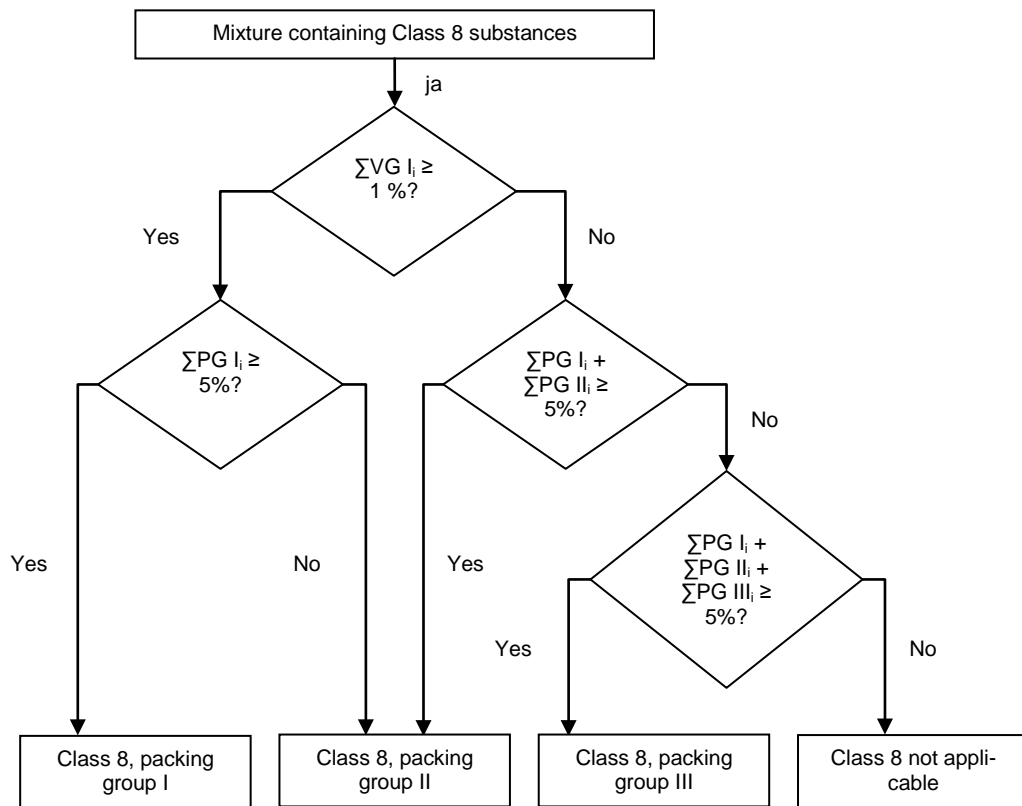
The criterion for packing group II is not fulfilled.

Calculation for packing group III:

$$\frac{3(\text{conc A})}{5(\text{GCL PG III})} + \frac{2(\text{conc B})}{5(\text{GCL PG III})} + \frac{10(\text{conc C})}{5(\text{GCL PG III})} = 3 \geq 1$$

The criterion for packing group III is fulfilled, the mixture shall be assigned to Class 8, packing group III.

Figure 2.2.8.1.6.3: Calculation method



2.2.8.1.7, including Note [Remain unchanged]

2.2.8.1.8 [Text of existing 2.2.8.1.8 with the Note of current 2.2.8.1.9]

2.2.8.1.9 *(Deleted)*

2.2.8.2 Substances not accepted for carriage

2.2.8.2.1 [Remain unchanged]

2.2.8.2.2 [Remain unchanged]

2.2.8.3 [Text of existing 2.2.8.3 with the following amendment:]

In the "List of collective entries", for "Articles C11" add:

"3547 ARTICLES CONTAINING CORROSIVE SUBSTANCE, N.O.S."

Section 2.2.9

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

2.2.9.1.3 Replace "2.2.9.1.4 to 2.2.9.1.14" by "2.2.9.1.4 to 2.2.9.1.8, 2.2.9.1.10, 2.2.9.1.11, 2.2.9.1.13 and 2.2.9.1.14".

2.2.9.1.7 At the end of the first paragraph, add the following Note:

"NOTE: For UN 3536 LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT, see special provision 389 in Chapter 3.3."

Before the last sub-paragraph, insert the following new sub-paragraphs (f) and (g):

"(f) Lithium batteries, containing both primary lithium metal cells and rechargeable lithium ion cells, that are not designed to be externally charged (see special provision 387 of Chapter 3.3) shall meet the following conditions:

- (i) The rechargeable lithium ion cells can only be charged from the primary lithium metal cells;
- (ii) Overcharge of the rechargeable lithium ion cells is precluded by design;
- (iii) The battery has been tested as a lithium primary battery;
- (iv) Component cells of the battery shall be of a type proved to meet the respective testing requirements of the Manual of Tests and Criteria, part III, sub-section 38.3.

(g) Manufacturers and subsequent distributors of cells or batteries shall make available the test summary as specified in the Manual of Tests and Criteria, Part III, sub-section 38.3, paragraph 38.3.5."

2.2.9.1.10.4.6.5 At the end, delete:

"with the additional statement that: "x percent of the mixture consists of ingredients(s) of unknown hazards to the aquatic environment"."

2.2.9.1.14 Amend the heading to read:

"Other substances and articles presenting a danger during carriage but not meeting the definitions of another class".

[The amendment to the entry for "Low hazard dithionites" in the French version does not apply to the English text.]

After "Vehicles, engines and machinery, internal combustion", insert the following new line:

"Articles containing miscellaneous dangerous goods".

In the Note, delete:

"UN No. 2071 AMMONIUM NITRATE FERTILIZERS," and

"UN No. 3363 DANGEROUS GOODS IN MACHINERY or UN No. 3363 DANGEROUS GOODS IN APPARATUS,".

2.2.9.3 For "Lithium batteries M4", add the following new entry:

"3536 LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT lithium ion batteries or lithium metal batteries".

In the Table, amend the entry for "Other substances or articles presenting a danger during carriage, but not meeting the definitions of another class M11" as follows:

- [The amendment to the title of classification code M11 in the French version does not apply to the English text.]
- In the text before the list of entries, delete:
"No collective entry available."
- After "1990 BENZALDEHYDE", insert:
"2071 AMMONIUM NITRATE BASED FERTILIZER".
- After "3359 FUMIGATED CARGO TRANSPORT UNIT", insert
"3363 DANGEROUS GOODS IN MACHINERY or
3363 DANGEROUS GOODS IN APPARATUS"
- At the end, add:
"3548 ARTICLES CONTAINING MISCELLANEOUS DANGEROUS GOODS
N.O.S."

Chapter 3.1

3.1.2.2 Amend the first sentence to read as follows:

"When a combination of several distinct proper shipping names are listed under a single UN number, and these are separated by "and" or "or" in lower case or are punctuated by commas, only the most appropriate shall be shown in the transport document and package marks."

Delete the second sentence.

3.1.2.6 Sub-paragraph (b) becomes sub-paragraph (c).

Add the following new sub-paragraph (b):

"(b) (Reserved)".

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

3.1.2.8.1.2 Amend the first sentence to read as follows:

"When a mixture of dangerous goods or articles containing dangerous goods are described by one of the "N.O.S." or "generic" entries to which special provision 274 has been allocated in Column (6) of Table A in Chapter 3.2, not more than the two constituents which most predominantly contribute to the hazard or hazards of the mixture or of the articles need to be shown, excluding controlled substances when their disclosure is prohibited by national law or international convention."

In the second sentence, replace "risk label" by:

"hazard label" (twice).

3.1.2.8.1.3 Add the end, after "(drazoxolon)", add the following new line:

"UN 3540 ARTICLES CONTAINING FLAMMABLE LIQUID, N.O.S. (pyrrolidine)".

Chapter 3.2

3.2.1 In the explanatory text for column (3b), in the penultimate indent, delete:
", 8".

In the explanatory text for column (3b), add a new fourth indent to read as follows:

"– For dangerous substances or articles of Class 8, the codes are explained in 2.2.8.1.4.1."

In the explanatory text for Column (9a), in the third indent, after "with the letter "L"", insert:

"or the letters "LL"" (twice).

In the explanatory text for column (15), add the following new second sentence:

"When no transport category has been assigned, this is indicated by the mention "–"."

Table A

| UN No. | Column | Amendment |
|--------|--------|------------------------------------|
| 0349 | (6) | Insert: "347". |
| 0367 | (6) | Insert: "347". |
| 0384 | (6) | Insert: "347". |
| 0481 | (6) | Insert: "347". |
| 0509 | (9b) | Insert: "MP24". |
| 1002 | (6) | Insert: "660". |
| 1006 | (6) | Insert: "660". |
| 1011 | (6) | Replace "660" by: "392 674". |
| 1013 | (6) | Insert: "660". |
| 1046 | (6) | Insert: "660". |
| 1049 | (6) | Replace "660" by: "392". |
| 1056 | (6) | Insert: "660". |
| 1058 | (6) | Insert: "660". |

| UN No. | Column | Amendment |
|---------------------------|--------|---|
| 1065 | (6) | Insert: "660". |
| 1066 | (6) | Insert: "660". |
| 1070 | (6) | Insert: "660". |
| 1072 | (6) | Insert: "660". |
| 1075 | (6) | Replace "660" by: "392 674". |
| 1080 | (6) | Insert: "660". |
| 1148, PG II | (2) | [The amendment in the German version does not apply to the English text.] |
| 1148, PG III | (2) | [The amendment in the German version does not apply to the English text.] |
| 1363 | (10) | Insert: "BK2". |
| 1386 | (10) | Insert: "BK2". |
| 1398 | (10) | Insert: "BK2". |
| 1435 | (10) | Insert: "BK2". |
| 1744 | (13) | Insert: "TU43". |
| 1755, PG II and III | (13) | Insert: "TU42". |
| 1778, PG II | (13) | Insert: "TU42". |
| 1779, PG II | (13) | Insert: "TU42". |
| 1788, PG II and III | (13) | Insert: "TU42". |
| 1789, PG II and III | (13) | Insert: "TU42". |
| 1791, PG II and III | (13) | Insert: "TU42". |
| 1803, PG II | (13) | Insert: "TU42". |
| 1805, PG III | (13) | Insert: "TU42". |
| 1814, PG II and III | (13) | Insert: "TU42". |
| 1819, PG II and III | (13) | Insert: "TU42". |

| UN No. | Column | Amendment |
|---------------------------|----------------|---|
| 1824, PG II and III | (13) | Insert: "TU42". |
| 1830, PG II | (13) | Insert: "TU42". |
| 1832, PG II | (13) | Insert: "TU42". |
| 1840, PG III | (13) | Insert: "TU42". |
| 1906, PG II | (13) | Insert: "TU42". |
| 1952 | (6) | Insert: "660". |
| 1954 | (6) | Replace "660" by: "392". |
| 1956 | (6) | Insert: "660". |
| 1965 | (6) | Replace "660" by: "392 674". |
| 1969 | (6) | Replace "660" by: "392 674". |
| 1971 | (6) | Replace "660" by: "392". |
| 1972 | (6) | Replace "660" by: "392". |
| 1978 | (6) | Replace "660" by: "392 674". |
| 2031, PG II | (13) | Insert: "TU42". |
| 2036 | (6) | Insert: "660". |
| 2067 | (6) | Delete: "186". |
| 2071 | (2) | Amend the name to read: "AMMONIUM NITRATE BASED FERTILIZER". |
| | (3b) | Insert: "M11". |
| | (4) to (20) | Delete: "Not subject to RID". |
| | (6) | Insert: "193". |
| 2073 | (6) | Insert: "660". |
| 2217 | (10) | Insert: "BK2". |
| 2451 | (6) | Insert: "660". |
| 2647 | (2) | [The amendment in the German version does not apply to the English text.] |
| 2793 | (10) | Insert: "BK2". |

| UN No. | Column | Amendment |
|---------------------------|--------|--|
| 2851, PG III | (13) | Insert: "TU42". |
| 2852, PG III | (13) | Insert: "TU42". |
| 2856, PG III | (13) | Insert: "TU42". |
| 2693, PG III | (13) | Insert: "TU42". |
| 2796, PG II | (13) | Insert: "TU42". |
| 3070 | (6) | Insert: "660". |
| 3090 | (6) | Insert: "387". |
| | (8) | After "P910", insert: "P911". After "LP904", insert: "LP905 LP906". |
| 3091 | (6) | Insert: "387". Replace "636" by: "670". |
| | (8) | After "P910", insert: "P911". After "LP904", insert: "LP905 LP906". |
| 3156 | (6) | Insert: "660". |
| 3157 | (6) | Insert: "660". |
| 3163 | (6) | Insert: "660". |
| 3166 | (6) | Replace "312 385" by: "388". |
| 3171 | (6) | Replace "240" by: "388". |
| 3223 | (9a) | Add: "PP94 PP95". |
| 3224 | (9a) | Add: "PP94 PP95". |
| 3264, PG II and III | (13) | Insert: "TU42". |
| 3266, PG II and III | (13) | Insert: "TU42". |
| 3297 | (6) | Insert: "660". |
| 3298 | (6) | Insert: "660". |
| 3299 | (6) | Insert: "660". |
| 3302 | (2) | At the end of the name, add: ", STABILIZED". |

| UN No. | Column | Amendment |
|--------------------------------|---------------|--|
| | (6) | Insert: "386". |
| 3316, PG II | (5) | Delete: "II". |
| | (6) | Add: "671". |
| | (15) | Replace "2" by: "See SP 671". |
| 3316, PG III | (1) – (20) | Delete the whole entry. |
| 3359 | (15) | Insert: "_" |
| 3373 (both en- tries) | (15) | Insert: "_" |
| 3480 | (6) | Insert: "387". |
| | (8) | After "P910", insert: "P911". After "LP904", insert: "LP905 LP906". |
| 3481 | (6) | Insert: "387". Replace "636" by: "670". |
| | (8) | After "P910", insert: "P911". After "LP904", insert: "LP905 LP906". |

Amend the entry for UN No. 3363 to read as follows:

| (1) | (2) | (3a) | (3b) | (4) | (5) | (6) | Limited and excepted quantities | | Packaging | | | Portable tanks and bulk containers | | RID Tanks | | Transport category | Special provisions for carriage | | | (19) | (20) | |
|------|--|------|------|-----|-----|------------|---------------------------------|------|-----------|------|------|------------------------------------|------|-----------|------|--------------------|---------------------------------|------|------|------|------|--|
| | | | | | | | (7a) | (7b) | (8) | (9a) | (9b) | (10) | (11) | (12) | (13) | | (16) | (17) | (18) | | | |
| 3363 | DANGEROUS GOODS IN MACHINERY or DANGEROUS GOODS IN APPARATUS | 9 | M11 | | 9 | 301 672 | 0 | E0 | P907 | | | | | | | | | | | | | |

Add the following new entries:

| (1) | (2) | (3a) | (3b) | (4) | (5) | (6) | Limited and excepted quantities | | Packaging | | | Portable tanks and bulk containers | | RID Tanks | | Transport category | Special provisions for carriage | | | (19) | (20) |
|------|--|------|------|-----|-----------------------|-------------------|---------------------------------|------|---------------|------|------|------------------------------------|------|-----------|------|--------------------|---------------------------------|------|----------------------|-----------|------|
| | | | | | | | (7a) | (7b) | (8) | (9a) | (9b) | (10) | (11) | (12) | (13) | | (16) | (17) | (18) | | |
| 3535 | TOXIC SOLID, FLAMMABLE, INORGANIC, N.O.S. | 6.1 | TF3 | I | 6.1 +4.1 | 274 | 0 | E5 | P002 IBC99 | | MP18 | T6 | TP33 | | | 1 | W10 | | CW13 CW28 CW31 | | 664 |
| 3535 | TOXIC SOLID, FLAMMABLE, INORGANIC, N.O.S. | 6.1 | TF3 | II | 6.1 +4.1 | 274 | 500 g | E4 | P002 IBC08 | B4 | MP10 | T3 | TP33 | SGAH | TU15 | 2 | W11 | | CW13 CW28 CW31 | CE9 | 64 |
| 3536 | LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT lithium ion batteries or lithium metal batteries | 9 | M4 | | 9A | 389 | 0 | E0 | | | | | | | | | - | | | | [90] |
| 3537 | ARTICLES CONTAINING FLAMMABLE GAS, N.O.S. | 2 | 6F | | See 5.2.2. 1.12 | 274 667 673 | 0 | E0 | P006 LP03 | | | | | | | | 4 | | CW13 CW28 | [CE3] | |

| 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) |
| 3538 | ARTICLES CONTAINING NON-FLAMMABLE, NON TOXIC GAS, N.O.S. | 2 | 6A | | See 5.2.2.1.12 | 274 667 673 | 0 | E0 | P006 LP03 | | | | | | | | 4 | | CW13 CW28 | [CE3] | |
| 3539 | ARTICLES CONTAINING TOXIC GAS, N.O.S. | 2 | 6T | | See 5.2.2.1.12 | 274 667 673 | 0 | E0 | P006 LP03 | | | | | | | | 4 | | CW13 CW28 | [CE3] | |
| 3540 | ARTICLES CONTAINING FLAMMABLE LIQUID, N.O.S. | 3 | F3 | | See 5.2.2.1.12 | 274 667 673 | 0 | E0 | P006 LP03 | | | | | | | | 4 | | CW13 CW28 | [CE3] | |
| 3541 | ARTICLES CONTAINING FLAMMABLE SOLID, N.O.S. | 4.1 | F4 | | See 5.2.2.1.12 | 274 667 673 | 0 | E0 | P006 LP03 | | | | | | | | 4 | | CW13 CW28 | [CE3] | |
| 3542 | ARTICLES CONTAINING A SUBSTANCE LIABLE TO SPONTANEOUS COMBUSTION, N.O.S. | 4.2 | S6 | | See 5.2.2.1.12 | 274 667 673 | 0 | E0 | P006 LP03 | | | | | | | | 4 | | CW13 CW28 | [CE3] | |
| 3543 | ARTICLES CONTAINING A SUBSTANCE WHICH EMITS FLAMMABLE GAS IN CONTACT WITH WATER, N.O.S. | 4.3 | W3 | | See 5.2.2.1.12 | 274 667 673 | 0 | E0 | P006 LP03 | | | | | | | | 4 | | CW13 CW28 | [CE3] | |
| 3544 | ARTICLES CONTAINING OXIDIZING SUBSTANCE, N.O.S. | 5.1 | O3 | | See 5.2.2.1.12 | 274 667 673 | 0 | E0 | P006 LP03 | | | | | | | | 4 | | CW13 CW28 | [CE3] | |
| 3545 | ARTICLES CONTAINING ORGANIC PEROXIDE, N.O.S. | 5.2 | P1 or P2 | | See 5.2.2.1.12 | 274 667 673 | 0 | E0 | P006 LP03 | | | | | | | | 4 | | CW13 CW28 | [CE3] | |
| 3546 | ARTICLES CONTAINING TOXIC SUBSTANCE, N.O.S. | 6.1 | T10 | | See 5.2.2.1.12 | 274 667 673 | 0 | E0 | P006 LP03 | | | | | | | | 4 | | CW13 CW28 | [CE3] | |
| 3547 | ARTICLES CONTAINING CORROSIVE SUBSTANCE, N.O.S. | 8 | C11 | | See 5.2.2.1.12 | 274 667 673 | 0 | E0 | P006 LP03 | | | | | | | | 4 | | CW13 CW28 | [CE3] | |
| 3548 | ARTICLES CONTAINING MISCELLANEOUS DANGEROUS GOODS, N.O.S. | 9 | M11 | | See 5.2.2.1.12 | 274 667 673 | 0 | E0 | P006 LP03 | | | | | | | | 4 | | CW13 CW28 | [CE3] | |

3.2.2

Table B

Amend the following entries:

| Name and description | UN No. | Amendment |
|---|--------|---|
| Ammonium nitrate based fertilizer, uniform mixtures of the nitrogen/phosphate, nitrogen/potash or nitrogen/phosphate/potash type, containing not more than 70% ammonium nitrate and not more than 0.4% total combustible/organic material calculated as carbon or with not more than 45% ammonium nitrate and unrestricted combustible material | 2071 | Amend the name and description in column (1) to read: "AMMONIUM NITRATE BASED FERTILIZER". |
| | | In column (3), delete: "Exempt". |
| 2-DIMETHYLAMINOETHYL ACRYLATE | 3302 | In column (1), at the end, add: ", STABILIZED". |
| Dangerous goods in apparatus | 3363 | Amend the name and description in column (1) to read: "DANGEROUS GOODS IN APPARATUS". |
| | | In column (3), delete: "Exempt". |
| Dangerous goods in machinery | 3363 | Amend the name and description in column (1) to read: "DANGEROUS GOODS IN MACHINERY". |
| | | In column (3), delete: "Exempt". |
| DIACETONE ALCOHOL | 1148 | [The amendments in the German version do not apply to the English text.] |
| MALONONITRILE | 2647 | [The amendment in the German version does not apply to the English text.] |

Insert the following new entries in alphabetical order:

| Name and description | UN No. | Note | NHM Code |
|---|--------|------|----------|
| ARTICLES CONTAINING A SUBSTANCE LIABLE TO SPONTANEOUS COMBUSTION, N.O.S. | 3542 | | ?????? |
| ARTICLES CONTAINING A SUBSTANCE WHICH EMITS FLAMMABLE GAS IN CONTACT WITH WATER, N.O.S. | 3543 | | ?????? |
| ARTICLES CONTAINING CORROSIVE SUBSTANCE, N.O.S. | 3547 | | ?????? |
| ARTICLES CONTAINING FLAMMABLE GAS, N.O.S. | 3537 | | ?????? |
| ARTICLES CONTAINING FLAMMABLE LIQUID, N.O.S. | 3540 | | ?????? |

| Name and description | UN No. | Note | NHM Code |
|--|--------|------|----------|
| ARTICLES CONTAINING FLAMMABLE SOLID, N.O.S. | 3541 | | ?????? |
| ARTICLES CONTAINING MISCELLANEOUS DANGEROUS GOODS, N.O.S. | 3548 | | ?????? |
| ARTICLES CONTAINING NON-FLAMMABLE, NON TOXIC GAS, N.O.S. | 3538 | | ?????? |
| ARTICLES CONTAINING ORGANIC PEROXIDE, N.O.S. | 3545 | | ?????? |
| ARTICLES CONTAINING OXIDIZING SUBSTANCE, N.O.S. | 3544 | | ?????? |
| ARTICLES CONTAINING TOXIC GAS, N.O.S. | 3539 | | ?????? |
| ARTICLES CONTAINING TOXIC SUBSTANCE, N.O.S. | 3546 | | ?????? |
| LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT lithium ion batteries or lithium metal batteries | 3536 | | ?????? |
| TOXIC SOLID, FLAMMABLE, INORGANIC, N.O.S. | 3535 | | ?????? |

Chapter 3.3

3.3.1 In the third sentence, replace "such as "DAMAGED LITHIUM BATTERIES"" by:

"such as "LITHIUM BATTERIES FOR DISPOSAL"".

SP 23 [The amendment in the French version does not apply to the English text.]

SP 61 [The amendment in the French version does not apply to the English text.]

SP 122 Replace "risk(s)" by:

"hazard(s)".

SP 172 In the introductory sentence, replace "risk(s)" by:

"hazard(s)".

In paragraph (a), replace "risk" by:

"hazard".

In paragraph (b), replace "risk" by:

"hazard".

In paragraph (c), replace "risk(s)" by:

"hazard(s)".

In paragraph (d), replace "risk" by:

"hazard".

SP 186 Amend to read as follows:

"186 (Deleted)".

SP 188 After (a) and (b), add the following new Note;

"NOTE: When lithium batteries in conformity with 2.2.9.1.7 (f) are carried in accordance with this special provision, the total lithium content of all lithium metal cells contained in the battery shall not exceed 1.5 g and the total capacity of all lithium ion cells contained in the battery shall not exceed 10 Wh (see special provision 387)."

In paragraph (c), replace "2.2.9.1.7 (a) and (e)" by:

"2.2.9.1.7 (a), (e), (f) if applicable and (g)".

In paragraph (d), replace "protection against contact with conductive materials" by:

"protection against contact with electrically conductive material".

In paragraph (f), at the end, add the following two sentences and the following Note:

"When packages are placed in an overpack, the lithium battery mark shall either be clearly visible or be reproduced on the outside of the overpack and the overpack shall be marked with the word "OVERPACK". The lettering of the "OVERPACK" mark shall be at least 12 mm high.

NOTE: Packages containing lithium batteries packed in conformity with the provisions of Part 4, Chapter 11, packing instructions 965 or 968, Section IB of the ICAO Technical Instructions that bear the mark as shown in 5.2.1.9 (lithium battery mark) and the label shown in 5.2.2.2.2, model No. 9A shall be deemed to meet the provisions of this special provision."

In the first paragraph after (h), add the following sentence:

"As used in this special provision "equipment" means apparatus for which the lithium cells or batteries will provide electrical power for its operation."

SP 240 Amend to read as follows:

"240 (Deleted)".

SP 250 In paragraph (a), delete:

"(see Table S-3-8 of the Supplement)".

- SP 251** In the first paragraph, replace the last sentence by:
- "Such kits shall only contain dangerous goods that are permitted as:
- (a) Excepted quantities not exceeding the quantity indicated by the code in column (7b) of Table A of Chapter 3.2, provided that the net quantity per inner packaging and net quantity per package are as prescribed in 3.5.1.2 and 3.5.1.3; or;
 - (b) Limited quantities as indicated in column (7a) of Table A of Chapter 3.2, provided that the net quantity per inner packaging does not exceed 250 ml or 250 g."
- In the second paragraph, delete the last sentence.
- In the third paragraph, insert a new first sentence to read as follows:
- "For the purposes of completion of the transport document as set out in 5.4.1.1.1, the packing group shown on the document shall be the most stringent packing group assigned to any individual substance in the kit."
- SP 280** [The amendment in the French version does not apply to the English text.]
- SP 290** In paragraph (b), in the first sentence, replace "risk" by:
- "hazard".
- SP 291** [The amendment in the German version does not apply to the English text.]
- SP 293** In paragraph (b), after "Safety matches are", replace "matches which" by:
- "matches that".
- SP 307** Amend to read as follows:
- "307** This entry may only be used for ammonium nitrate based fertilizers. They shall be classified in accordance with the procedure as set out in the Manual of Tests and Criteria, Part III, Section 39 subject to the restrictions of 2.2.51.2.2, thirteenth indent. When used in the said Section 39, the term "competent authority" means the competent authority of the country of origin. If the country of origin is not an RID Contracting State, the classification and conditions of carriage shall be recognized by the competent authority of the first RID Contracting State reached by the consignment."
- SP 310** In the first paragraph, replace "cells and batteries" by:
- "cells or batteries" (twice).
- At the end of the first paragraph, add:
- "or LP 905 of 4.1.4.3, as applicable".
- SP 312** Amend to read as follows:
- "312** (Deleted)".

SP 339 [The amendment to paragraph (b) in the French version does not apply to the English text.]

SP 361 [The amendment to paragraph (b) in the French version does not apply to the English text.]

SP 363 Insert the following new introductory sentence:

"This entry may only be used when the conditions of this special provision are met. No other requirements of RID apply."

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

In paragraph (f) at the end, replace "requirements of 2.2.9.1.7" by:

"provisions of 2.2.9.1.7".

In paragraph (g), delete the introductory text.

Re-number existing (i) to (vi) under current (g) as (g) to (l).

Add a new paragraph (m) to read as follows:

"(m) The requirements specified in packing instruction P 005 of 4.1.4.1 shall be met."

SP 369 In the first paragraph, replace "risks" by:

"hazards".

In the third paragraph, replace "risk" by:

"hazard".

SP 376 Amend the text after the third paragraph to read as follows:

"Cells and batteries shall be packed in accordance with packing instructions P 908 of 4.1.4.1 or LP 904 of 4.1.4.3, as applicable.

Cells and batteries identified as damaged or defective and liable to rapidly disassemble, dangerously react, produce a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours under normal conditions of carriage shall be packed and carried in accordance with packing instruction P 911 of 4.1.4.1 or LP 906 of 4.1.4.3, as applicable. Alternative packing and/or carriage conditions may be authorized by the competent authority of any RID Contracting State who may also recognize an approval granted by the competent authority of a country which is not an RID Contracting State provided that this approval has been granted in accordance with the procedures applicable according to RID, ADR, ADN, the IMDG Code or the ICAO Technical Instructions. In both cases the cells and batteries are assigned to transport category 0.

Packages shall be marked "DAMAGED/DEFECTIVE LITHIUM-ION BATTERIES" or "DAMAGED/DEFECTIVE LITHIUM METAL BATTERIES", as applicable.

The transport document shall include the following statement:

"TRANSPORT IN ACCORDANCE WITH SPECIAL PROVISION 376".

If applicable, a copy of the competent authority approval shall accompany the carriage."

SP 377 In the second paragraph, replace "requirements of 2.2.9.1.7 (a) to (e)" by:

"provisions of 2.2.9.1.7 (a) to (g)".

SP 385 Amend to read as follows:

"385 (Deleted)".

"385 – 499 (Deleted)" becomes:

"393 – 499 (Deleted)".

SP 636 Amend to read as follows:

"636 Up to the intermediate processing facility, lithium cells and batteries with a gross mass of not more than 500 g each, lithium ion cells with a Watt-hour rating of not more than 20 Wh, lithium ion batteries with a Watt-hour rating of not more than 100 Wh, lithium metal cells with a lithium content of not more than 1 g and lithium metal batteries with an aggregate lithium content of not more than 2 g, not contained in equipment, collected and handed over for carriage for sorting, disposal or recycling, together with or without other non-lithium cells or batteries, are not subject to the other provisions of RID including special provision 376 and 2.2.9.1.7, if the following conditions are met:

- (a) The cells and batteries are packed according to packing instruction P 909 of 4.1.4.1 except for the additional requirements 1 and 2;
- (b) A quality assurance system is in place to ensure that the total amount of lithium cells and batteries per wagon or large container does not exceed 333 kg;

NOTE: The total quantity of lithium cells and batteries in the mix may be assessed by means of a statistical method included in the quality assurance system. A copy of the quality assurance records shall be made available to the competent authority upon request.

- (c) Packages are marked "LITHIUM BATTERIES FOR DISPOSAL" or "LITHIUM BATTERIES FOR RECYCLING" as appropriate."

SP 660 Amend to read as follows:

"660 For the carriage of fuel gas containment systems designed and approved to be fitted in motor vehicles containing this gas the provisions of sub-section 4.1.4.1 and Chapter 6.2 need not be applied when carried for disposal, recycling, repair, inspection, maintenance or from where they are manufactured to a vehicle assembly plant, provided the conditions described in special provi-

sion 392 are met. This also applies for mixtures of gases subject to special provision 392 and gases of group A subject to this special provision."

SP 663 Under "General provisions:", replace "risk" by:

"hazard" (twice).

SP 666 Amend the first paragraph to read as follows:

"Vehicles and battery powered equipment, referred to by special provision 388, when carried as a load, as well as any dangerous goods they contain that are necessary for their operation or the operation of their equipment, are not subject to any other provisions of RID, provided the following conditions are met:".

SP 667 In paragraphs (a), (b), (b) (i) and (b) (ii), replace "or machinery" by:

", machinery or article".

In paragraphs (a) and (b), replace "requirements of 2.2.9.1.7" by:

"provisions of 2.2.9.1.7".

Add the following new paragraph (c):

"(c) The procedures described in (b) also apply to damaged lithium cells or batteries in vehicles, engines, machinery or articles."

Add the following new special provisions:

"193 This entry may only be used for ammonium nitrate based compound fertilizers. They shall be classified in accordance with the procedure as set out in the Manual of Tests and Criteria, Part III, Section 39. Fertilizers meeting the criteria for this UN number are not subject to the requirements of RID."

"301 This entry only applies to machinery or apparatus containing dangerous goods as a residue or an integral element of the machinery or apparatus. It shall not be used for machinery or apparatus for which a proper shipping name already exists in Table A of Chapter 3.2. Machinery and apparatus carried under this entry shall only contain dangerous goods which are authorized to be carried in accordance with the provisions of Chapter 3.4 (Limited quantities). The quantity of dangerous goods in machinery or apparatus shall not exceed the quantity specified in Column (7a) of Table A of Chapter 3.2 for each item of dangerous goods contained. If the machinery or apparatus contains more than one item of dangerous goods, the individual dangerous goods shall be enclosed to prevent them reacting dangerously with one another during carriage (see 4.1.1.6). When it is required to ensure liquid dangerous goods remain in their intended orientation, orientation arrows shall be displayed on at least two opposite vertical sides with the arrows pointing in the correct direction in accordance with 5.2.1.10.

[NOTE: In this special provision the reference to "a proper shipping name which already exists" excludes specific n.o.s. entries for UN Nos. 3537 to 3548."**]**

"387 Lithium batteries in conformity with 2.2.9.1.7 (f) containing both primary lithium metal cells and rechargeable lithium ion cells shall be assigned to UN Nos. 3090 or 3091 as appropriate. When such batteries are carried in accordance with special provision 188, the total lithium content of all lithium metal cells contained in the battery shall not exceed 1.5 g and the total capacity of all lithium ion cells contained in the battery shall not exceed 10 Wh.

388 UN No. 3166 entries apply to vehicles powered by flammable liquid or gas internal combustion engines or fuel cells.

Vehicles powered by a fuel cell engine shall be assigned to the entries UN 3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED, as appropriate. These entries include hybrid electric vehicles powered by both a fuel cell and an internal combustion engine with wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, carried with the battery(ies) installed.

Other vehicles which contain an internal combustion engine shall be assigned to the entries UN 3166 VEHICLE, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FLAMMABLE LIQUID POWERED, as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, carried with the battery(ies) installed.

If a vehicle is powered by a flammable liquid and a flammable gas internal combustion engine, it shall be assigned to UN 3166 VEHICLE, FLAMMABLE GAS POWERED.

Entry UN 3171 only applies to vehicles powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries and equipment powered by wet batteries or sodium batteries carried with these batteries installed.

For the purpose of this special provision, vehicles are self-propelled apparatus designed to carry one or more persons or goods. Examples of such vehicles are cars, motorcycles, scooters, three- and four-wheeled vehicles or motorcycles, trucks, locomotives, bicycles (pedal cycles with a motor) and other vehicles of this type (e.g. self-balancing vehicles or vehicles not equipped with at least one seating position), wheelchairs, lawn tractors, self-propelled farming and construction equipment, boats and aircraft. This includes vehicles carried in a packaging. In this case some parts of the vehicle may be detached from its frame to fit into the packaging.

Examples of equipment are lawnmowers, cleaning machines or model boats and model aircraft. Equipment powered by lithium metal batteries or lithium ion batteries shall be assigned to the entries UN 3091 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or UN 3091 LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT or UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or UN 3481 LITHIUM ION BATTERIES PACKED WITH EQUIPMENT, as appropriate.

Dangerous goods, such as batteries, airbags, fire extinguishers, compressed gas accumulators, safety devices and other integral components of the vehicle that are necessary for the operation of the vehicle or for the safety of its operator or passengers, shall be securely installed in the vehicle and are not otherwise subject to RID. However, lithium batteries shall meet the provisions of 2.2.9.1.7, except as otherwise provided for in special provision 667.

Where a lithium battery installed in a vehicle or equipment is damaged or defective, the vehicle or equipment shall be carried in accordance with the conditions defined in special provision 667 (c).

389 This entry only applies to cargo transport units in which lithium ion batteries or lithium metal batteries are installed and which are designed only to provide power external to the unit. The lithium batteries shall meet the provisions of 2.2.9.1.7 (a) to (g) and contain the necessary systems to prevent overcharge and over discharge between the batteries.

The batteries shall be securely attached to the interior structure of the cargo transport unit (e.g., by means of placement in racks, cabinets, etc.) in such a manner as to prevent short circuits, accidental operation, and significant movement relative to the cargo transport unit under the shocks, loadings and vibrations normally incident to carriage. Dangerous goods necessary for the safe and proper operation of the cargo transport unit (e.g., fire extinguishing systems and air conditioning systems), shall be properly secured to or installed in the cargo transport unit and are not otherwise subject to RID. Dangerous goods not necessary for the safe and proper operation of the cargo transport unit shall not be carried within the cargo transport unit.

The batteries inside the cargo transport unit are not subject to marking or labelling requirements. The cargo transport unit shall bear orange-coloured plates in accordance with 5.3.2.2 and placards in accordance with 5.3.1.1 on two opposing sides.

390 (Reserved)

391 (Reserved)

392 For the carriage of fuel gas containment systems designed and approved to be fitted in motor vehicles containing this gas the provisions of 4.1.4.1 and Chapter 6.2 of RID need not be applied when carried for disposal, recycling, repair, inspection, maintenance or from where they are manufactured to a vehicle assembly plant, provided the following conditions are met:

- (a) The fuel gas containment systems shall meet the requirements of the standards or regulations for fuel tanks for vehicles, as applicable. Examples of applicable standards and regulations are:

| LPG tanks | |
|----------------------------------|--|
| ECE Regulation No. 67 Revision 2 | Uniform provisions concerning: I. Approval of specific equipment of vehicles of category M and N using liquefied petroleum gases in their propulsion system; II. Approval of vehicles of category M and N fitted with specific equipment for the use of liquefied petroleum gases in their propulsion system with regard to the installation of such equipment |
| ECE Regulation No. 115 | Uniform provisions concerning the approval of: |

| | |
|--|--|
| | <ul style="list-style-type: none"> I. Specific LPG (liquefied petroleum gases) retrofit systems to be installed in motor vehicles for the use of LPG in their propulsion systems; II Specific CNG (compressed natural gas) retrofit systems to be installed in motor vehicles for the use of CNG in their propulsion system |
| CNG and LNG tanks | |
| ECE Regulation No. 110 | <p>Uniform provisions concerning the approval of:</p> <ul style="list-style-type: none"> I. Specific components of motor vehicles using compressed natural gas (CNG) and/or liquefied natural gas (LNG) in their propulsion system II. Vehicles with regard to the installation of specific components of an approved type for the use of compressed natural gas (CNG) and/or liquefied natural gas (LNG) in their propulsion system |
| ECE Regulation No. 115 | <p>Uniform provisions concerning the approval of:</p> <ul style="list-style-type: none"> I. Specific LPG (liquefied petroleum gases) retrofit systems to be installed in motor vehicles for the use of LPG in their propulsion systems; II Specific CNG (compressed natural gas) retrofit systems to be installed in motor vehicles for the use of CNG in their propulsion system |
| ISO 11439:2013 | Gas cylinders – High pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles |
| ISO 15500-Series | Road vehicles – Compressed natural gas (CNG) fuel system components – several parts as applicable |
| ANSI NGV 2 | Compressed natural gas vehicle fuel containers |
| CSA B51 Part 2:2014 | Boiler, pressure vessel, and pressure piping code Part 2 Requirements for high-pressure cylinders for on-board storage of fuels for automotive vehicles |
| Hydrogen pressure tanks | |
| Global Technical Regulation (GTR) No. 13 | Global technical regulation on hydrogen and fuel cell vehicles (ECE/TRANS/180/Add.13) |
| ISO/TS 15869:2009 | Gaseous hydrogen and hydrogen |

| | |
|------------------------------|---|
| | blends – Land vehicle fuel tanks |
| Regulation (EC) No. 79/2009 | Regulation (EC) No. 79/2009 of the European Parliament and of the Council of 14 January 2009 on type approval of hydrogen-powered motor vehicles, and amending Directive 2007/46/EC |
| Regulation (EU) No. 406/2010 | Commission Regulation (EU) No 406/2010 of 26 April 2010 implementing Regulation (EC) No 79/2009 of the European Parliament and of the Council on type-approval of hydrogen-powered motor vehicles |
| ECE Regulation No. 134 | Hydrogen and fuel cell vehicles (HFCV) |
| CSA B51 Part 2: 2014 | Boiler, pressure vessel, and pressure piping code – Part 2: Requirements for high-pressure cylinders for on-board storage of fuels for automotive vehicles |

Gas tanks designed and constructed in accordance with previous versions of relevant standards or regulations for gas tanks for motor vehicles, which were applicable at the time of the certification of the vehicles for which the gas tanks were designed and constructed may continue to be carried;

- (b) The fuel gas containment systems shall be leakproof and shall not exhibit any signs of external damage which may affect their safety;

NOTE 1: Criteria may be found in standard ISO 11623:2015 Transportable gas cylinders – Periodic inspection and testing of composite gas cylinders (or ISO 19078:2013 Gas cylinders – Inspection of the cylinder installation, and requalification of high pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles).

- 2:** If the fuel gas containment systems are not leakproof or are overfilled or if they exhibit damage that could affect their safety (e.g. in case of a safety related recall), they shall only be carried in salvage pressure receptacles in conformity with RID.

- (c) If a fuel gas containment system is equipped with two valves or more integrated in line, the two valves shall be closed as to be gastight under normal conditions of carriage. If only one valve exists or only one valve works all openings with the exception of the opening of the pressure relief device, it shall be closed as to be gastight under normal conditions of carriage;
- (d) Fuel gas containment systems shall be carried in such a way as to prevent obstruction of the pressure relief device or any damage to the valves and any other pressurised part of the fuel gas containment systems and unintentional release of the gas under normal conditions of carriage. The fuel gas containment system shall be secured in order to prevent slipping, rolling or vertical movement;

- (e) Valves shall be protected by one of the methods described in 4.1.6.8 (a) to (e);
- (f) Except for the case of fuel gas containment systems removed for disposal, recycling, repair, inspection or maintenance, they shall be filled with not more than 20% of their nominal filling ratio or nominal working pressure, as applicable;
- (g) Notwithstanding the provisions of Chapter 5.2, when fuel gas containment systems are consigned in a handling device, marks and labels may be affixed to the handling device; and
- (h) Notwithstanding the provisions of 5.4.1.1.1 (f) the information on the total quantity of dangerous goods may be replaced by the following information:
 - (i) The number of fuel gas containment systems; and
 - (ii) In the case of liquefied gases the total net mass (kg) of gas of each fuel gas containment system and, in the case of compressed gases, the total water capacity (l) of each fuel gas containment system followed by the nominal working pressure.

Examples for information in the transport document:

Example 1: "UN 1971 NATURAL GAS, COMPRESSED, 2.1, 1 FUEL GAS CONTAINMENT SYSTEM OF 50 L IN TOTAL, 200 BAR".

Example 2: "UN 1965 HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., 2.1, 3 FUEL GAS CONTAINMENT SYSTEMS, EACH OF 15 KG NET MASS OF GAS".

"670

- (a) Lithium cells and batteries installed in equipment from private households collected and handed over for carriage for depollution, dismantling, recycling or disposal are not subject to the other provisions of RID including special provision 376 and 2.2.9.1.7 when:
 - (i) They are not the main power source for the operation of the equipment in which they are contained;
 - (ii) The equipment in which they are contained does not contain any other lithium cell or battery used as the main power source; and
 - (iii) They are afforded protection by the equipment in which they are contained.

Examples for cells and batteries covered by this paragraph are button cells used for data integrity in household appliances (e.g. refrigerators, washing machines, dishwashers) or in other electrical or electronic equipment;

- (b) Up to the intermediate processing facility lithium cells and batteries contained in equipment from private households not meeting the requirements of (a) collected and handed over for carriage for depollution, dis-

mantling, recycling or disposal are not subject to the other provisions of RID including special provision 376 and 2.2.9.1.7, if the following conditions are met:

- (i) The equipment is packed in accordance with packing instruction P 909 of 4.1.4.1 except for the additional requirements 1 and 2; or it is packed in strong outer packagings, e.g. specially designed collection receptacles, which meet the following requirements:
 - The packagings shall be constructed of suitable material and be of adequate strength and design in relation to the packaging capacity and its intended use. The packagings need not meet the requirements of 4.1.1.3;
 - Appropriate measures shall be taken to minimize the damage of the equipment when filling and handling the packaging, e.g. use of rubber mats; and
 - The packagings shall be constructed and closed so as to prevent any loss of contents during carriage, e.g. by lids, strong inner liners, covers for transport. Openings designed for filling are acceptable if they are constructed so as to prevent loss of content;
- (ii) A quality assurance system is in place to ensure that the total amount of lithium cells and batteries per wagon or large container unit does not exceed 333 g;

NOTE: The total quantity of lithium cells and batteries in the equipment from private households may be assessed by means of a statistical method included in the quality assurance system. A copy of the quality assurance records shall be made available to the competent authority upon request.

- (iii) Packages are marked "LITHIUM BATTERIES FOR DISPOSAL" or "LITHIUM BATTERIES FOR RECYCLING" as appropriate.

If equipment containing lithium cells or batteries is carried unpackaged or on pallets in accordance with packing instruction P 909 (3) of 4.1.4.1, this mark may alternatively be affixed to the external surface of the wagons or large containers).

NOTE: "Equipment from private households" means equipment which comes from private households and equipment which comes from commercial, industrial, institutional and other sources which, because of its nature and quantity, is similar to that from private households. Equipment likely to be used by both private households and users other than private households shall in any event be considered to be equipment from private households.

671 For the purposes of the exemption related to quantities carried per wagon or large container (see 1.1.3.6), the transport category shall be determined in relation to the packing group (see third paragraph of special provision 251):

- Transport category 3 for kits assigned to packing group III;
- Transport category 2 for kits assigned to packing group II;

- Transport category 1 for kits assigned to packing group I.

672 Machinery and apparatus carried under this entry and in conformity with special provision 301 are not subject to any other provision of RID provided they are either:

- packed in a strong outer packaging constructed of suitable material, and of adequate strength and design in relation to the packaging's capacity and its intended use, and meeting the applicable requirements of 4.1.1.1; or
- carried without outer packaging if the machinery or apparatus is constructed and designed so that the receptacles containing the dangerous goods are afforded adequate protection.

673 For the carriage of this article the requirements of Chapter 1.10 and 5.3, of Section 5.4.3 and of Chapter 7.2 need not be applied.

674 This special provision applies to periodic inspection and test of over-moulded cylinders as defined in 1.2.1.

Over-moulded cylinders subject to 6.2.3.5.3.1 shall be subject to periodic inspection and test in accordance with 6.2.1.6.1, adapted by the following alternative method:

- Substitute test required in 6.2.1.6.1 d) by alternative destructive tests;
- Perform specific additional destructive tests related to the characteristics of over-moulded cylinders.

The procedures and requirements of this alternative method are described below.

Alternative method:

(a) General

The following provisions apply to over-moulded cylinders produced serially and based on welded steel cylinders in accordance with EN 1442:2017, EN 14140:2014 + AC:2015 or annex I, parts 1 to 3 to Council Directive 84/527/EEC. The design of the over-moulding shall prevent water from penetrating on to the inner steel cylinder. The conversion of the steel cylinder to an over-moulded cylinder shall comply with the relevant requirements of EN 1442:2017 and EN 14140:2014 + AC:2015.

Over-moulded cylinders shall be equipped with self-closing valves.

(b) Basic population

A basic population of over-moulded cylinders is defined as the production of cylinders from only one over-moulding manufacturer using new inner cylinders manufactured by only one manufacturer within one calendar year, based on the same design type, the same materials and production processes.

(c) Sub-groups of a basic population

Within the above defined basic population, over-moulded cylinders belonging to different owners shall be separated into specific sub-groups, one per owner.

If the whole basic population is owned by one owner, the sub-group equals the basic population.

(d) Traceability

Inner steel cylinder marks in accordance with 6.2.3.9 shall be repeated on the over-moulding. In addition, each over-moulded cylinder shall be fitted with an individual resilient electronic identification device. The detailed characteristics of the over-moulded cylinders shall be recorded by the owner in a central database. The database shall be used to:

- Identify the specific sub-group;
- Make available to inspection bodies, filling centres and competent authorities the specific technical characteristics of the cylinders consisting of at least the following: serial number, steel cylinder production batch, over-moulding production batch, date of over-moulding;
- Identify the cylinder by linking the electronic device to the database with the serial number;
- Check individual cylinder history and determine measures (e.g. filling, sampling, retesting, withdrawal);
- Record performed measures including the date and the address of where it was done.

The recorded data shall be kept available by the owner of the over-moulded cylinders for the entire life of the sub-group.

(e) Sampling for statistical assessment

The sampling shall be random among a sub-group as defined in sub-paragraph (c). The size of each sample per sub-group shall be in accordance with the Table in sub-paragraph (g).

(f) Test procedure for destructive testing

The inspection and test required by 6.2.1.6.1 shall be carried out except (d) which shall be substituted by the following test procedure:

- Burst test (according to EN 1442:2017 or EN 14140:2014 + AC:2015).

In addition, the following tests shall be performed:

- Adhesion test (according to EN 1442:2017 or EN 14140:2014 + AC:2015);
- Peeling and Corrosion tests (according to EN ISO 4628-3:2016).

Adhesion test, peeling and corrosion tests, and burst test shall be performed on each related sample according to the Table in sub-paragraph (g) and shall be conducted after the first 3 years in service and every 5 years thereafter.

(g) Statistical evaluation of test results – Method and minimum requirements

The procedure for statistical evaluation according to the related rejection criteria is described in the following.

| Test interval (years) | Type of test | Standard | Rejection criteria | Sampling out of a sub-group |
|------------------------------------|--------------------------|--|--|--|
| After 3 years in service (see (f)) | Burst test | EN 1442:2017 | Burst pressure point of the representative sample must be above the lower limit of tolerance interval on the Sample Performance Chart $\Omega_m \geq 1 + \Omega_s \times k3(n;p;1-\alpha)^a$ No individual test result shall be less than the test pressure | $3\sqrt[3]{Q}$ or $Q/200$ whichever is lower, and with a minimum of 20 per sub-group (Q) |
| | Peeling and corrosion | EN ISO 4628-3:2016 | Max corrosion grade: Ri2 | Q/1000 |
| | Adhesion of polyurethane | ISO 2859-1:1999 + A1:2011 EN 1442:2017 EN 14140:2014 + AC:2015 | Adhesion value > 0.5 N/mm ² | See ISO 2859-1:1999 + A1:2011 applied to Q/1000 |
| Every 5 years thereafter (see (f)) | Burst test | EN 1442:2017 | Burst pressure point of the representative sample must be above the lower limit of tolerance interval on the Sample Performance Chart $\Omega_m \geq 1 + \Omega_s \times k3(n;p;1-\alpha)^a$ No individual test result shall be less than the test pressure | $6\sqrt[3]{Q}$ or $Q/100$ whichever is lower, and with a minimum of 40 per sub-group (Q) |
| | Peeling and corrosion | EN ISO 4628-3:2016 | Max corrosion grade: Ri2 | Q/1000 |
| | Adhesion of polyurethane | ISO 2859-1:1999 + A1:2011 EN 1442:2017 EN 14140:2014 + AC:2015 | Adhesion value > 0.5 N/mm ² | See ISO 2859-1:1999 + A1:2011 applied to Q/1000 |

^a Burst pressure point (BPP) of the representative sample is used for the evaluation of test results by using a Sample Performance Chart:

Step 1: Determination of the burst pressure point (BPP) of a representative sample

Each sample is represented by a point whose coordinates are the mean value of burst test results and the standard deviation of burst test results, each normalised to the relevant test pressure.

$$\text{BPP: } (\Omega_s = \frac{s}{PH}; \Omega_m = \frac{x}{PH})$$

with

\bar{x} = sample mean value;

s = sample standard deviation;

PH = test pressure

Step 2: Plotting on a Sample Performance Chart

Each BPP is plotted on a Sample Performance Chart with following axis:

- Abscissa: Standard Deviation normalised to test pressure (Ω_s)
- Ordinate: Mean value normalised to test pressure (Ω_m)

Step 3: Determination of the relevant lower limit of tolerance interval in the Sample Performance Chart

Results for burst pressure shall first be checked according to the Joint Test (multidirectional test) using a significance level of $\alpha = 0.05$ (see paragraph 7 of ISO 5479:1997) to determine whether the distribution of results for each sample is normal or non-normal.

- For a normal distribution, the determination of the relevant lower limit of tolerance is given in step 3.1.
- For a non-normal distribution, the determination of the relevant lower limit of tolerance is given in step 3.2.

Step 3.1: Lower limit of tolerance interval for results following a normal distribution

In accordance with the standard ISO 16269-6:2014, and considering that the variance is unknown, the unilateral statistical tolerance interval shall be considered for a confidence level of 95% and a fraction of population equal to 99.9999%.

By application in the Sample Performance Chart, the lower limit of tolerance interval is represented by a line of constant survival rate defined by the formula:

$$\Omega_m \geq 1 + \Omega_s \times k_3(n;p;1-\alpha)$$

with

k_3 = factor function of n , p and $1-\alpha$;

p = proportion of the population selected for the tolerance interval (99.9999%);

$1-\alpha$ = confidence level (95%);

n = sample size.

The value for k_3 dedicated to normal distributions shall be taken from the Table at end of Step 3.

Step 3.2: Lower limit of tolerance interval for results following a non-normal distribution

The unilateral statistical tolerance interval shall be calculated for a confidence level of 95% and a fraction of population equal to 99.9999%.

The lower limit of tolerance is represented by a line of constant survival rate defined by the formula given in previous step 3.1, with factors k_3 based and calculated on the properties of a Weibull distribution.

The value for k_3 dedicated to Weibull distributions shall be taken from the Table below at end of Step 3.

| Table for k_3 | | |
|---|----------------------------|-----------------------------|
| $p = 99.9999\%$ and $(1-\alpha) = 0.95$ | | |
| Sample size | Normal distribution | Weibull distribution |
| n | k_3 | k_3 |
| 20 | 6.901 | 16.021 |
| 22 | 6.765 | 15.722 |
| 24 | 6.651 | 15.472 |
| 26 | 6.553 | 15.258 |
| 28 | 6.468 | 15.072 |
| 30 | 6.393 | 14.909 |
| 35 | 6.241 | 14.578 |
| 40 | 6.123 | 14.321 |
| 45 | 6.028 | 14.116 |
| 50 | 5.949 | 13.947 |
| 60 | 5.827 | 13.683 |
| 70 | 5.735 | 13.485 |
| 80 | 5.662 | 13.329 |
| 90 | 5.603 | 13.203 |
| 100 | 5.554 | 13.098 |
| 150 | 5.393 | 12.754 |
| 200 | 5.300 | 12.557 |
| 250 | 5.238 | 12.426 |
| 300 | 5.193 | 12.330 |
| 400 | 5.131 | 12.199 |
| 500 | 5.089 | 12.111 |
| 1000 | 4.988 | 11.897 |
| ∞ | 4.753 | 11.408 |

NOTE: If sample size is between two values, the closest lower sample size shall be selected.

(h) Measures if the acceptance criteria are not met

If a result of the burst test, peeling and corrosion test or adhesion test does not comply with the criteria detailed in the Table in paragraph (g), the affected sub-group of over-moulded cylinders shall be segregated by the owner for further investigations and not be filled or made available for transport and use.

In agreement with the competent authority or the Xa body which issued the design approval, additional tests shall be performed to determine the root cause of the failure.

If the root cause cannot be proved to be limited to the affected sub-group of the owner, the competent authority or the Xa body shall take measures concerning the whole basic population and potentially other years of production.

If the root cause can be proved to be limited to a part of the affected sub-group, not affected parts may be authorized by the competent authority to return to service. It shall be proved that no individual over-moulded cylinder returning to service is affected.

(i) Filling centre requirements

The owner shall make available to the competent authority documentary evidence that the filling centres:

- Comply with the provisions of packing instruction P 200 (7) of 4.1.4.1 and that the requirements of the standard on pre-fill inspections referenced in the Table of packing instruction P 200 (11) of 4.1.4.1 are fulfilled and correctly applied;
- Have the appropriate means to identify over-moulded cylinders through the electronic identification device;
- Have access to the database as defined in (d);
- Have the capacity to update the database;
- Apply a quality system, according to the standard ISO 9000 (series) or equivalent, certified by an accredited independent body recognized by the competent authority."

Chapter 4.1

Under the heading of the Chapter, insert the following Note:

"NOTE: Packagings, including IBCs and large packagings, marked in accordance with 6.1.3, 6.2.2.7, 6.2.2.8, 6.2.2.9, 6.2.2.10, 6.3.4, 6.5.2 or 6.6.3 but which were approved in a country which is not an RID Contracting State may nevertheless be used for carriage under RID."

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

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

4.1.1.17 Amend to read as follows:

"**4.1.1.17** (Deleted)".

4.1.4.1

P 001 Under "Composite packagings", replace the rows for "plastics receptacle with outer steel or aluminium drum (6HA1, 6HB1)" and "plastics receptacle with outer fibre, plastics or plywood drum (6HG1, 6HH1, 6HD1)" as follows:

| Single packagings | Maximum capacity/Net mass (see 4.1.3.3) | | |
|---|--|------------------|-------------------|
| | Packing group I | Packing group II | Packing group III |
| plastics receptacle with outer steel, aluminium or plastics drum (6HA1, 6HB1, 6HH1) | 250 l | 250 l | 250 l |
| plastics receptacle with outer fibre or plywood drum (6HG1, 6HD1) | 120 l | 250 l | 250 l |

P 114b [The amendment in the German version does not apply to the English text.]

P 143 [The amendment in the German version does not apply to the English text.]

P 200 In paragraph (10), in special packing provision va, after "EN ISO 15996:2005 + A1:2007" add:

"or EN ISO 15996:2017" (twice).

In paragraph (11), in the Table, delete the first two rows (EN 1919:2000 and EN 1920:2000) and add the following new row:

| | | |
|-----|-------------------|---|
| (7) | EN ISO 24431:2016 | Gas cylinders – Seamless, welded and composite cylinders for compressed and liquefied gases (excluding acetylene) – Inspection at time of filling |
|-----|-------------------|---|

In paragraph (11), in the Table, in column "Reference", replace "EN 1439:2008 EN 1439:2008 (except 3.5 and Annex G)" by:

"EN 1439:2017".

In paragraph (11), in the Table, after the row for "EN 1439:2017", insert the following standard:

| | | |
|-----|---------------|--|
| (7) | EN 13952:2017 | LPG equipment and accessories – Filling operations for LPG cylinders |
|-----|---------------|--|

In paragraph (11), in the Table, delete the row for standard "EN 12755:2000".

In paragraph (12), in 2.1, replace "EN 1439:2008" by:

"EN 1439:2017 and EN 13952:2017".

In paragraph (13), under 2.1, replace "EN 1919:2000, EN 1920:2000" by:

"EN ISO 24431:2016".

P 520 In the additional requirement 4, replace "risk" by:
"hazard".

Add the following new special packing provisions:

"PP 94 Very small amounts of energetic samples of 2.1.4.3 may be carried under UN No. 3223 or UN No. 3224, as appropriate, provided that:

1. Only combination packagings with outer packagings comprising boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2) are used;
2. The samples are carried in microtiter plates or multi-titer plates made of plastics, glass, porcelain or stoneware as inner packaging;
3. The maximum amount per individual inner cavity does not exceed 0.01 g for solids or 0.01 ml for liquids;
4. The maximum net quantity per outer packaging is 20 g for solids or 20 ml for liquids, or in the case of mixed packing the sum of grams and millilitres does not exceed 20; and
5. When dry ice or liquid nitrogen is optionally used as a coolant for quality control measures, the requirements of 5.5.3 are complied with. Interior supports shall be provided to secure the inner packagings in their original position. The inner and outer packagings shall maintain their integrity at the temperature of the refrigerant used as well as the temperatures and the pressures which could result if refrigeration were lost.

PP 95 Small amounts of energetic samples of 2.1.4.3 may be carried under UN No. 3223 or UN No. 3224, as appropriate, provided that:

1. The outer packaging consists only of corrugated fibreboard of type 4G having minimum dimensions of 60 cm (length) by 40.5 cm (width) by 30 cm (height) and minimum wall thickness of 1.3 cm;
2. The individual substance is contained in an inner packaging of glass or plastics of maximum capacity 30 ml placed in an expandable polyethylene foam matrix of at least 130 mm thickness having a density of 18 ± 1 g/l;
3. Within the foam carrier, inner packagings are segregated from each other by a minimum distance of 40 mm and from the wall of the outer packaging by a minimum distance of 70 mm. The package may contain up to two layers of such foam matrices, each carrying up to 28 inner packagings;
4. The maximum content of each inner packaging does not exceed 1 g for solids or 1 ml for liquids;
5. The maximum net quantity per outer packaging is 56 g for solids or 56 ml for liquids, or in the case of mixed packing the sum of grams and millilitres does not exceed 56; and

6. When dry ice or liquid nitrogen is optionally used as a coolant for quality control measures, the requirements of 5.5.3 are complied with. Interior supports shall be provided to secure the inner packagings in their original position. The inner and outer packagings shall maintain their integrity at the temperature of the refrigerant used as well as the temperatures and the pressures which could result if refrigeration were lost."

- P 620** Amend additional requirement 3 to read as follows:
- "3. Whatever the intended temperature of the consignment, the primary receptacle or the secondary packaging shall be capable of withstanding without leakage an internal pressure producing a pressure differential of not less than 95 kPa. This primary receptacle or secondary packaging shall also be capable of withstanding temperatures in the range -40 °C to +55 °C.
- P 801** In additional requirement 2, replace "non conductive" by:
- "electrically non-conductive".
- P 901** Under "Additional requirements", delete:
- "not exceed either 250 ml or 250 g and shall".
- [The second amendment in the German version does not apply to the English text.]
- P 902** In the paragraph under "Unpackaged articles:", amend the end of the sentence to read:
- "when moved to, from, or between where they are manufactured and an assembly plant including intermediate handling locations."
- P 903** Before the introductory sentence that starts "The following packagings...", insert a new sentence to read as follows:
- "For the purpose of this packing instruction, "equipment" means apparatus for which the lithium cells or batteries will provide electrical power for its operation."
- In paragraph (3). delete the last sentence.
- P 906** [The amendment to paragraph (2) in the French version does not apply to the English text.]
- P 908** In paragraphs 2 and 4, replace "non-conductive" by:
- "electrically non-conductive".
- P 909** In paragraphs 1 (c) and 2 (b), in the fourth indent of additional requirement 2 and in additional requirement 3, replace "non-conductive" by:
- "electrically non-conductive".

P 910 In the introductory sentence, replace "cells and batteries" by:

"cells or batteries" (twice).

[The amendments to paragraph (1) (b), the first and third amendments to paragraph (1) (c), the first and third amendments to paragraph (1) (d), the amendments to paragraph (1) (e), the amendment to paragraph (1) (f) and the amendment to paragraph (2) (a) in the German version do not apply to the English text.]

In paragraphs (1) (c), (1) (d), (2) (c) and in the fourth indent of the additional requirements, replace "non-conductive" by:

"electrically non-conductive".

R 001 In Note 2, replace "risk" by:

"hazard".

Insert the following new packing instructions:

"

| P 006 | PACKING INSTRUCTION | P 006 |
|--|----------------------------|--------------|
| This instruction applies to UN Nos. 3537 to 3548. | | |
| <p>(1) The following packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:</p> <p>Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G); Boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2); Jerricans (3A2, 3B2, 3H2). Packagings shall conform to the packing group II performance level.</p> <p>(2) In addition, for robust articles the following packagings are authorized:</p> <p>Strong outer packagings constructed of suitable material and of adequate strength and design in relation to the packaging capacity and its intended use. The packagings shall meet the provisions of 4.1.1.1, 4.1.1.2, 4.1.1.8 and 4.1.3 in order to achieve a level of protection that is at least equivalent to that provided by Chapter 6.1. Articles may be carried unpackaged or on pallets when the dangerous goods are afforded equivalent protection by the article in which they are contained.</p> <p>(3) Additionally, the following conditions shall be met:</p> <p>(a) Receptacles within articles containing liquids or solids shall be constructed of suitable materials and secured in the article in such a way that, under normal conditions of carriage, they cannot break, be punctured or leak their contents into the article itself or the outer packaging;</p> <p>(b) Receptacles containing liquids with closures shall be packed with their closures correctly oriented. The receptacles shall in addition conform to the internal pressure test provisions of 6.1.5.5;</p> <p>(c) Receptacles that are liable to break or be punctured easily, such as those made of glass, porcelain or stoneware or of certain plastics materials shall be properly secured. Any leakage of the contents shall not substantially impair the protective properties of the article or of the outer packaging;</p> <p>(d) Receptacles within articles containing gases shall meet the requirements of Section 4.1.6 and Chapter 6.2 as appropriate or be capable of providing an equivalent level of protection as packing instructions P 200 or P 208;</p> | | |

- (e) Where there is no receptacle within the article, the article shall fully enclose the dangerous substances and prevent their release under normal conditions of carriage.
- (4) Articles shall be packed to prevent movement and inadvertent operation during normal conditions of carriage.

"
"

| | | |
|--------------|----------------------------|--------------|
| P 907 | PACKING INSTRUCTION | P 907 |
|--------------|----------------------------|--------------|

This instruction applies to UN No. 3363.

If the machinery or apparatus is constructed and designed so that the receptacles containing the dangerous goods are afforded adequate protection, an outer packaging is not required. Dangerous goods in machinery or apparatus shall otherwise be packed in outer packagings constructed of suitable material, and of adequate strength and design in relation to the packaging capacity and its intended use, and meeting the applicable requirements of 4.1.1.1.

Receptacles containing dangerous goods shall conform to the general provisions in 4.1.1, except that 4.1.1.3, 4.1.1.4, 4.1.1.12 and 4.1.1.14 do not apply. For non-flammable, non-toxic gases, the inner cylinder or receptacle, its contents and filling density shall be to the satisfaction of the competent authority of the country in which the cylinder or receptacle is filled.

In addition, the manner in which receptacles are contained within the machinery or apparatus, shall be such that under normal conditions of carriage, damage to receptacles containing the dangerous goods is unlikely; and in the event of damage to receptacles containing solid or liquid dangerous goods, no leakage of the dangerous goods from the machinery or apparatus is possible (a leakproof liner may be used to satisfy this requirement). Receptacles containing dangerous goods shall be so installed, secured or cushioned as to prevent their breakage or leakage and so as to control their movement within the machinery or apparatus during normal conditions of carriage. Cushioning material shall not react dangerously with the content of the receptacles. Any leakage of the contents shall not substantially impair the protective properties of the cushioning material.

"
"

| | | |
|--------------|----------------------------|--------------|
| P 911 | PACKING INSTRUCTION | P 911 |
|--------------|----------------------------|--------------|

This instruction applies to damaged or defective cells and batteries of UN Nos. 3090, 3091, 3480 and 3481 liable to rapidly disassemble, dangerously react, produce a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours under normal conditions of carriage.

The following packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:

For cells and batteries and equipment containing cells and batteries:

- Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);
- Boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2);
- Jerricans (3A2, 3B2, 3H2).

The packagings shall conform to the packing group I performance level.

- (1) The packaging shall be capable of meeting the following additional performance requirements in case of rapid disassembly, dangerous reaction, production of a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours of the cells or batteries:
- (a) The outside surface temperature of the completed package shall not have a temperature

- of more than 100 °C. A momentary spike in temperature up to 200 °C is acceptable;
- (b) No flame shall occur outside the package;
 - (c) No projectiles shall exit the package;
 - (d) The structural integrity of the package shall be maintained; and
 - (e) The packagings shall have a gas management system (e.g. filter system, air circulation, containment for gas, gas tight packaging etc.), as appropriate.
- (2) The additional packaging performance requirements shall be verified by a test as specified by the competent authority of any RID Contracting State who may also recognize a test specified by the competent authority of a country which is not an RID Contracting State provided that this test has been specified in accordance with the procedures applicable according to RID, ADR, ADN, the IMDG Code or the ICAO Technical Instructions^a.
- A verification report shall be available on request. As a minimum requirement, the cell or battery name, the cell or battery number, the mass, type, energy content of the cells or batteries, the packaging identification and the test data according to the verification method as specified by the competent authority shall be listed in the verification report.
- (3) When dry ice or liquid nitrogen is used as a coolant, the requirements of section 5.5.3 shall apply. The inner packaging and outer packaging shall maintain their integrity at the temperature of the refrigerant used as well as the temperatures and the pressures which could result if refrigeration were lost.

Additional requirement

Cells or batteries shall be protected against short circuit.

- ^a The following criteria, as relevant, may be considered to assess the performance of the packaging:
- (a) The assessment shall be done under a quality management system (as described e.g. in section 2.2.9.1.7 (e)) allowing for the traceability of tests results, reference data and characterization models used;
 - (b) The list of hazards expected in case of thermal run-away for the cell or battery type, in the condition it is carried (e.g. usage of an inner packaging, state of charge (SOC), use of sufficient non-combustible, electrically non-conductive and absorbent cushioning material etc.), shall be clearly identified and quantified; the reference list of possible hazards for lithium cells or batteries (rapidly disassemble, dangerously react, produce a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours) can be used for this purpose. The quantification of these hazards shall rely on available scientific literature;
 - (c) The mitigating effects of the packaging shall be identified and characterized, based on the nature of the protections provided and the construction material properties. A list of technical characteristics and drawings shall be used to support this assessment (Density ($\text{kg}\cdot\text{m}^{-3}$), specific heat capacity ($\text{J}\cdot\text{kg}^{-1}\cdot\text{K}^{-1}$), heating value ($\text{kJ}\cdot\text{kg}^{-1}$), thermal conductivity ($\text{W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), melting temperature and flammability temperature (K), heat transfer coefficient of the outer packaging ($\text{W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$), ...);
 - (d) The test and any supporting calculations shall assess the result of a thermal run-away of the cell or battery inside the packaging in the normal conditions of carriage;
 - (e) In case the SOC of the cell or battery is not known, the assessment used, shall be done with the highest possible SOC corresponding to the cell or battery use conditions;
 - (f) The surrounding conditions in which the packaging may be used and carried shall be described (including for possible consequences of gas or smoke emissions on the environment, such as ventilation or other methods) according to the gas management system of the packaging;

- (g) The tests or the model calculation shall consider the worst case scenario for the thermal run-away triggering and propagation inside the cell or battery; this scenario includes the worst possible failure in the normal carriage condition, the maximum heat and flame emissions for the possible propagation of the reaction;
- (h) These scenarios shall be assessed over a period of time long enough to allow all the possible consequences to occur (e.g. 24 hours).

4.1.4.2

IBC 520 In the second line, after "4.1.7.2.", insert a new sentence to read as follows:

"The formulations listed below may also be carried packed in accordance with packing method OP8 of packing instruction P 520 of 4.1.4.1."

For UN No. 3109, under the entry "tert-BUTYL HYDROPEROXIDE, not more than 72% with water", add a new line to read:

| UN No. | Organic peroxid | Type of IBC | Maximum quantity (litres/kg) |
|--------|-----------------|-------------|------------------------------|
| | | 31HA1 | 1000 |

Add the following new entries:

| UN No. | Organic peroxid | Type of IBC | Maximum quantity (litres/kg) |
|--------|---|-------------|------------------------------|
| 3109 | 2,5-DIMETHYL-2,5-DI(tert-BUTYLPEROXY)HEXANE, not more than 52% in diluent type A | 31HA1 | 1000 |
| | 3,6,9-TRIETHYL-3,6,9-TRIMETHYL-1,4,7-TRIPEROXONANE, not more than 27% in diluent type A | 31HA1 | 1000 |

4.1.4.3

LP 902 Under "Packaged articles", replace "Packagings conforming to the packing group III performance level." by:

"Rigid large packagings conforming to the packing group III performance level, made of:

- steel (50A);
- aluminium (50B);
- metal other than steel or aluminium (50N);
- rigid plastics (50H);
- natural wood (50C);
- plywood (50D);
- reconstituted wood (50F);
- rigid fibreboard (50G)."

In the paragraph under "Unpackaged articles:", amend the end of the sentence to read:

"when moved to, from, or between where they are manufactured and an assembly plant including intermediate handling locations."

LP 903 In the second sentence, replace ", including for a battery contained in equipment" by:

"and for a single item of equipment containing batteries,".

Amend the last sentence before the additional requirements to read as follows:

"The battery or the equipment shall be packed so that the battery or the equipment is protected against damage that may be caused by its movement or placement within the large packaging."

LP 904 Amend the first sentence to read as follows:

"This instruction applies to single damaged or defective batteries and to single items of equipment containing damaged or defective cells and batteries of UN Nos. 3090, 3091, 3480 and 3481."

Amend the second sentence to read as follows:

"The following large packagings are authorized for a single damaged or defective battery and for a single item of equipment containing damaged or defective cells and batteries, provided the general provisions of 4.1.1 and 4.1.3 are met."

In the third sentence replace "For batteries and equipment containing batteries, large packagings made of:" by:

"For batteries and equipment containing cells and batteries:

Rigid large packagings conforming to the packing group II performance level, made of:".

After "plywood (50D)", delete:

"Packagings shall conform to the packing group II performance level."

In paragraph 1, amend the beginning of the first sentence to read as follows:

"The damaged or defective battery or equipment containing such cells or batteries shall be ...".

In paragraph 2, amend the beginning of the sentence to read:

"The inner packaging ...".

In paragraph 2, replace "non-conductive" by:

"electrically non-conductive".

In paragraph 4, after "movement of the battery" add:

"or the equipment".

In paragraph 4, replace "non-conductive" by:

"electrically non-conductive".

In the last sentence before the additional requirement, replace "For leaking batteries" by:

"For leaking cells and batteries".

In the additional requirement, replace "Batteries" by:

"Cells and batteries".

Insert the following new packing instructions:

"

| LP 03 | PACKING INSTRUCTION | LP 03 |
|---|---------------------|-------|
| This instruction applies to UN Nos. 3537 to 3548. | | |
| <p>(1) The following large packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:</p> <p>Rigid large packagings conforming to the packing group II performance level made of:</p> <ul style="list-style-type: none"> steel (50A); aluminium (50B); metal other than steel or aluminium (50N); rigid plastics (50H); natural wood (50C); plywood (50D); reconstituted wood (50F); rigid fibreboard (50G). <p>(2) Additionally, the following conditions shall be met:</p> <ul style="list-style-type: none"> (a) Receptacles within articles containing liquids or solids shall be constructed of suitable materials and secured in the article in such a way that, under normal conditions of carriage, they cannot break, be punctured or leak their contents into the article itself or the outer packaging; (b) Receptacles containing liquids with closures shall be packed with their closures correctly oriented. The receptacles shall in addition conform to the internal pressure test provisions of 6.1.5.5; (c) Receptacles that are liable to break or be punctured easily, such as those made of glass, porcelain or stoneware or of certain plastics materials shall be properly secured. Any leakage of the contents shall not substantially impair the protective properties of the article or of the outer packaging; (d) Receptacles within articles containing gases shall meet the requirements of Section 4.1.6 and Chapter 6.2 as appropriate or be capable of providing an equivalent level of protection as packing instructions P 200 or P 208; and (e) Where there is no receptacle within the article, the article shall fully enclose the dangerous substances and prevent their release under normal conditions of carriage. <p>(3) Articles shall be packed to prevent movement and inadvertent operation during normal conditions of carriage.</p> | | |

"

"

| LP 905 | PACKING INSTRUCTION | LP 905 |
|--|---------------------|--------|
| <p>This instruction applies to UN Nos. 3090, 3091, 3480 and 3481 production runs consisting of not more than 100 cells and batteries and to pre-production prototypes of cells and batteries when these prototypes are carried for testing.</p> | | |
| <p>The following large packagings are authorized for a single battery and for a single item of equipment containing cells or batteries, provided that the general provisions of 4.1.1 and 4.1.3 are met:</p> <p>(1) For a single battery:</p> <p>Rigid large packagings conforming to the packing group II performance level, made of:</p> <ul style="list-style-type: none"> steel (50A); aluminium (50B); metal other than steel or aluminium (50N); rigid plastics (50H); natural wood (50C); plywood (50D); reconstituted wood (50F); rigid fibreboard (50G). <p>Large packagings shall also meet the following requirements:</p> <ul style="list-style-type: none"> (a) A battery of different size, shape or mass may be packed in an outer packaging of a tested design type listed above provided the total gross mass of the package does not exceed the gross mass for which the design type has been tested; (b) The battery shall be packed in an inner packaging and placed inside the outer packaging; (c) The inner packaging shall be completely surrounded by sufficient non-combustible and electrically non-conductive thermal insulation material to protect against a dangerous evolution of heat; (d) Appropriate measures shall be taken to minimize the effects of vibration and shocks and prevent movement of the battery within the package that may lead to damage and a dangerous condition during carriage. When cushioning material is used to meet this requirement it shall be non-combustible and electrically non-conductive; and (e) Non-combustibility shall be assessed according to a standard recognized in the country where the large packaging is designed or manufactured. <p>(2) For a single item of equipment containing cells or batteries:</p> <p>Rigid large packagings conforming to the packing group II performance level, made of:</p> <ul style="list-style-type: none"> steel (50A); aluminium (50B); metal other than steel or aluminium (50N); rigid plastics (50H); natural wood (50C); plywood (50D); reconstituted wood (50F); rigid fibreboard (50G). <p>Large packagings shall also meet the following requirements:</p> <ul style="list-style-type: none"> (a) A single item of equipment of different size, shape or mass may be packed in an outer packaging of a tested design type listed above provided the total gross mass of the package does not exceed the gross mass for which the design type has been tested; (b) The equipment shall be constructed or packed in such a manner as to prevent accidental operation during carriage; (c) Appropriate measures shall be taken to minimize the effects of vibration and shocks and | | |

prevent movement of the equipment within the package that may lead to damage and a dangerous condition during carriage. When cushioning material is used to meet this requirement, it shall be non-combustible and electrically non-conductive; and

- (d) Non-combustibility shall be assessed according to a standard recognized in the country where the large packaging is designed or manufactured.

Additional requirement

Cells and batteries shall be protected against short circuit.

LP 906

PACKING INSTRUCTION

LP 906

This instruction applies to damaged or defective batteries of UN Nos. 3090, 3091, 3480 and 3481 liable to rapidly disassemble, dangerously react, produce a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours under normal conditions of carriage.

The following large packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:

For a single battery and for a single item of equipment containing batteries:

Für eine einzelne Batterie und eine einzelne Ausrüstung, die Batterien enthält:

Rigid large packagings conforming to the packing group I performance level, made of:

- steel (50A);
- aluminium (50B);
- metal other than steel or aluminium (50N);
- rigid plastics (50H);
- plywood (50D);
- rigid fibreboard (50G)

- (1) The large packaging shall be capable of meeting the following additional performance requirements in case of rapid disassembly, dangerous reaction, production of a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours of the battery:
 - (a) The outside surface temperature of the completed package shall not have a temperature of more than 100 °C. A momentary spike in temperature up to 200 °C is acceptable;
 - (b) No flame shall occur outside the package;
 - (c) No projectiles shall exit the package;
 - (d) The structural integrity of the package shall be maintained; and
 - (e) The large packagings shall have a gas management system (e.g. filter system, air circulation, containment for gas, gas tight packaging etc.), as appropriate.
- (2) The additional large packaging performance requirements shall be verified by a test as specified by the competent authority of any RID Contracting State who may also recognize a test specified by the competent authority of a country which is not an RID Contracting State provided that this test has been specified in accordance with the procedures applicable according to RID, ADR, ADN, the IMDG Code or the ICAO Technical Instructions^a.

A verification report shall be available on request. As a minimum requirement, the battery name, the battery number, the mass, type, 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.

- (3) When dry ice or liquid nitrogen is used as a coolant, the requirements of section 5.5.3 shall apply. The inner packaging and outer packaging shall maintain their integrity at the tempera-

ture of the refrigerant used as well as the temperatures and the pressures which could result if refrigeration were lost.

Additional requirement

Batteries shall be protected against short circuit.

^a The following criteria, as relevant, may be considered to assess the performance of the large packaging:

- (a) The assessment shall be done under a quality management system (as described e.g. in section 2.2.9.1.7 (e)) allowing for the traceability of tests results, reference data and characterization models used;
- (b) The list of hazards expected in case of thermal run-away for the battery type, in the condition it is carried (e.g. usage of an inner packaging, state of charge (SOC), use of sufficient non-combustible, electrically non-conductive and absorbent cushioning material etc.), shall be clearly identified and quantified; the reference list of possible hazards for lithium batteries (rapidly disassemble, dangerously react, produce a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours) can be used for this purpose. The quantification of these hazards shall rely on available scientific literature;
- (c) The mitigating effects of the large packaging shall be identified and characterized, based on the nature of the protections provided and the construction material properties. A list of technical characteristics and drawings shall be used to support this assessment (Density ($\text{kg}\cdot\text{m}^{-3}$), specific heat capacity ($\text{J}\cdot\text{kg}^{-1}\cdot\text{K}^{-1}$), heating value ($\text{kJ}\cdot\text{kg}^{-1}$), thermal conductivity ($\text{W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), melting temperature and flammability temperature (K), heat transfer coefficient of the outer packaging ($\text{W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$), ...);
- (d) The test and any supporting calculations shall assess the result of a thermal run-away of the battery inside the large packaging in the normal conditions of carriage;
- (e) In case the SOC of the battery is not known, the assessment used, shall be done with the highest possible SOC corresponding to the battery use conditions;
- (f) The surrounding conditions in which the large packaging may be used and carried shall be described (including for possible consequences of gas or smoke emissions on the environment, such as ventilation or other methods) according to the gas management system of the large packaging;
- (g) The tests or the model calculation shall consider the worst case scenario for the thermal run-away triggering and propagation inside the battery; this scenario includes the worst possible failure in the normal carriage condition, the maximum heat and flame emissions for the possible propagation of the reaction;
- (h) These scenarios shall be assessed over a period of time long enough to allow all the possible consequences to occur (e.g. 24 hours).

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

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

4.1.6.4 In the second sentence, replace "risk" by:
"hazard".

4.1.6.15 In the Table, in the column "Reference", replace "ISO 11114-1:2012" by:
"EN ISO 11114-1:2012 + A1:2017".

In the Table, in the column "Reference", replace "Annex A of ISO 10297:2006 or annex A of ISO 10297:2014" by:

"Annex A of EN ISO 10297:2006 or annex A of EN ISO 10297:2014 or annex A of EN ISO 10297:2014 + A1:[2017]".

In the Table, for "4.1.6.8 Valves with inherent protection", add the following new row:

| Applicable paragraphs | Reference | Document title |
|-----------------------|-------------------|---|
| | EN ISO 17879:2017 | Gas cylinders – Self-closing cylinder valves - Specification and type testing |

4.1.9.1.5 Replace "risk" by:

"hazard" (twice).

4.1.10.4

MP 24 In the Table, insert a new column and a new row with the following heading:

"0509".

At the intersections of this new column/row with the columns/rows for UN Nos. 0027, 0028, 0044, 0160 and 0161, insert:

"B".

Chapter 4.2

4.2.1.19.1 Replace "risk" by:

"hazard".

4.2.5.2.6

T 23 In the first line after the title, at the end, add a new sentence to read as follows:

"The formulations listed below may also be carried packed in accordance with packing method OP8 of packing instruction P 520 of 4.1.4.1."

4.2.5.3

TP 10 Add the following new sentence at the end:

"A portable tank may be offered for carriage after the date of expiry of the last lining inspection for a period not to exceed three months beyond the date of expiry of the last testing, after emptying but before cleaning, for purposes of performing the next required test or inspection prior to refilling."

Chapter 4.3

4.3.2.2.1 In paragraph (a), replace "risks" by:

"hazards".

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

4.3.4.1.3 Add the following new sentence at the end of the first paragraph:

"The requirements for these tanks are given by the following tank codes supplemented by the relevant special provisions indicated in column (13) of Table A in Chapter 3.2."

Replace paragraphs (a) to (i) by the following Table:

| Class | UN No. | Name and description | Tank code |
|--------------|----------------------------------|--|------------------|
| 4.1 | 2448 | Sulphur, molten | LGBV |
| | 3531 | Polymerizing substance, solid, stabilized, n.o.s. | SGAN |
| | 3532 | Polymerizing substance, liquid, stabilized, n.o.s. | L4BN |
| 4.2 | 1381 | Phosphorus, white or yellow, dry, under water or in solution | L10DH |
| | 2447 | Phosphorus, white, molten | |
| 4.3 | 1389 | Alkali metal amalgam, liquid | L10BN |
| | 1391 | Alkali metal dispersion or Alkaline earth metal dispersion | |
| | 1392 | Alkaline earth metal amalgam, liquid | |
| | 1415 | Lithium | |
| | 1420 | Potassium metal alloys, liquid | |
| | 1421 | Alkali metal alloy, liquid, n.o.s. | |
| | 1422 | Potassium sodium alloys, liquid | |
| | 1428 | Sodium | |
| | 2257 | Potassium | |
| | 3401 | Alkali metal amalgam, solid | |
| | 3402 | Alkaline earth metal amalgam, solid | |
| | 3403 | Potassium metal alloys, solid | |
| | 3404 | Potassium sodium alloys, solid | |
| | 3482 | Alkali metal dispersion, flammable or Alkaline earth metal dispersion, flammable | |
| | 1407 | Caesium | |
| 1423 | Rubidium | S2.65AN | |
| 1402 | Calcium carbide, packing group I | | |
| 5.1 | 1873 | Perchloric acid with more than 50% but not more than 72% acid, by mass | L4DN |
| | 2015 | Hydrogen peroxide, aqueous solution, stabilized with more than 70% hydrogen peroxide | L4DV |
| | 2014 | Hydrogen peroxide, aqueous solution with not less than 20% but not more than 60% hydrogen peroxide | L4BV |
| | 2015 | Hydrogen peroxide, aqueous solution, stabilized with more than 60% hydrogen peroxide and not more than 70% hydrogen peroxide | |
| | 2426 | Ammonium nitrate, liquid, hot concentrated solution with more than 80% but not more than 93% | |
| | 3149 | Hydrogen peroxide and peroxyacetic acid mixture, | |

| Class | UN No. | Name and description | Tank code |
|----------------|--------|--|---------------|
| | | stabilized | |
| | 3375 | Ammonium nitrate emulsion, suspension or gel, intermediate for blasting explosives, liquid | LGAV |
| | 3375 | Ammonium nitrate emulsion, suspension or gel, intermediate for blasting explosives, solid | SGAV |
| 5.2 | 3109 | Organic peroxide, type F, liquid | L4BN |
| | 3110 | Organic peroxide, type F, solid | S4AN |
| 6.1 | 1613 | Hydrogen cyanide, aqueous solution | L15DH |
| | 3294 | Hydrogen cyanide solution in alcohol | |
| 7 ^a | | All substances | Special tanks |
| | | Minimum requirement for liquids | L2.65CN |
| | | Minimum requirement for solids | S2.65AN |
| 8 | 1052 | Hydrogen fluoride, anhydrous | L21DH |
| | 1744 | Bromine or bromine solution | |
| | 1790 | Hydrofluoric acid, solution, with more than 85% hydrofluoric acid | |
| | 1791 | Hypochlorite solution | L4BV |
| | 1908 | Chlorite solution | |

^a Notwithstanding the general requirements of this paragraph, tanks used for radioactive material may also be used for the carriage of other goods provided the requirements of 5.1.3.2 are complied with."

4.3.5

TU 35 [The amendment in the German version does not apply to the English text.]

TU 37 [The amendments in the German version do not apply to the English text.]

Add the following new special provisions:

"TU 42 Tanks with a shell constructed of aluminium alloy, including those with a protective lining, shall only be used if the pH value of the substance is not less than 5.0 and not more than 8.0."

TU 43 An empty uncleaned tank may be offered for carriage after the date of expiry of the last inspection of the lining for a period not to exceed three months beyond this date for the purposes of performing the next inspection of the lining prior to refilling (see special provision TT 2 in 6.8.4 (d))."

Chapter 5.2

5.2.1 After the heading, renumber the Note as Note 1 and add a new Note 2:

"2: In accordance with the GHS, a GHS pictogram not required by RID should only appear in carriage as part of a complete GHS label and not independently (see GHS 1.4.10.4.4)."

5.2.1.3 After "Salvage packagings", add:

"including large salvage packagings".

5.2.1.10.1 In the second indent, at the end, delete:

"and".

In the third indent, at the end, replace the comma by:

"; and".

Add the following new fourth indent:

"– machinery or apparatus containing liquid dangerous goods when it is required to ensure the liquid dangerous goods remain in their intended orientation (see special provision 301 of Chapter 3.3),".

5.2.2.1 Add the following new paragraph **5.2.2.1.12**:

5.2.2.1.12 **Special provisions for the labelling of articles containing dangerous goods carried as UN Nos. 3537, 3538, 3539, 3540, 3541, 3542, 3543, 3544, 3545, 3546, 3547 and 3548**

5.2.2.1.12.1 Packages containing articles or articles carried unpackaged shall bear labels according to 5.2.2.1 reflecting the hazards established according to 2.1.5, except that for articles that in addition contain lithium batteries, a lithium battery mark or a label conforming to model No. 9A is not required.

5.2.2.1.12.2 When it is required to ensure articles containing liquid dangerous goods remain in their intended orientation, orientation arrows meeting 5.2.1.10.1 shall be affixed and visible on at least two opposite vertical sides of the package or of the unpackaged article where possible, with the arrows pointing in the correct upright direction."

[5.2.2.2.1.1.2 Replace the second and third sentences by:

"The minimum dimensions shall be 100 mm × 100 mm. There shall be a line inside the edge forming the diamond which shall be parallel and approximately 5 mm from the outside of that line to the edge of the label."]

5.2.2.2.1.1.3 In the first sentence, after "the dimensions may be reduced" add:

"proportionally".

Delete the second and third sentences ("The line inside the edge shall remain 5 mm to the edge of the label. The minimum width of the line inside the edge shall remain 2 mm.").

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

In the paragraph after the Note, replace "risk" by:





"hazard".


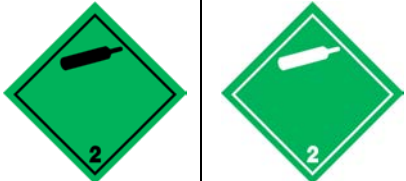


5.2.2.2.1.3 [The amendment in the French version does not apply to the English text.]



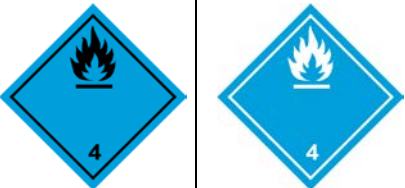
5.2.2.2.1.5 Replace "risk" by:
"hazard".




5.2.2.2.2 Amend to read as follows:




"5.2.2.2.2 Specimen labels




| Label model No. | Division or Category | Symbol and symbol colour | Back-ground | Figure in bottom corner (and figure colour) | Specimen labels | Note |
|---|-------------------------|---|-------------|---|---|--|
| Class 1 hazard: Explosive substances or articles | | | | | | |
| 1 | Divisions 1.1, 1.2, 1.3 | Exploding bomb: black | Orange | 1 (black) |  | ** Place for division – to be left blank if explosive is the subsidiary hazard * Place for compatibility group – to be left blank if explosive is the subsidiary hazard |
| 1.4 | Division 1.4 | 1.4: black Numerals shall be about 30 mm in height and be about 5 mm thick (for a label measuring 100 mm × 100 mm). | Orange | 1 (black) |  | * Place for compatibility group |
| 1.5 | Division 1.5 | 1.5: black Numerals shall be about 30 mm in height and be about 5 mm thick (for a label measuring 100 mm × 100 mm). | Orange | 1 (black) |  | * Place for compatibility group |
| 1.6 | Unterklasse 1.6 | 1.6: black Numerals shall be about 30 mm in height and be about 5 mm thick (for a label measuring 100 mm × 100 mm) 1.6: schwarz | Orange | 1 (black) |  | * Place for compatibility group |



| Label model No. | Division or Category | Symbol and symbol colour | Background | Figure in bottom corner (and figure colour) | Specimen labels | Note |
|--|--|------------------------------|------------|---|---|------|
| Gefahr der Klasse 2: Gase | | | | | | |
| 2.1 | Flammable gases (except as provided for in 5.2.2.2.1.6 d)) | Flame: black or white | Red | 2 (black or white) |  | – |
| 2.2 | Non-flammable, non-toxic gases | Gas cylinder: black or white | Green | 2 (black or white) |  | – |
| 2.3 | Toxic gases | Skull and crossbones: black | White | 2 (black) |  | – |
| Class 3 hazard: Flammable liquids | | | | | | |
| 3 | – | Flame: black or white | Red | 3 (black or white) |  | – |

| Label model No. | Division or Category | Symbol and symbol colour | Background | Figure in bottom corner (and figure colour) | Specimen labels | Note |
|--|----------------------|--------------------------|-----------------------------------|---|--|------|
| Class 4.1 hazard: Flammable solids, self-reactive substances, solid desensitized explosives and polymerizing substances | | | | | | |
| 4.1 | – | Flame: black | White with 7 vertical red stripes | 4 (black) |  | – |
| Class 4.2 hazard: Substances liable to spontaneous combustion | | | | | | |
| 4.2 | – | Flame: black | Upper half white, lower half red | 4 (black) |  | – |
| Class 4.3 hazard: Substances which, in contact with water emit flammable gases | | | | | | |
| 4.3 | – | Flame: black or white | Blue | 4 (black or white) |  | – |

| Label model No. | Division or Category | Symbol and symbol colour | Back-ground | Figure in bottom corner (and figure colour) | Specimen labels | Note |
|---|----------------------|-----------------------------|-----------------------------------|---|--|------|
| Class 5.1 hazard: Oxidizing substances | | | | | | |
| 5.1 | – | Flame over circle: black | Yellow | 5.1 (black) |  | – |
| Class 5.2 hazard: Organic peroxides | | | | | | |
| 5.2 | – | Flame: black or white | Upper half red, lower half yellow | 5.2 (black) |  | – |
| Class 6.1 hazard: Toxic substances | | | | | | |
| 6.1 | – | Skull and crossbones: black | White | 6 (black) |  | – |

| Label model No. | Division or Category | Symbol and symbol colour | Back-ground | Figure in bottom corner (and figure colour) | Specimen labels | Note |
|--|----------------------|---|---|---|---|--|
| Class 6.2 hazard: Infectious substances | | | | | | |
| 6.2 | – | Three crescents superimposed on a circle: black | White | 6 (black) |  | The lower half of the label may bear the inscriptions: "INFECTIOUS SUBSTANCE" and "IN THE CASE OF DAMAGE OR LEAKAGE IMMEDIATELY NOTIFY PUBLIC HEALTH AUTHORITY" in black colour. |
| Class 7 hazard: Radioactive material | | | | | | |
| 7A | Category I – WHITE | Trefoil: black | White | 7 (black) |  | Text (mandatory), black in lower half of label: "RADIOACTIVE" "CONTENTS ..." "ACTIVITY ..."; One red vertical bar shall follow the word: "RADIOACTIVE". |
| 7B | Category II – YELLOW | Trefoil: black | Upper half yellow with white border, lower half white | 7 (black) |  | Text (mandatory), black in lower half of label: "RADIOACTIVE" "CONTENTS ..." "ACTIVITY ..."; In a black outlined box: "TRANSPORT INDEX"; Two red vertical bars shall follow the word: "RADIOACTIVE". |

| Label model No. | Division or Category | Symbol and symbol colour | Background | Figure in bottom corner (and figure colour) | Specimen labels | Note |
|---|-----------------------|--|---|---|---|--|
| 7C | Category III – YELLOW | Trefoil: black | Upper half yellow with white border, lower half white | 7 (black) |  | Text (mandatory), black in lower half of label: "RADIOACTIVE" "CONTENTS ..." "ACTIVITY ..."; In a black outlined box: "TRANSPORT INDEX". Three red vertical bars shall follow the word: "RADIOACTIVE". |
| 7E | Fissile material | – | White | 7 (black) |  | Text (mandatory): black in upper half of label: "FISSILE"; In a black outlined box in the lower half of label: "CRITICALITY SAFETY INDEX". |
| Class 8 hazard: Corrosive substances | | | | | | |
| 8 | – | Liquids, spilling from two glass vessels and attacking a hand and a metal: black | Upper half white, lower half black with white border | 8 (white) |  | – |

| Label model No. | Division or Category | Symbol and symbol colour | Back-ground | Figure in bottom corner (and figure colour) | Specimen labels | Note |
|--|----------------------|--|-------------|---|---|------|
| Class 9 hazard: Miscellaneous dangerous substances and articles, including environmentally hazardous substances | | | | | | |
| 9 | – | 7 vertical stripes in upper half: black | White | 9 underlined (black) |  | – |
| 9A | – | 7 vertical stripes in upper half: black; battery group, one broken and emitting flame in lower half: black | White | 9 underlined (black) |  | – |

Chapter 5.3

- 5.3** After the heading, renumber the Note as Note 1.
- In Note 1, after "containers," insert:
- "bulk containers,".
- Add the following new Note 2:
- "2:** In accordance with the GHS, a GHS pictogram not required by RID should only appear in carriage as part of a complete GHS label and not independently (see GHS 1.4.10.4.4)."
- 5.3.1.1.1** In the first sentence, after "large containers," insert:
- "bulk containers,".
- In the second sentence, after "large container," insert:
- "bulk container,".
- At the end, add:
- "The placards shall be weather-resistant and shall ensure durable marking throughout the entire journey."
- 5.3.1.1.3** In the first paragraph, replace "risk" by:
- "hazard".
- 5.3.1.1.5** Replace "risk" by:
- "hazard" (twice).
- 5.3.1.2** In the title, after "large containers," insert:
- "bulk containers,".
- In the paragraph after the Note, at the end, add "and to two opposites sides of the bulk container".
- 5.3.1.3** In the title, after "large containers," insert:
- "bulk containers,".
- In the paragraph after the Note, after "large containers," insert:
- "bulk containers,".
- 5.3.2.1.5** After "containers," insert:
- "bulk containers,".
- 5.3.2.3.2** For hazard identification number 20, replace "risk" by:
- "hazard".

5.3.3 Add the following sentence at the end:

"The mark shall be weather-resistant and shall ensure durable marking throughout the entire journey."

5.3.6.1 After "large containers," insert:

"bulk containers,"

Add the following new sentence at the end:

"This does not apply to the exceptions listed in 5.2.1.8.1."

5.3.6.2 After "large containers," insert:

", bulk containers".

Chapter 5.4

5.4.1.1.1 In paragraph (c), in the Note, replace "risk" by:

"hazard".

In paragraph (d), in the Note, replace "risk" by:

"hazard".

In paragraph (j), amend the end of the first sentence to read as follows:

"..., the hazard identification number shall also be inscribed before the letters "UN" preceding the UN number (see paragraph (a))."

In paragraph (j), in the second sentence, after "substance", insert:

"or article".

5.4.1.1.5 In the heading and the following sentence, after "salvage packagings" add:

"including large salvage packagings".

5.4.1.1.6.2.1 In paragraph (b), in the first paragraph replace "risk(s)" by:

"hazard(s)".

In paragraph (b), the second paragraph, replace "risk" by:

"hazard".

5.4.1.1.19 In the first paragraph replace "risk(s)" by:

"hazard(s)".

In the second paragraph, replace "risk" by:

"hazard".

5.4.1.2.5.1 In paragraph (b), in the last sentence, replace "risk" by:
"hazard".

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

Chapter 5.5

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

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

Chapter 6.1

6.1.1.1 In paragraph (b), replace "(see Chapter 6.3, Note and packing instruction P 621 of 4.1.4.1)" by:

"(see Note under the heading of Chapter 6.3 and packing instruction P 621 of 4.1.4.1)".

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

6.1.3 [The amendment to Note 3 in the French version does not apply to the English text.]

6.1.5.8.1 Under item 8, add the following sentence at the end:

"For plastics packagings subject to the internal pressure test in 6.1.5.5, the temperature of the water used."

Chapter 6.2

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

6.2.1.6.1 Amend Note 2 to read as follows:

"**2:** For seamless steel cylinders and tubes the check of 6.2.1.6.1 (b) and hydraulic pressure test of 6.2.1.6.1 (d) may be replaced by a procedure conforming to ISO 16148:2016 "Gas cylinders – Refillable seamless steel gas cylinders and tubes – Acoustic emission examination (AT) and follow-up ultrasonic examination (UT) for periodic inspection and testing"."

In Note 3, replace "The hydraulic pressure test may be replaced" by:

"The check of 6.2.1.6.1 (b) and the hydraulic pressure test of 6.2.1.6.1 (d) may be replaced".

6.2.2.1.1 Amend the Table as follows:

– For "ISO 11118:1999", in the column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2020".

- After "ISO 11118:1999", insert a new line to read as follows:

"

| Reference | Title | Applicable for manufacture |
|----------------|--|----------------------------|
| ISO 11118:2015 | Gas cylinders – Non-refillable metallic gas cylinders – Specification and test methods | Until further notice |

"

6.2.2.1.2 Amend the Table as follows:

- For "ISO 11120:1999", in the column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2022".

- After "ISO 11120:1999", insert a new line to read as follows:

"

| Reference | Title | Applicable for manufacture |
|----------------|--|----------------------------|
| ISO 11120:2015 | Gas cylinders – Refillable seamless steel tubes of water capacity between 150 / and 3 000 / – Design, construction and testing | Until further notice |

"

6.2.2.1 Insert a new paragraph **6.2.2.1.8** to read as follows.

"6.2.2.1.8 The following standards apply for the design, construction and initial inspection and test of UN pressure drums, except that 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 21172-1:2015 | 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 NOTE: Irrespective of section 6.3.3.4 of this standard, welded steel gas pressure drums with dished ends convex to pressure may be used for the carriage of corrosive substances provided all applicable requirements of RID are met. | Until further notice |
| ISO 4706:2008 | Gas cylinders – Refillable welded steel cylinders – Test pressure 60 bar and below | Until further notice |
| ISO 18172-1:2007 | Gas cylinders – Refillable welded stainless steel cylinders – Part 1: Test pressure 6 MPa and below | Until further notice |

"

6.2.2.3 In the first Table, for "ISO 13340:2001", in the column "Applicable for manufacture", replace "Until further notice" by:

"Until 31 December 2020".

In the first Table, insert the following rows at the end:

| Reference | Title | Applicable for manufacture |
|----------------|--|----------------------------|
| ISO 14246:2014 | Gas cylinders – Cylinder valves – Manufacturing tests and examination | Until further notice |
| ISO 17871:2015 | Gas cylinders – Quick-release cylinders valves- Specification and type testing | Until further notice |

"

6.2.2.4

Amend the end of the introductory sentence to read:

"... testing of UN cylinders and their closures:".

Move the last row of the Table into a new Table, after the existing one, with the same headings and a new introductory sentence to read:

"The following standard applies to the periodic inspection and testing of UN metal hydride storage systems:".

In the first Table, for "ISO 11623:2002", in column "Applicable", replace "Until further notice" by:

"Until 31 December 2020".

After the row for "ISO 11623:2002" insert the following new row:

| Reference | Title | Applicable |
|----------------|--|----------------------|
| ISO 11623:2015 | Gas cylinders – Composite construction – Periodic inspection and testing | Until further notice |

"

At the end of the first Table, insert the following row:

| Reference | Title | Applicable |
|----------------|--|----------------------|
| ISO 22434:2006 | Transportable gas cylinders – Inspection and maintenance of cylinder valves NOTE: These requirements may be met at times other than at the periodic inspection and test of UN cylinders. | Until further notice |

"

6.2.2.7.4

Under paragraph (m), insert a new Note to read as follows:

NOTE: Information on marks that may be used for identifying threads for cylinders is given in ISO/TR 11364 "Gas cylinders – Compilation of national and international valve stem/gas cylinder neck threads and their identification and marking system".

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

6.2.3.5 Add new **6.2.3.5.3** and **6.2.3.5.4** to read as follows:

"6.2.3.5.3 *General provisions for the substitution of dedicated check(s) for periodic inspection and test required in 6.2.3.5.1*

6.2.3.5.3.1 This paragraph only applies to types of pressure receptacles designed and manufactured in accordance with the standards referred to in 6.2.4.1 or a technical code in accordance with 6.2.5, and for which the inherent properties of the design prevent the checks (b) or (d) for periodic inspection and test required in 6.2.1.6.1 to be applied or the results to be interpreted.

For such pressure receptacles, these check(s) shall be replaced by alternative method(s) related to the characteristics of the specific design specified under 6.2.3.5.4, and detailed in a special provision of Chapter 3.3 or a standard referenced in 6.2.4.2.

The alternative methods shall specify which checks and tests according to 6.2.1.6.1 (b) and (d) are to be substituted.

The alternative method(s) in combination with the remaining checks according to 6.2.1.6.1 (a) to (e) shall ensure a level of safety at least equivalent to the safety level for pressure receptacles of a similar size and use which are periodically inspected and tested in compliance with 6.2.3.5.1.

The alternative method(s) shall moreover detail all the following elements:

- A description of the relevant types of pressure receptacles;
- The procedure for the test(s);
- The specifications of the acceptance criteria;
- A description of the measures to be taken in case of rejection of pressure receptacles.

6.2.3.5.3.2 Non-destructive testing as an alternative method

The check(s) identified in 6.2.3.5.3.1 shall be supplemented or replaced by one (or more) non-destructive test method(s) to be performed on each individual pressure receptacle.

6.2.3.5.3.3 Destructive testing as an alternative method

If no non-destructive test method leads to an equivalent level of safety, the check(s) identified in 6.2.3.5.3.1, with exception of the check of the internal conditions mentioned in 6.2.1.6.1 (b), shall be supplemented or replaced by one (or more) destructive test method(s) in combination with its statistical evaluation.

In addition to the elements described above, the detailed method for destructive testing shall document the following elements:

- A description of the relevant basic population of pressure receptacles;
- A procedure for the random sampling of individual pressure receptacles to be tested;

- A procedure for the statistical evaluation of the test results including rejection criteria;
- A specification for the periodicity of destructive sample tests;
- A description of the measures to be taken if acceptance criteria are met but a safety relevant degradation of material properties is observed, which shall be used for the determination of the end of service life;
- A statistical assessment of the level of safety achieved by the alternative method.

6.2.3.5.4 Over-moulded cylinders subject to 6.2.3.5.3.1 shall be subject to periodic inspection and test in accordance with special provision 674 of Chapter 3.3."

6.2.3.6.1 Amend the first paragraph after the Table to read as follows:

"For refillable pressure receptacles, the conformity assessment of valves and other demountable accessories having a direct safety function may be carried out separately from the pressure receptacles. For non-refillable pressure receptacles, the conformity assessment of valves and other demountable accessories having a direct safety function shall be carried out together with the assessment of the pressure receptacles."

6.2.3.9.6 After "cylinder", add:

"or pressure drum" (twice)

6.2.4.1 Amend the Table, under "For design and construction", as follows:

- For standard "EN ISO 11120:1999 + A1:2013", in column (4), replace "Until further notice" by:

"Between 1 January 2015 and 31 December 2020".

- After standard "EN ISO 11120:1999 + A1:2013", insert the following new row:

| (1) | (2) | (3) | (4) | (5) |
|-------------------|---|---------------------|----------------------|-----|
| EN ISO 11120:2015 | Gas cylinders – Refillable seamless steel tubes of water capacity between 150 l and 3000 l – Design, construction and testing | 6.2.3.1 and 6.2.3.4 | Until further notice | |

- Amend the Note appearing under the title of standard EN 1251-2:2000 to read as follows:

NOTE: Standards EN 1252-1:1998 and EN 1626 referenced in this standard are also applicable to closed cryogenic receptacles for the carriage of UN No. 1972 (METHANE, REFRIGERATED LIQUID or NATURAL GAS, REFRIGERATED LIQUID)."

- For "EN 14140:2014 + AC:2015", in column (1), delete:

"(except over-moulded cylinders)".

Amend the Table, under "for closures", as follows:

- For standard "EN ISO 10297:2014", in column (2), delete:
"(ISO/DIS 10297:2012)".
- For standard "EN ISO 10297:2014", in column (4), replace "Until further notice" by:
"Between 1 January 2015 and 31 December 2020".
- After standard "EN ISO 10297:2014", insert the following new row:

| (1) | (2) | (3) | (4) | (5) |
|-------------------------------|--|---------------------|----------------------|-----|
| EN ISO 10297:2014 + A1:[2017] | Gas cylinders – Cylinder valves – Specification and type testing | 6.2.3.1 and 6.2.3.3 | Until further notice | |

- Under the title of standard EN 1626:2008, insert the following Note:
"NOTE: This standard is also applicable to valves for the carriage of UN No 1972 (METHANE, REFRIGERATED LIQUID or NATURAL GAS, REFRIGERATED LIQUID)."

- For standard "EN ISO 17871:2015", in column (4), replace "Until further notice" by:
"Between 1 January 2017 and 31 December 2020".

- After standard "EN ISO 17871:2015", add the following new standard:

| (1) | (2) | (3) | (4) | (5) |
|-------------------------------|--|------------------------------|----------------------|-----|
| EN ISO 17871:2015 + A1:[2018] | 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 | |

- At the end, add the following new row:

| (1) | (2) | (3) | (4) | (5) |
|-------------------|---|---------------------|----------------------|-----|
| EN ISO 17879:2017 | Gas cylinders – Self-closing cylinder valves – Specification and type testing | 6.2.3.1 and 6.2.3.4 | Until further notice | |

6.2.4.2

Amend the Table as follows:

- Delete the row for "EN ISO 11623:2002 (except article 4)".
- Delete the row for "EN 14912:2005".
- Delete the row for "EN 1440:2008 + A1:2012 (except annexes G and H)".
- For standard "EN 1440:2016 (except annex C)", in column (3), replace "Mandatorily from 1 January 2019" by:
"Until 31 December 2020".

- After standard "EN 1440:2016 (except annex C)", add the following new standard:

"

| (1) | (2) | (3) |
|---|--|---------------------------------|
| EN 1440:2016 + A1:[2018] (except Annex C) | LPG equipment and accessories – Transportable refillable traditional welded and brazed steel Liquefied Petroleum Gas (LPG) cylinders – Periodic inspection | Mandatorily from 1 January 2021 |

"

- For standard "EN 16728:2016 (except clause 3.5, Annex F and Annex G)", in column (3), replace "Mandatorily from 1 January 2019" by:

"Until 31 December 2020".

- After standard "EN 16728:2016 (except clause 3.5, Annex F and Annex G)" add the following new row:

"

| (1) | (2) | (3) |
|---------------------------|---|---------------------------------|
| EN 16728:2016 + A1:[2018] | LPG equipment and accessories – Transportable refillable LPG cylinders other than traditional welded and brazed steel cylinders – Periodic inspection | Mandatorily from 1 January 2021 |

"

6.2.6.4 At the end of the third indent, delete:

", excluding clause 9".

At the end of the third indent, add:

"In addition to the marks required by this standard the gas cartridge shall be marked "UN 2037/EN 16509"."

Chapter 6.4

- 6.4.23.11 [The amendments in the German version do not apply to the English text.]
- 6.4.23.12 [The amendments in the German version do not apply to the English text.]
- 6.4.23.13 [The amendment in the German version does not apply to the English text.]
- 6.4.23.14 [The amendment in the German version does not apply to the English text.]
- 6.4.23.15 [The amendment in the German version does not apply to the English text.]
- 6.4.23.16 [The amendment in the German version does not apply to the English text.]
- 6.4.23.17 [The amendment in the German version does not apply to the English text.]
- 6.4.23.18 [The amendment in the German version does not apply to the English text.]

Chapter 6.5

- 6.5.4.4.2 [The amendment in the German version does not apply to the English text.]
- 6.5.6.9.3 Amend the last paragraph to read as follows:

"The same IBC or a different IBC of the same design may be used for each drop."

6.5.6.14.1 Under item 8, add the following sentence:

"For rigid plastics and composite IBCs subject to the hydraulic pressure test in 6.5.6.8, the temperature of the water used."

Chapter 6.7

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

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

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

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

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

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

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

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

Chapter 6.8

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

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

In the first paragraph, replace "substantially" by:

"appreciably".

[6.8.2.1.18 Add the following sentence at the end of footnote 4:

"However the cross section of shells according to 6.8.2.1.14 (a) may contain recesses or protrusions such as sumps, cut-outs or recessed manhole constructions. They may be constructed of flat or shaped (concave or convex) sheet metal. Dents and other unintended deformations shall not be regarded as recesses or protrusions."]

6.8.2.1.23 Amend the first two sentences to read as follows:

"The ability of the manufacturer, or the maintenance or repair shop, to perform welding operations shall be verified and confirmed by either the competent authority or by the body designated by this authority. A weld quality assurance system shall be operated by the manufacturer or the maintenance or repair shop."

In the last sentence of the first paragraph after "ultrasound", insert a reference to a footnote 6 to read as follows:

⁶ Lap joints used for joining an end to the shell wall may be tested using alternative methods to radiography or ultrasound."

Renumber footnotes 6 to 21 as footnotes 7 to 22.

Amend the second sentence under " $\lambda = 0.8$ " to read as follows:

"The non-destructive checks shall include all weld "Tee" junctions, all inserts used to avoid welds crossing and all welds in the knuckle area of the tank ends."

Amend the second sentence under " $\lambda = 0.9$ " to read as follows:

"The non-destructive checks shall include all connections, all inserts used to avoid welds crossing, all welds in the knuckle area of the tank ends and all welds for the assembly of large-diameter items of equipment."

6.8.2.2.2 After the second set of indents, replace the wording "an ebonite or thermoplastic coating" by:

"a protective lining".

6.8.2.2.3 Add the following paragraph after the last but one paragraph:

"Flame arresters for breather devices shall be suitable for the vapour emitted by the substances carried (maximum experimental safety gap – MESH), temperature range and application. They shall meet the requirements and tests of EN ISO 16852:2016 (Flame arresters – Performance requirements, test methods and limits for use) for the situations given in the Table below:

| Application/Installation | Testing requirements |
|--------------------------------------|--|
| Direct communication with atmosphere | EN ISO 16852:2016, 7.3.2.1 |
| Communication to pipe work system | EN ISO 16852:2016, 7.3.3.2 (applies to valve/flame arrester combinations when tested together) |
| | EN ISO 16852:2016, 7.3.3.3 (applies to flame arresters tested independently of the valves) |

"

6.8.2.2.10 Amend the first sentence of the second sub-paragraph to read as follows:

"The bursting disc shall rupture at a nominal pressure [between 0.9 to 1.0 times the test pressure], except for tanks intended for the carriage of compressed, liquefied or dissolved gases where the arrangement of the bursting disc and safety valve shall be such as to satisfy the competent authority."

At the end of the second sub-paragraph, delete:

"which may disrupt the action of the safety valve".

6.8.2.2 Insert the following new paragraph:

"6.8.2.2.11 Glass level-gauges and level-gauges made of other fragile material, which are in direct communication with the contents of the shell, shall not be used."

6.8.2.3.1 Amend the second indent to read as follows (the dividing line is deleted):

"– an approval number for the type which shall consist of the distinguishing sign used on vehicles in international road traffic¹⁰ of the State in whose territory the approval was granted and a registration number;"

6.8.2.4.2 Add the following new paragraph at the end:

"Protective linings shall be visually examined for defects. In case defects appear the condition of the lining shall be evaluated by appropriate test(s)."

6.8.2.4.3 Add the following new paragraph at the end:

"Protective linings shall be visually examined for defects. In case defects appear the condition of the lining shall be evaluated by appropriate test(s)."

6.8.3.2.6 Delete the first sentence

6.8.3.2.9 At the end, add the following new sub-paragraph:

"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."

6.8.3.2.21 At the end, delete:

"The basic requirements of this paragraph shall be deemed to have been complied with if the following standards are applied: *(Reserved)*."

6.8.3.6 In the Table, for standard "EN 13807:2003", in column (4), replace "Until further notice" by:

"Between 1 January 2005 and 31 December 2020".

After standard "EN 13807:2003", add the following new standard:

| (1) | (2) | (3) | (4) | (5) |
|---------------|--|--|----------------------|-----|
| EN 13807:2017 | Transportable gas cylinders – Battery vehicles and multiple-element gas containers (MEGCs) – Design, manufacture, identification and testing | 6.8.3.1.4, 6.8.3.1.5, 6.8.3.2.18 to 6.8.3.2.28, 6.8.3.4.12 to 6.8.3.4.1 4 and 6.8.3.5.10 to 6.8.3.5.13 | Until further notice | |

6.8.4 (d)

TT 2 At the end, add:

"(see special provision TU 43 in 4.3.5)".

6.8.5.1.2 In paragraph (a), at the end, add the following new indent:

"– Austenitic-ferritic stainless steels, down to a temperature of [-40 °C];".

6.8.5.2.1 At the end of the second indent, replace "or austenitic Cr-Ni steel", by:

"austenitic Cr-Ni steel; or austenitic-ferritic stainless steel."

6.8.5.4 Replace "EN 1252-1:1998 Cryogenic vessels – Materials – Part 1: Toughness requirements for temperatures below -80 °C" by:

"EN ISO 21028-1:2016 Cryogenic vessels – Toughness requirements for materials at cryogenic temperature – Part 1: Temperatures below -80 °C".

Chapter 6.9

6.9.3.1 Replace "and 6.8.2.2.4" by:

", 6.8.2.2.4 and 6.8.2.2.6".

Chapter 6.10

6.10.1.2.1 In the third paragraph, in the first sentence, replace "with the exception of requirements overtaken by a special provision in this Chapter" by:

"except where overtaken by special requirements in this Chapter."

6.10.3.8 In the second sentence of paragraph (f), replace "Sight glasses" by:

"Glass level-gauges and level-gauges of other suitable transparent material".

Chapter 6.11

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

Chapter 7.3

7.3.2.10 Under the heading, insert the following Note:

"NOTE: Flexible bulk containers marked in accordance with 6.11.5.5 but which were approved in a country which is not an RID Contracting State may nevertheless be used for carriage under RID."

7.3.3.1 After the first paragraph, insert a Note to read as follows:

"NOTE: Where a VC 1 code is shown in column (17) of Table A of Chapter 3.2, a BK 1 bulk container may therefore also be used for land transport provided the additional provisions in 7.3.3.2 are fulfilled. Where a VC 2 code is shown in column (17) of Table A of Chapter 3.2, a BK 2 bulk container may therefore also be used for land transport provided the additional provisions in 7.3.3.2 are fulfilled."

Chapter 7.5

7.5.2.2 In table note b, replace "risk" by:

"hazard".

[The second amendment to table note b in the German version does not apply to the English text.]

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