



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

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

held in Geneva on 9 December 2022

Addendum

Annex I

**Amendments to the twenty-second revised edition of the
Recommendations on the Transport of Dangerous Goods, Model
Regulations (ST/SG/AC.10/1/Rev.22)**



Data sheet to be submitted to the United Nations for new or amended classification of substances

Section 9, item 9.6 Amend to read as follows:

“9.6 Filling ratio/degree of filling, as applicable

Chapter 1.1

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

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

Chapter 1.2

1.2.1 Amend the definition of “*Recycled plastics material*” to read as follows:

“*Recycled plastics material* means material recovered from used industrial packagings or from other plastics material that has been pre-sorted and prepared for processing into new packagings, including IBCs. The specific properties of the recycled material used for production of new packagings, including IBCs, shall be assured and documented regularly as part of a quality assurance programme recognized by the competent authority. The quality assurance programme shall include a record of proper pre-sorting and verification that each batch of recycled plastics material, which is of homogeneous composition, is consistent with the material specifications (melt flow rate, density, and tensile properties) of the design type manufactured from such recycled material. This necessarily includes knowledge about the plastics material from which the recycled plastics have been derived, as well as awareness of the prior use, including prior contents, of the plastics material if that prior use might reduce the capability of new packagings, including IBCs, produced using that material. In addition, the packaging or IBC manufacturer's quality assurance programme under 6.1.1.4 or 6.5.4.1 shall include performance of the appropriate mechanical design type tests in 6.1.5 or 6.5.6 on packagings or IBCs, manufactured from each batch of recycled plastics material. In this testing, stacking performance may be verified by appropriate dynamic compression testing rather than static load testing;”

In the note under the definition, in the first sentence, replace “to be followed” by “which may be followed”.

1.2.1 Add a new definition in proper alphabetical order to read as follows:

“*Degree of filling* means the ratio, expressed in %, of the volume of liquid or solid introduced at 15 °C into the means of containment and the volume of the means of containment ready for use;”

1.2.2.1 In the table, in the entry for “Electrical resistance”, in the last column, replace “ $1 \text{ kg} \cdot \text{m}^2 / \text{s}^3 / \text{A}^2$ ” by “ $1 \text{ kg} \cdot \text{m}^2 \cdot \text{s}^{-3} \cdot \text{A}^{-2}$ ”.

Chapter 2.0

2.0.5.2 Amend to read as follows:

“2.0.5.2 Such articles may in addition contain cells or batteries. Lithium cells and 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. For articles containing pre-production prototype lithium cells or batteries transported for testing, or for articles containing lithium cells or batteries manufactured in production runs of not more than 100 cells or batteries, the requirements of special provision 310 of Chapter 3.3 shall apply.”

Chapter 2.1

- 2.1.1.3 In (b), replace “a substance or a mixture of substances” by “an explosive substance”.

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

- “ (e) *Explosive or pyrotechnic effect* means, in the context of 2.1.1.1 (c), an effect produced by self-sustaining exothermic chemical reactions including shock, blast, fragmentation, projection, heat, light, sound, gas and smoke.”

Chapter 2.3

- 2.3.1.4 In the last sentence, replace “UN 3357 and UN 3379” by “UN 3357, UN 3379 and UN 3555”.

Chapter 2.4

- 2.4.2.2.1 Add a new 2.4.2.2.1.3 to read as follows:

“2.4.2.2.1.3 *Metal powders* are powders of metals or metal alloys.”

- 2.4.2.2.2.1 In the second sentence, replace “Powders of metals or metal-alloys” by “Metal powders”.

- 2.4.2.2.3.1 In the third sentence, replace “powders of metals or metal-alloys” by “metal powders”.

- 2.4.2.3.2.3 In the fourth sentence, replace “The formulations not listed in this provision” by “The formulations not listed in this sub-section”.

Chapter 2.5

- 2.5.3.2.4 In the fourth sentence, replace “The formulations not listed in this provision” by “The formulations not listed in this sub-section”.

In the table, for “DI-2,4-DICHLOROBENZOYL PEROXIDE”, concentration “ ≤ 52 as a paste with silicon oil”, in column “Packing Method”, replace “OP7” by “OP5” and in column “Number (Generic entry)”, replace “3106” by “3104”.

In the table, add the following new entries:

DIBENZOYL PEROXIDE	≤ 42	≥ 38			≥ 13	OP8			3109	
2,5-DIMETHYL-2,5-DI-(tert-BUTYLPEROXY) HEXANE	≤ 22			≥ 78					Exempt	29)
METHYL ETHYL KETONE PEROXIDE(S)	See remark 33)	≥ 41			≥ 9	OP8			3105	33) 34)

After the table, add the following new remarks:

“33) Available oxygen ≤ 10 %.

34) Sum of diluent type A and water ≥ 55 %, and in addition methyl ethyl ketone.”

Chapter 2.6

- 2.6.3.2.2.1 In the table, for UN 2814, in the entry for “Monkeypox virus”, at the end, add “(cultures only)”.

Chapter 2.7

2.7.1.3 In the definition for “*Specific activity of a radionuclide*”, at the end, add the following new note:

“**NOTE:** *The terms "activity concentration" and "specific activity" are synonymous for the purpose of these Regulations.*”

Chapter 2.9

2.9.2 After the section for “*Lithium batteries*”, add a new section to read as follows:

“*Sodium ion batteries*”

3551 SODIUM ION BATTERIES with organic electrolyte

3552 SODIUM ION BATTERIES CONTAINED IN EQUIPMENT or SODIUM ION BATTERIES PACKED WITH EQUIPMENT, with organic electrolyte”.

Under “*Life-saving appliances*”, add the following new entry:

“3559 FIRE SUPPRESSANT DISPERSING DEVICES”

Under “*Genetically modified micro-organisms (GMMOs) and genetically modified organisms (GMOs)*”, before the last paragraph, add the following new paragraph:

“Pharmaceutical products (such as vaccines) that are packed in a form ready to be administered, including those in clinical trials, and that contain GMMOs or GMOs are not subject to these Regulations.”

In the section for “*Other substances or articles presenting a danger during transport, but not meeting the definitions of another class*”, add the following new entries:

“3556 VEHICLE, LITHIUM ION BATTERY POWERED

3557 VEHICLE, LITHIUM METAL BATTERY POWERED

3558 VEHICLE, SODIUM ION BATTERY POWERED”.

2.9.4 (g) At the end, add a new note to read as follows:

“**NOTE:** *The term "make available" means that manufacturers and subsequent distributors ensure that the test summary for lithium cells or batteries or equipment with installed lithium cells or batteries is accessible so that the consignor or other persons in the supply chain can confirm compliance.*”

2.9.5 Add a new 2.9.5 to read as follows:

“**2.9.5 Sodium ion batteries**”

Cells and batteries, cells and batteries contained in equipment, or cells and batteries packed with equipment containing sodium ion, which are a rechargeable electrochemical system where the positive and negative electrode are both intercalation or insertion compounds, constructed with no metallic sodium (or sodium alloy) in either electrode and with an organic non aqueous compound as electrolyte, shall be assigned to UN Nos. 3551 or 3552 as appropriate.

NOTE: *Intercalated sodium exists in an ionic or quasi-atomic form in the lattice of the electrode material.*

They may be transported under these entries if they meet the following provisions:

- (a) Each cell or battery is of the type proved to meet the requirements of applicable tests of the Manual of Tests and Criteria, part III, sub-section 38.3.

- (b) Each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under conditions normally encountered during transport;
- (c) Each cell and battery is equipped with an effective means of preventing external short circuits;
- (d) Each battery containing cells or a series of cells connected in parallel is equipped with effective means as necessary to prevent dangerous reverse current flow (e.g., diodes, fuses, etc.);
- (e) Cells and batteries shall be manufactured under a quality management program as prescribed under 2.9.4 (e) (i) to (ix);
- (f) 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.”

Chapter 3.1

3.1.2.2 In the first sentence, delete “and” or”.

Chapter 3.2

3.2.1 In the descriptive text for column 5, first sentence, delete “article or”.

Chapter 3.2, dangerous goods list

For UN Nos. 0030, 0255, 0456, 0511, 0512 and 0513, in column (6), add “399”.

For UN 0331, in column (11), delete “TP1”.

For UN Nos. 1006, 1013, 1046 and 1066, in column (6), add “406”.

For UN 1010, in column (2), replace “40 %” by “20 %” and in column (6), add “402”.

For UN Nos. 1204, 2059 (three entries), 2555, 2556, 2907, 3064, 3319, 3343, 3344 and 3357, in column (6), add “28”.

For UN Nos. 1391 and 3482, in column (10), add “T13” and in column (11), add “TP2 TP7 TP42”.

For UN 1835, PG II, in column (2), replace “SOLUTION” by “AQUEOUS SOLUTION with more than 2.5 % but less than 25 % tetramethylammonium hydroxide”, in column (4), add “6.1” and in column (6) add “279 408 409”.

For UN 1835, PG III, in column (2), replace “SOLUTION” by “AQUEOUS SOLUTION with not more than 2.5 % tetramethylammonium hydroxide” and in column (6) add “408 409”.

For UN 2028, in column (5), delete “II”.

For UN 2795, in column (6), add “401”.

For UN 2803, in column (6), add “365”.

For UN 2807, in column (5), delete “III”.

For UN 2870 (second entry), in column (5), delete “I”.

For UN 3165 in column (5), delete “I”.

For UN 3270, in column (6), add “403”.

For UN 3292, in column (2), replace “SODIUM” by “METALLIC SODIUM OR SODIUM ALLOY” (twice) and in column (6), add “401”.

For UN 3423, in column (3), replace “8” by “6.1”, in column (4), add “8”, in column (5), replace “II” by “I”, in column (6), add “279 409”, in column (7a), replace “1 kg” by “0”, in column (7b), replace “E2” by “E5”, in column (8), replace “IBC08” by “IBC99”, in column (9), delete “B2, B4” and in column (10), replace “T3” by “T6”.

For UN Nos. 3537, 3538, 3540, 3541, 3546, 3547 and 3548, in column (6), add “310”.

Add the following new entries*:

(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
0514	FIRE SUPPRESSANT DISPERSING DEVICES†	1.4S			407	0	E0	P135			
3551	SODIUM ION BATTERIES with organic electrolyte	9			188 230 310 348 376 377 384 400 401	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906			
3552	SODIUM ION BATTERIES CONTAINED IN EQUIPMENT or SODIUM ION BATTERIES PACKED WITH EQUIPMENT, with organic electrolyte	9			188 230 310 348 360 376 377 384 400 401	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906			
3553	DISILANE	2.1				0	E0	P200			
3554	GALLIUM CONTAINED IN MANUFACTURED ARTICLES	8			366	5 kg	E0	P003	PP90		
3555	TRIFLUOROMETHYLTETRAZOLE-SODIUM SALT IN ACETONE, with not less than 68 % acetone, by mass	3		II	28 132	0	E0	P303	PP26		
3556	VEHICLE, LITHIUM ION BATTERY POWERED	9			384 388 405	0	E0	P912			
3557	VEHICLE, LITHIUM METAL BATTERY POWERED	9			384 388 405	0	E0	P912			
3558	VEHICLE, SODIUM ION BATTERY POWERED	9			384 388 404 405	0	E0	P912			
3559	FIRE SUPPRESSANT DISPERSING DEVICES†	9			407	0	E0	P902			
3560	TETRAMETHYLAMMONIUM HYDROXIDE AQUEOUS SOLUTION with not less than 25 % tetramethylammonium hydroxide	6.1	8	I	279 408 409	0	E5	P001		T14	TP2

Chapter 3.3

SP 28 Before “Division 4.1”, add “Class 3 or” and before “2.4.2.4”, add “2.3.1.4 and”.

At the end, add the following new sentence: “In cases where the diluent is not stated, the substance shall be packed so that the amount of explosive substance does not exceed the stated value.”.

SP 188 In (a), after “lithium ion”, insert “or sodium ion”.

* Note by the secretariat: The UN number for “TETRAMETHYLAMMONIUM HYDROXIDE AQUEOUS SOLUTION with not less than 25 % tetramethylammonium hydroxide” was modified during the preparation of this document.

In (b), first sentence, after “lithium ion”, insert “or sodium ion”. In the second sentence, after “Lithium ion”, insert “and sodium ion”. In the second sentence, replace “except those” by “except lithium ion batteries”.

In (c), after “Each”, insert “lithium”, and after “(g)”, insert “or for sodium ion cells or batteries, the provisions of 2.9.5 (a), (e) and (f) shall apply”.

In (f), in the first and last paragraphs, replace “lithium battery mark” by “lithium or sodium ion battery mark”.

In the antepenultimate paragraph, second sentence, delete “lithium”.

SP 204 In the second paragraph, delete “, except that those manufactured before 31 December 2016 may be transported until 1 January 2019 without a "TOXIC" subsidiary hazard label”.

SP 230 At the end, add the following new sentence “Sodium ion cells and batteries may be transported under this entry if they meet the provisions of 2.9.5.”.

SP 252 Amend to read as follows:

“252 (1) Ammonium nitrate hot concentrated solutions can be transported under this entry provided:

- (a) The solution contains not more than 93 % ammonium nitrate;
- (b) The solution contains at least 7 % water;
- (c) The solution contains not more than 0.2 % combustible material;
- (d) The solution contains no chlorine compounds in quantities such that the chloride ion level exceeds 0.02 %;
- (e) The pH of an aqueous solution of 10 % of the substance is between 5 and 7, measured at 25 °C; and
- (f) The maximum allowable transport temperature of the solution is 140 °C.

(2) Additionally, ammonium nitrate hot concentrate solutions are not subject to these Regulations provided:

- (a) The solution contains not more than 80 % ammonium nitrate;
- (b) The solution contains not more than 0.2 % combustible material;
- (c) The ammonium nitrate remains in solution under all conditions of transport; and
- (d) The solution does not meet the criteria of any other class or division.”

SP 280 In the last sentence, at the end, add “or to fire suppressant dispersing devices described in special provision 407 (UN Nos. 0514 and 3559)”.

SP 296 In (d), after “lithium”, insert “or sodium ion”.

SP 310 Amend the first paragraph to read as follows:

“310 Cells or batteries from production runs of not more than 100 cells or batteries, or pre-production prototypes of cells or batteries when these prototypes are transported for testing, shall meet the provisions of 2.9.4 with the exception of 2.9.4 (a), (e) (vii), (f) (iii) if applicable, (f) (iv) if applicable and (g).

NOTE: *"Transported for testing" includes, but is not limited to, testing described in the Manual of Tests and Criteria, part III, sub-section 38.3, integration testing and product performance testing.*

These cells and batteries shall be packaged in accordance with packing instruction P910 of 4.1.4.1 or LP905 of 4.1.4.3, as applicable.

Articles (UN Nos. 3537, 3538, 3540, 3541, 3546, 3547 or 3548) may contain such cells or batteries provided that the applicable parts of packing instruction P006 of 4.1.4.1 or LP03 of 4.1.4.3, as applicable, are met.”

- SP 328 In the last paragraph, replace “lithium metal or lithium ion” by “lithium metal, lithium ion or sodium ion”, replace the “or” before “UN 3481” by a comma and, at the end of the sentence, add “or UN 3552 SODIUM ION BATTERIES CONTAINED IN EQUIPMENT”.
- SP 348 Replace “Batteries” by “Lithium batteries”. After “2011” insert “and sodium ion batteries manufactured after 31 December 2025”.
- SP 360 In the first sentence, replace “lithium metal batteries or lithium ion batteries” by “lithium metal, lithium ion or sodium ion batteries” and replace “entry UN 3171 BATTERY-POWERED VEHICLE” by “entries UN 3556 VEHICLE, LITHIUM ION BATTERY POWERED or UN 3557 VEHICLE, LITHIUM METAL BATTERY POWERED or UN 3558 VEHICLE, SODIUM ION BATTERY POWERED, as applicable”.
- SP 363 In (f), first paragraph, amend the second sentence to read “However, lithium batteries shall meet the provisions of 2.9.4, except that 2.9.4 (a), (e) (vii), (f) (iii) if applicable, (f) (iv) if applicable and (g) do not apply when batteries of a production run of not more than 100 cells or batteries, or pre-production prototypes of cells or batteries when these prototypes are transported for testing, are installed in machinery or engines.”.
- SP 365 After “mercury”, add “or gallium”. Replace “UN 3506” by “UN Nos. 3506 or 3554, as appropriate”.
- SP 366 In the first sentence, after “mercury”, add “or gallium”. In the second sentence, after “mercury”, add “or gallium”.
- SP 371 In (1) (f), first sentence, replace “16.6.1.3.1 to 16.6.1.3.6” by “16.6.1.3.1 to 16.6.1.3.4, 16.6.1.3.6”.
- SP 376 In the first paragraph, replace “Lithium ion cells or batteries and lithium metal cells or batteries” by “Lithium metal, lithium ion or sodium ion cells or batteries”.
- In the paragraph after the note, replace “UN 3480 and UN 3481” by “UN 3480, UN 3481, UN 3551 and UN 3552, as appropriate”.
- SP 377 In the first paragraph, replace “Lithium ion and lithium metal” by “Lithium metal, lithium ion and sodium ion” and after “non-lithium”, insert “or non-sodium ion”.
- In the second paragraph, after “2.9.4”, insert “or 2.9.5”.
- In the third paragraph, replace “or” by “, ”SODIUM ION BATTERIES FOR DISPOSAL”,”. At the end of the sentence, add “or ”SODIUM ION BATTERIES FOR RECYCLING”, as appropriate”.
- SP 379 In (d) (i), replace “ISO 11114-1:2012 + A1:2017” by “ISO 11114-1:2020”.
- SP 384 Delete the note.
- SP 388 Amend paragraph 5 to read as follows:

“Entry UN 3171 only applies to vehicles and equipment powered by wet batteries, metallic sodium batteries or sodium alloy batteries, transported with these batteries installed.”

After paragraph 5, add the following new paragraph:

“UN 3556 VEHICLE, LITHIUM ION BATTERY POWERED, UN 3557 VEHICLE, LITHIUM METAL BATTERY POWERED and UN 3558 VEHICLE, SODIUM ION BATTERY POWERED, as applicable, apply to vehicles powered by lithium ion, lithium metal or sodium ion batteries transported with the batteries installed.”

In paragraph 7 (old paragraph 6), combine and amend the last two sentences to read “When vehicles are transported in a packaging, some parts of the vehicle, other than the battery, may be detached from its frame to fit into the packaging.”.

In paragraph 9 (old paragraph 8), amend the second sentence to read “However, lithium batteries shall meet the provisions of 2.9.4, except that 2.9.4 (a), (e) (vii), (f) (iii) if applicable, (f) (iv) if applicable and (g) do not apply when batteries of a production run of not more than 100 cells or batteries, or pre-production prototypes of cells or batteries when these prototypes are transported for testing, are installed in vehicles.”.

In the last paragraph, delete “or equipment” (twice).

SP 396 (f) Replace “and are marked” by “and marked”.

Add the following new special provisions:

“399 For articles that meet the definition for DETONATORS, ELECTRONIC as described in Appendix B and assigned to UN Nos. 0511, 0512 and 0513, the entries for DETONATORS, ELECTRIC (UN Nos. 0030, 0255 and 0456) may continue to be used until 30 June 2025.”

“400 Sodium ion cells and batteries and sodium ion cells and batteries contained in or packed with equipment, prepared and offered for transport, are not subject to other provisions of these Regulations if they meet the following:

- (a) The cell or battery is short-circuited, in a way that the cell or battery does not contain electrical energy. The short-circuiting of the cell or battery shall be easily verifiable (e.g., busbar between terminals);
- (b) Each cell or battery meets the provisions of 2.9.5 (a), (b), (d), (e) and (f);
- (c) Each package shall be marked according to 5.2.1.9;
- (d) Except when cells or batteries are installed in equipment, each package shall be capable of withstanding a 1.2 m drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell to cell) contact and without release of contents;
- (e) Cells and batteries, when installed in equipment shall be protected from damage. When batteries are installed in equipment, the equipment shall be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging’s capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained;
- (f) Each cell, including when it is a component of a battery, shall only contain dangerous goods that are authorized to be transported in accordance with the provisions of Chapter 3.4 and in a quantity not exceeding the quantity specified in column 7a of the Dangerous Goods List of Chapter 3.2.”

“401 Sodium ion cells and batteries with organic electrolyte shall be transported as UN 3551 or 3552 as appropriate. Sodium ion cells and batteries with aqueous alkali electrolyte shall be transported as UN 2795 BATTERIES, WET, FILLED WITH ALKALI, electric storage.”.

“402 Substances transported under this entry shall have a vapour pressure at 70 °C not exceeding 1.1 MPa (11 bar) and a density at 50 °C not lower than 0.525 kg/l.”

“403 Nitrocellulose (NC) membrane filters covered by this entry with NC content not exceeding 53 g/m² and an NC net mass not exceeding 300 g per inner

packaging, are not subject to the requirements of this regulation if they meet the following conditions:

- (a) They are packed with paper separators of minimum 80 g/m² placed between each layer of NC membrane filters;
- (b) They are packed to maintain the alignment of the NC membrane filters and the paper separators in any of the following configurations:
 - (i) Rolls tightly wound and packed in plastic foil of minimum 80 g/m² or aluminium pouches with an oxygen permeability of equal or less than 0.1 % according to standard ISO 15105-1:2007;
 - (ii) Sheets packed in cardboard of minimum 250 g/m² or aluminium pouches with an oxygen permeability of equal or less than 0.1 % according to standard ISO 15105-1:2007;
 - (iii) Round filters packed in disc holders or cardboard packaging of minimum 250 g/m² or single packed in pouches of paper and plastic material of total minimum 100 g/m².”

“404 Vehicles powered by sodium ion batteries, containing no other dangerous goods, are not subject to other provisions of these Regulations, if the battery is short-circuited in a way that the battery does not contain electrical energy. The short-circuiting of the battery shall be easily verifiable (e.g., busbar between terminals).”

“405 Vehicles are not subject to the marking or labelling requirements of Chapter 5.2 when they are not fully enclosed by packagings, crates or other means that prevent ready identification.”

“406 This entry may be transported in accordance with the limited quantity provisions of Chapter 3.4 when transported in pressure receptacles containing not more than 1 000 ml. The pressure receptacles shall meet the requirements of packing instruction P200 of 4.1.4.1 and have a test pressure capacity product not exceeding 15.2 MPa·l (152 bar·l). The pressure receptacles shall not be packed together with other dangerous goods.”

“407 Fire suppressant dispersing devices are articles which contain a pyrotechnic substance, which are intended to disperse a fire extinguishing agent (or aerosol) when activated, and which do not contain any other dangerous goods. These articles, as packaged for transport, shall fulfil the criteria for Division 1.4S, when tested in accordance with test series 6(c) of Section 16 of Part I of the Manual of Tests and Criteria. The device shall be transported with either the means of activation removed or equipped with at least two independent means to prevent accidental activation.

Fire suppressant dispersing devices shall only be assigned to Class 9, UN 3559 if the following additional conditions are met:

- (a) The device meets the exclusion criteria in 2.1.3.6.4 (b), (c) and (d);
- (b) The suppressant shall be deemed safe for normally occupied spaces in compliance with international or regional standards (e.g. NFPA 2010);
- (c) The article shall be packaged in a manner such that when activated, temperatures of the outside of the package shall not exceed 200 °C;
- (d) This entry shall be used only with the approval of the competent authority of the country of manufacture.

This entry does not apply to "SAFETY DEVICES, electrically initiated" described in special provision 280 (UN 3268).”

“408 This entry applies only to aqueous solutions comprised of water, tetramethylammonium hydroxide (TMAH), and no more than 1 % of other

constituents. Other formulations containing tetramethylammonium hydroxide must be assigned to an appropriate generic or N.O.S. entry (e.g., UN 2927, TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S., etc.), except as follows:

- (a) Other formulations containing a surfactant in a concentration > 1 % and with not less than 8.75 % tetramethylammonium hydroxide must be assigned to UN 2927, TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S., PG I; and
- (b) Other formulations containing a surfactant in a concentration > 1 % and with more than 2.38 % but less than 8.75 % tetramethylammonium hydroxide must be assigned to UN 2927, TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S., PG II.”

“409 The provisions of Chapter 3.2 from the twenty-second revised edition of the Recommendations on the Transport of Dangerous Goods, Model Regulations may continue to be applied until 31 December 2026.”

Chapter 3.4

3.4.7.2 Delete the note.

3.4.8.2 Delete the note.

Chapter 3.5

3.5.4.3 Delete the note.

Appendix B

Add the following new entry:

“FIRE SUPPRESSANT DISPERSING DEVICES

Articles which contain a pyrotechnic substance, which are intended to disperse a fire extinguishing agent (or aerosol) when activated, and which do not contain any other dangerous goods.”

Alphabetical index

For “BATTERIES, CONTAINING SODIUM”, in the column for “Name and description”, replace “SODIUM” by “METALLIC SODIUM OR SODIUM ALLOY”.

For “BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED, containing more than 40 % butadienes”, replace “40 %” by “20 %”.

For “CELLS, CONTAINING SODIUM”, in the column for “Name and description”, replace “SODIUM” by “METALLIC SODIUM OR SODIUM ALLOY”.

Amend the entry for “TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION” to read as follows:

TETRAMETHYLAMMONIUM HYDROXIDE AQUEOUS SOLUTION	6.1 8	3560 1835
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For “TETRAMETHYLAMMONIUM HYDROXIDE, SOLID”, in the second column, replace “8” by “6.1”.

Add the following new entries in alphabetical order:

Batteries, sodium nickel chloride, see	4.3	3292
Butylenes mixture, see	2.1	1012
DISILANE	2.1	3553
FIRE SUPPRESSANT DISPERSING DEVICES	1.4S 9	0514 3559
GALLIUM CONTAINED IN MANUFACTURED ARTICLES	8	3554
TRIFLUOROMETHYLTETRAZOLE-SODIUM SALT IN ACETONE, with not less than 68 % acetone, by mass	3	3555
SODIUM ION BATTERIES with organic electrolyte	9	3551
SODIUM ION BATTERIES CONTAINED IN EQUIPMENT, with organic electrolyte	9	3552
SODIUM ION BATTERIES PACKED WITH EQUIPMENT, with organic electrolyte	9	3552
VEHICLE, LITHIUM ION BATTERY POWERED	9	3556
VEHICLE, LITHIUM METAL BATTERY POWERED	9	3557
VEHICLE, SODIUM ION BATTERY POWERED	9	3558

Chapter 4.1

4.1.1.10 (a) The amendment does not apply to the English version.

4.1.4.1, P001, P002, P410, P501, P502 and P504 Amend the formatting as needed to display composite packagings as a category of single packagings.

4.1.4.1, P001, P002, P410, P520, P911 Place the footnotes directly below the packing instruction, in those pages in which they appear.

4.1.4.1, P003 In special packing provision PP90, replace “UN 3506” by “UN Nos. 3506 and 3554” and after “mercury”, add “or gallium, as appropriate,”.

4.1.4.1, P006 At the end, add a new (5) to read as follows:

“(5) Articles containing pre-production prototype lithium cells or batteries when these prototypes are transported for testing or production runs of not more than 100 lithium cells or batteries that are of a type that have not met the testing requirements of the Manual of Tests and Criteria, part III, sub-section 38.3 shall in addition meet the following:

- (a) Packagings shall conform to the requirements in paragraph (1) of this packing instruction;
- (b) Appropriate measures shall be taken to minimize the effects of vibration and shocks and prevent movement of the article within the package that may lead to damage and a dangerous condition during transport. When cushioning material is used to meet this requirement it shall be non-combustible and electrically non-conductive;

- (c) Non-combustibility of the cushioning material shall be assessed according to a standard recognized in the country where the packaging is designed or manufactured;
- (d) The article may be transported unpackaged under conditions specified by the competent authority. Additional conditions that may be considered in the approval process include, but are not limited to:
- (i) The article shall be strong enough to withstand the shocks and loadings normally encountered during transport, including trans-shipment between cargo transport units and between cargo transport units and warehouses as well as any removal from a pallet for subsequent manual or mechanical handling; and
- (ii) The article shall be fixed in cradles or crates or other handling devices in such a way that it will not become loose during normal conditions of transport.”

4.1.4.1, P200 In (4), renumber the first list with bullets as (a) to (e) and delete the bullets from the second one. Replace “ISO 13088:2011” by “ISO 13088:2011 + Amd 1:2020”.

In (5) s, renumber the list with bullets as (a) to (b).

In (5) t, renumber (i), (ii) as (a), (b).

In (5) z, paragraphs 8 and 9, replace “(abs.)” by “(absolute)”.

In table 1, place footnote ^a directly below the packing instruction (two times). In table 3, renumber footnote ^a as footnote ^b (entries for UN Nos. 1745, 1746 2495, as well as the footnote itself).

In tables 1, 2 and 3, in the heading of the fourth column, replace “hazard” by “hazards”. In all entries with multiple hazards, separate each hazard with a comma. In all entries with multiple test pressures, separate each row with dashed line spanning the last three columns. For UN Nos. 1010, 1012, 1060 and 2073, separate the different entries with a different “name and description” with a dashed line spanning all columns except the first one.

In table 2, for the third entry of UN 1010, in the column “Name and description”, replace “40 %” by “20 %”.

In table 2, add the following new row:

UN No.	Name and description	Class or Division	Subsidiary hazard	LC ₅₀ (ml/m ³)	Cylinders	Tubes	Pressure drums	Bundles of cylinders	MEGCs	Test period (years)	Test pressure (bar)	Filling ratio	Special packing provisions
3553	DISILANE	2.1			X	X	X	X		10	225	0.39	q

4.1.4.1, P203 Under “Requirements for closed cryogenic receptacles”, in (5), amend the heading to read “(5) Filling”. In the last paragraph, replace “degree of filling” by “gas filled into the receptacle”.

Under “Requirements for open cryogenic receptacles”, at the end of the first paragraph, add “For these gases, when used as a coolant, the requirements of 5.5.3 shall apply.”. In (9), renumber the list with bullets as (a) to (e).

4.1.4.1, P206 In special provision PP89, replace “ISO 11118:1999” by “clause 1 of ISO 11118:2015 + Amd 1:2019”.

4.1.4.1, P208 In table 1, remove the header row containing column numbers.

4.1.4.1, P301 In the second row after the heading, first sentence, replace “4.1.1” by “4.1.1.1, 4.1.1.2, 4.1.1.4, 4.1.1.5, 4.1.1.6”.

4.1.4.1, P404 Amend the second row under the heading to read as follows:

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

(1) Combination packagings:

Outer packagings:

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

Boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H2).

Inner packagings:

Metal receptacles with a maximum net mass of 15 kg each. Inner packagings shall be hermetically sealed;

Glass receptacles, with a maximum net mass of 1 kg each, having closures with gaskets, cushioned on all sides and contained in hermetically sealed metal cans.

Outer packagings shall have a maximum net mass of 125 kg.

Inner packagings shall have threaded closures or closures physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport.

(2) Metal packagings:

Drums (1A1, 1A2, 1B1, 1B2, 1N1, 1N2);

Jerricans (3A1, 3A2, 3B1, 3B2).

Maximum gross mass: 150 kg

(3) Composite packagings:

Plastics receptacle in a steel or aluminium drum (6HA1 or 6HB1).

Maximum gross mass: 150 kg

(4) Pressure receptacles, provided that the general provisions of 4.1.3.6 are met.

4.1.4.1, P405 In (1) (a), after “Outer packagings:”, start a new line (indented) and add “Boxes”.

4.1.4.1, P501 Under "Combination packagings", before “Boxes”, delete “(1)” and before “Fibreboard”, delete (2).

4.1.4.1, P505 Amend rows 3 to 5 under the heading to read as follows:

		Maximum capacity/maximum net mass	
Combination packagings			
Inner packagings		Outer packagings	
glass	5 l	Boxes	
plastics	5 l	aluminium (4B)	125 kg
metal	5 l	natural wood, ordinary (4C1)	125 kg
		natural wood, sift-proof walls (4C2)	125 kg
		plywood (4D)	125 kg
		fibreboard (4G)	125 kg
		plastics, solid (4H2)	125 kg
		Drums	
		aluminium, removable head (1B2)	125 kg
		fibre (1G)	125 kg
		other metal, removable head (1N2)	125 kg
		plastics, removable head (1H2)	125 kg
		plywood (1D)	125 kg
		Jerricans	
		aluminium, removable head (3B2)	125 kg
		plastics, removable head (3H2)	125 kg
Single packagings			

4.1.4.1, P520 In (1), replace “, jerricans” by “and jerricans”.

Amend the table under (3) to read as follows:

...								
The maximum quantities per packaging/package for packing methods OP1 to OP8 are:								
	OP1	OP2^a	OP3	OP4^a	OP5	OP6	OP7	OP8
Maximum net mass (kg) for solids and for combination packagings (liquid and solid)	0.5	0.5/10	5	5/25	25	50	50	400 ^b
Maximum contents in litres for liquids ^c	0.5	-	5	-	30	60	60	225 ^d

In PP94, renumber 1. to 5. as (a) to (e). In PP95, renumber 1. to 6. as (a) to (f).

4.1.4.1, P600 Amend the second row under the heading to read as follows:

<p>The following packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:</p> <p>Drums (1A1, 1A2, 1B1, 1B2, 1N1, 1N2, 1H1, 1H2, 1D, 1G);</p> <p>Boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H2).</p> <p>Outer packagings shall meet the packing group II performance level.</p> <p>Articles shall be individually packaged and separated from each other using partitions, dividers, inner packagings or cushioning material to prevent inadvertent discharge during normal conditions of transport.</p> <p>Maximum net mass: 75 kg</p>
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4.1.4.1, P601 In (1), renumber the list with bullets as (a) to (c).

4.1.4.1, P602 In (1), renumber the list with bullets as (a) to (c).

4.1.4.1, P603 Add a new additional requirement reading “4. In the case of fissile-excepted material, limits specified in 2.7.2.3.5 shall be met.”. Delete the entire row for special packing provisions.

4.1.4.1, P620 In additional requirement 1, at the end, add “When dry ice or other refrigerants presenting a risk of asphyxiation are used as a coolant, the requirements of 5.5.3 shall apply.”.

In additional requirement 2 (b), after the third sentence, add “When dry ice or other refrigerants presenting a risk of asphyxiation are used as a coolant, the requirements of 5.5.3 shall apply.”.

In additional requirement 2 (c), after the first sentence, add “When liquid nitrogen is used as a coolant, the requirements of 5.5.3 shall apply.”.

4.1.4.1, P650 In the first sentence, after “This”, delete “packing”.

In (4), delete the note.

Amend (6) to read as follows:

“(6) The completed package shall be capable of withstanding a 1.2 m drop in any orientation without leakage from the primary receptacle(s), which shall remain protected by absorbent material, when required, in the secondary packaging.

NOTE: *Capability may be demonstrated by testing, assessment or experience.”*

In (7) (d), at the end, add “and”.

Under (7) (e), add the following new note:

NOTE: *Capability may be demonstrated by testing, assessment or experience.”*

In (8) (c), at the end, add “and”.

In (9) (a), at the end, add “and”.

4.1.4.1, P800 In special packing provision PP41, after the first sentence, add “When dry ice or other means of refrigeration presenting a risk of asphyxiation are used as a coolant, the requirements of 5.5.3 shall apply.”. At the end, add the following new sentence: “Interior supports shall be provided to prevent movement after the dissipation of the refrigerant.”.

4.1.4.1, P803 Amend the second row under the heading to read as follows:

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

Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);

Boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H2).

Packagings shall conform to the packing group II performance level.

Articles shall be individually packaged and separated from each other using partitions, dividers, inner packagings or cushioning material to prevent inadvertent discharge during normal conditions of transport.

Maximum net mass: 75 kg.

4.1.4.1, P804 In (1), renumber the list with bullets as (a) to (c).

4.1.4.1, P901 At the end (before the additional requirement), add a new paragraph to read:

“If dry ice is used as a coolant, the requirements of 5.5.3 shall apply.”

4.1.4.1, P902 In the second row under the heading, insert “(1)” before “**Packaged articles:**” and remove the boldface, and insert “(2)” before “**Unpackaged articles:**” and remove the boldface.

Under “(2) Unpackaged articles:”, amend the beginning of the sentence to read “Except for UN 3559, the articles...”.

4.1.4.1, P903 In the first sentence, replace “3480 and 3481” by “3480, 3481, 3551 and 3552”.

In the second sentence, delete “lithium”.

- 4.1.4.1, P904 In (2), delete the note.
In the additional requirement, delete the first line reading “Ice, dry ice and liquid nitrogen”.
- 4.1.4.1, P905 In additional requirement 1 (c), after “lithium batteries”, insert “and sodium ion batteries”.
- 4.1.4.1, P908 In the first row under the heading, delete “lithium ion”, delete “and damaged or defective lithium metal cells and batteries” and replace “3480 and 3481” by “3480, 3481, 3551 and 3552”.
In the second row under the heading, before the numbered list, insert a new paragraph reading “Packagings shall also meet the following requirements:”. In the list, renumber 1. to 5. as (a) to (e). In (e) (old 5.), replace “Non-combustibility” by “The non-combustibility of the thermal insulation material and the cushioning material”.
- 4.1.4.1, P907 In the first sentence, after “This”, delete “packing”.
- 4.1.4.1, P909 In the first sentence, after “This”, delete “packing”. Replace “3480 and 3481” by “3480, 3481, 3551 and 3552”.
In (2), after “lithium ion”, insert “or sodium ion” (two times).
In additional requirement 2, renumber the list with bullets as (a) to (d).
- 4.1.4.1, P910 In the first sentence, replace “3480 and 3481” by “3480, 3481, 3551 and 3552”.
In (1) (e), replace “Non-combustibility” by “The non-combustibility of the thermal insulation material and the cushioning material”.
In (2) (d), replace “Non-combustibility” by “The non-combustibility of the cushioning material”.
In the additional requirement, at the end of the first sentence, replace the semicolon by a full stop and delete the paragraph break so that the first two sentences are displayed in a single paragraph. Renumber the list with bullets as (a) to (d).
- 4.1.4.1, P911 In the first sentence, replace “3480 and 3481” by “3480, 3481, 3551 and 3552”.
In table note a, sub-paragraph (b), first sentence, delete “lithium” and replace “(rapidly disassemble)” by “(e.g. rapidly disassemble)”.
- 4.1.4.1 Add the following new packing instructions:

P303	PACKING INSTRUCTION	P303
	This instruction applies to UN 3555.	
	The following packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 as well as 4.1.5.12 are met: Plastics drum non-removeable head (1H1) of maximum capacity 250 l.	
	Additional requirement: The packagings shall be transported in an upright position.	
	Special packing provision: PP26 For UN 3555, packagings shall be lead free.	

P912	PACKING INSTRUCTION	P912
This instruction applies to UN Nos. 3556, 3557 and 3558.		
<p>The vehicle shall be secured in a strong, rigid outer packaging constructed of suitable material, and of adequate strength and design in relation to the packaging capacity and its intended use. It shall be constructed in such a manner as to prevent accidental operation during transport. Packagings need not meet the requirements of 4.1.1.3. The vehicle shall be secured by means capable of restraining the vehicle in the outer packaging to prevent any movement during transport which would change the orientation or cause the battery in the vehicle to be damaged.</p> <p>Vehicles transported in a packaging may have some parts of the vehicle, other than the battery, detached from its frame to fit into the packaging.</p> <p>NOTE: <i>The packagings may exceed a net mass of 400 kg (see 4.1.3.3).</i></p> <p>Vehicles with an individual net mass of 30 kg or more:</p> <p>(a) may be loaded into crates or secured to pallets;</p> <p>(b) may be transported unpackaged providing that the vehicle is capable of remaining upright during transport without additional support and the vehicle provides adequate protection to the battery so that no damage to the battery can occur; or</p> <p>(c) where the vehicles have the potential to topple over during transport (e.g. motor cycles), may be transported unpackaged in a cargo transport unit fitted out with the means to prevent toppling in transport, such as by the use of bracing, frames or racking.</p>		

4.1.4.2, IBC02, IBC03, IBC05, IBC06, IBC07, IBC08, IBC100 Delete the numbers in front of the list in the row below the heading.

4.1.4.2, IBC03 Amend special packing provision B11 to read as follows:

“B11 Notwithstanding the provisions of the second paragraph of 4.1.1.10, UN 2672 ammonia solution in concentrations not exceeding 25 % may be transported in IBCs.”

4.1.4.2, IBC520 Replace “2.4.2.3.2.3 and 2.5.3.2.4” by “2.4.2.3.2.3 or 2.5.3.2.4”.

For UN 3109, in the entry for “tert-Butyl hydroperoxide, not more than 72 % with water”, remove the horizontal line between the rows for IBC types “31A” and “31HA1”.

For UN 3119, amend the entry for “Di-(3,5,5-trimethylhexanoyl) peroxide, not more than 52 %, stable dispersion, in water” to read as follows:

	Di-(3,5,5-trimethylhexanoyl) peroxide, not more than 52 %, stable dispersion, in water	31HA1	1 000	+10 °C	+15 °C
		31A	1 250	+10 °C	+15 °C

4.1.4.3, LP02 and LP906 Place the footnotes directly below the packing instruction, in those pages in which they appear.

4.1.4.3, LP03 Add a new (4) to read as follows:

“(4) Articles containing pre-production prototype lithium cells or batteries when these prototypes are transported for testing or production runs of not more than 100 lithium cells or batteries that are of a type that have not met the testing requirements of the Manual of Tests and Criteria, part III, sub-section 38.3 shall in addition meet the following:

- (a) Packagings shall conform to the requirements in paragraph (1) of this packing instruction;
- (b) Appropriate measures shall be taken to minimize the effects of vibration and shocks and prevent movement of the article within the package that may lead to damage and a dangerous condition during transport. When cushioning material is used to meet this requirement it shall be non-combustible and electrically non-conductive;

- (c) Non-combustibility of the cushioning material shall be assessed according to a standard recognized in the country where the packaging is designed or manufactured.”

4.1.4.3, LP902 In the second row under the heading, insert “(1)” before “**Packaged articles:**” and remove the boldface, and insert “(2)” before “**Unpackaged articles:**” and remove the boldface.

4.1.4.3, LP903 Amend the first sentence under the heading to read: “This instruction applies to large cells with a gross mass of more than 500 g, large batteries with a gross mass of more than 12 kg, and equipment containing large cells or large batteries of UN Nos. 3090, 3091, 3480, 3481, 3551 and 3552.”.

In the second line, first paragraph, replace “for a single battery and for a single item of equipment containing batteries” by “for cells, batteries and equipment containing cells or batteries”.

In the second line, modify the last paragraph to read as follows:

“Cells, batteries or equipment shall be placed in inner packagings or separated by other suitable means, such as placement in trays or by dividers, to ensure protection against damage that may be caused under normal conditions of transport by:

- (a) its movement or placement within the large packaging;
- (b) contact with other cells, batteries or equipment within the large packaging; and
- (c) any loads arising from the superimposed weight of cells, batteries, equipment and packaging components above the cell, battery or equipment within the large packaging.

When multiple cells, batteries or items of equipment, are packed in the large packaging, bags (e.g., plastics) alone shall not be used to satisfy these requirements.”

4.1.4.3, LP904 In the first row under the heading, replace “3480 and 3481” by “3480, 3481, 3551 and 3552”.

In the second row under the heading, before the numbered list, insert a new paragraph reading “Large packagings shall also meet the following requirements:”. In the list, renumber 1. to 5. as (a) to (e). In (e) (old 5.), replace “Non-combustibility” by “The non-combustibility of the thermal insulation material and the cushioning material”.

4.1.4.3, LP905 In the first sentence, replace “3480 and 3481” by “3480, 3481, 3551 and 3552”.

In (1) (e), replace “Non-combustibility” by “The non-combustibility of the thermal insulation material and the cushioning material”.

In (2) (d), replace “Non-combustibility” by “The non-combustibility of the cushioning material”.

4.1.4.3, LP906 In the first row under the heading, replace “3480 and 3481” by “3480, 3481, 3551 and 3552”.

In the second row under the heading, in the second sentence, replace “For a batteries” by “For batteries”.

In table note a, sub-paragraph (b), first sentence, replace “lithium batteries (rapidly disassemble,” by “batteries (e.g. rapidly disassemble,”.

4.1.6.1.2 In the second sentence, replace “ISO 11114-1:2012 + A1:2017” by “ISO 11114-1:2020” and “ISO 11114-2:2013” by “ISO 11114-2:2021”.

4.1.6.1.8 The amendments to (a), (d) and (e) do not apply to the English version. Amend (b) and (c) to read as follows:

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

- (c) Valves are protected by shrouds or permanent protective attachments;”

Amend the paragraph after the indents to read as follows:

“For pressure receptacles with valves as described in (b), the requirements of ISO 11117:1998, ISO 11117:2008 + Cor 1:2009 or ISO 11117:2019 shall be met. Requirements for shrouds and permanent protective attachments used as valve protection under (c), are given in the relevant pressure receptacle shell design standards, see 6.2.2.1. Valves with inherent protection used for refillable pressure receptacles shall meet the requirements of clause 4.6.2 of ISO 10297:2006 or clause 5.5.2 of ISO 10297:2014 or clause 5.5.2 of ISO 10297:2014 + Amd 1:2017, or in case of self-closing valves, of clause 5.4.2 of ISO 17879:2017. For valves with inherent protection used for non-refillable cylinders, the requirements of clause 9.2.5 of ISO 11118:2015 or of clause 9.2.5 of ISO 11118:2015 + Amd 1:2019 shall be met.”

- 4.1.7.0.1 The amendment does not apply to the English version.

Chapter 4.2

- 4.2.1.9.2 The amendment does not apply to the English version.
- 4.2.1.9.3 The amendment does not apply to the English version.
- 4.2.1.9.5 The amendment does not apply to the English version.
- 4.2.1.9.5.1 The amendment does not apply to the English version.
- 4.2.1.9.6 The amendment does not apply to the English version.
- 4.2.1.13.13 The amendment does not apply to the English version.
- 4.2.1.16.2 The amendment does not apply to the English version.
- 4.2.1.19.2 The amendment does not apply to the English version.
- 4.2.3.6.2 In the first sentence, replace “degree of filling” by “quantity of gas filled into the shell,”. In the second sentence, replace “degree of filling of the shell” by “quantity of gas filled into the shell”.
- 4.2.3.6.4 Replace “degree of filling” by “quantity of gas filled into the shell”.
- 4.2.5.2.3 Replace “degree of filling” by “filling ratio”.
- 4.2.5.2.6, T23 Replace “2.4.2.3.2.3 and 2.5.3.2.4” by “2.4.2.3.2.3 or 2.5.3.2.4”. The second amendment does not apply to the English version.
- 4.2.5.2.6, T50 The amendment does not apply to the English version.
- 4.2.5.3, TP1 The amendment does not apply to the English version.
- 4.2.5.3, TP2 The amendment does not apply to the English version.
- 4.2.5.3, TP3 The amendment does not apply to the English version.
- 4.2.5.3, TP4 The amendment does not apply to the English version.
- 4.2.5.3, TP5 Replace “degree of filling” by “restrictions on filling”.
- 4.2.5.3 Add the following new portable tank special provision:
- “TP42 Portable tanks are not authorized for the transport of caesium or rubidium dispersions.”

Chapter 5.2

- 5.2.1.6.3 Delete note 2. Note 1 becomes “**NOTE**”.
- 5.2.1.9 In the heading, after “*Lithium*”, insert “*or sodium ion*”.
- 5.2.1.9.1 After “lithium”, insert “or sodium ion”.

- 5.2.1.9.2 In the first paragraph, first sentence, replace the “or” before “UN 3480” by a comma and at the end of the sentence, add “, or UN 3551” for sodium ion cells or batteries”. In the second sentence, delete “lithium” and replace “UN 3091” or “UN 3481” by “UN 3091”, “UN 3481” or “UN 3552”. In the third sentence, delete “lithium”.

In the heading of figure 5.2.5, after “**Lithium**”, insert “**or sodium ion**”.

In the last paragraph, third sentence, replace “UN number” by “UN number(s)” and delete “for lithium ion or lithium metal batteries or cells”.

- 5.2.2.1.13.1 In the second sentence, replace “lithium batteries” by “lithium or sodium ion batteries”, “lithium ion batteries” by “lithium ion or sodium ion batteries” and “lithium battery mark” by “lithium or sodium ion battery mark”. In the third sentence, replace “lithium batteries” by “lithium or sodium ion batteries”, “lithium ion batteries” by “lithium ion or sodium ion batteries”, “the lithium battery label” by “the battery label” and “5.2.2.1.2” by “5.2.2.2”.

- 5.2.2.2.1.1.3 Delete the note.

Chapter 5.3

- 5.3.1.1.5.1 In the first sentence, after “SCO-I”, add “or SCO-III”.

- 5.3.1.2.1 Delete the note.

- 5.3.2.2 Delete the note.

Chapter 5.5

- 5.5.2.3.2 Delete the note.

- 5.5.3.3.1 Replace “P650, P800, P901 or P904” by “P650 or P800”.

Chapter 6.1

- 6.1.3.1 In the first sentence, after “marks”, insert “on a non-removable component”.

After the first paragraph, add the following new note:

NOTE: *The provisions of 6.1.3.1 of the twenty-second revised edition of the Recommendations on the Transport of Dangerous Goods, Model Regulations may continue to be applied until 31 December 2026. Packagings manufactured before 1 January 2027 according to the provisions applicable at the date of manufacture may continue to be used.*

- 6.1.4.1.4 Replace the first sentence by “Drums may have rolling hoops, either expanded or separate.”.

- 6.1.4.2.3 Replace the first sentence by “Drums may have rolling hoops, either expanded or separate.”.

- 6.1.4.3.3 Replace the first sentence by “Drums may have rolling hoops, either expanded or separate.”.

- 6.1.4.12 Amend the heading to read:

“6.1.4.12 Fibreboard boxes (including corrugated fibreboard boxes)”.

- 6.1.4.12.1 In the second sentence, replace “ISO 535:1991” by “ISO 535:2014”.

- 6.1.5.5.4 The amendment does not apply to the English version.

Chapter 6.2

6.2.1.5.2 After (p), replace “closed cryogenic pressure receptacles” by “closed cryogenic receptacles”.

Insert the following note at the end:

“NOTE: *Closed cryogenic receptacles which were constructed in accordance with the initial inspection and test requirements of 6.2.1.5.2 applicable in the twenty-first revised edition of the Model Regulations but which do not however conform to the requirements of 6.2.1.5.2 relating to the initial inspection and test applicable in the twenty-second revised edition of the Model Regulations, may continue to be used.”*

6.2.1.5.4 The amendment does not apply to the English version.

6.2.1.6.1 (d) In note 2, replace “ISO 16148:2016” by “ISO 16148:2016 + Amd 1:2020”.

In note 3, first sentence, after “ISO 18119:2018”, add “+ Amd 1:2021”. After the first sentence, add the following new second sentence: “For a transitional period until 31 December 2026 the standard ISO 18119:2018 may be used for this same purpose.”. In the last sentence, replace “ISO 10461:2005 + A1:2006” by “ISO 10461:2005 + Amd 1:2006”.

6.2.2.1.1 In the table, in the row for ISO 9809-4:2014, replace “Until further notice” by “Until 31 December 2028”. Add a new row beneath this row as follows:

ISO 9809-4:2021	Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 4: Stainless steel cylinders with an Rm value of less than 1 100 MPa <i>NOTE: Small quantities are a batch of cylinders not exceeding 200.</i>	Until further notice
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6.2.2.1.1 and 6.2.2.1.2 In the table:

- In the row for ISO 11119-1:2012, replace “Until further notice” by “Until 31 December 2028”. Add a new row beneath this row as follows:

ISO 11119-1:2020	Gas cylinders — Design, construction and testing of refillable composite gas cylinders and tubes — Part 1: Hoop wrapped fibre reinforced composite gas cylinders and tubes up to 450 l	Until further notice
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- In the row for ISO 11119-2:2012 + Amd 1:2014, replace “Until further notice” by “Until 31 December 2028”. Add a new row beneath this row as follows:

ISO 11119-2:2020	Gas cylinders — Design, construction and testing of refillable composite gas cylinders and tubes — Part 2: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with load-sharing metal liners	Until further notice
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- In the row for ISO 11119-3:2013, replace “Until further notice” by “Until 31 December 2028”. Add a new row beneath this row as follows:

ISO 11119-3:2020	Gas cylinders — Design, construction and testing of refillable composite gas cylinders and tubes — Part 3: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with non-load-sharing metallic or non-metallic liners or without liners	Until further notice
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6.2.2.1.4 In the table, in the row for “ISO 21029-1:2018 + Amd.1:2019”, replace “Amd.1 by “Amd 1”.

6.2.2.1.9 In the table, in the row for “ISO 11118:2015 +Amd.1:2019”, replace “+Amd.1 by “+ Amd 1”.

6.2.2.2 In the table, replace “ISO 11114-1:2012 + A1:2017” by “ISO 11114-1:2020” and replace “ISO 11114-2:2013” by “ISO 11114-2:2021”.

The second amendment does not apply to the English version.

6.2.2.3 In the first table, replace “ISO 10297:2014 + A1:2017” by “ISO 10297:2014 + Amd 1:2017” and replace “ISO 14246:2014 + A1:2017” by “ISO 14246:2014 + Amd 1:2017”.

Add the following new row at the end of the first table

ISO 23826:2021	Gas cylinders – Ball valves – Specification and testing	Until further notice
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6.2.2.4 In the first table, in the row for ISO 18119:2018, replace “Until further notice” by “Until 31 December 2026”. Add a new row beneath this row as follows:

ISO 18119:2018 +Amd 1:2021	Gas cylinders – Seamless steel and seamless aluminium-alloy gas cylinders and tubes — Periodic inspection and testing	Until further notice
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For ISO 10461:2005/A1:2006, replace “ISO 10461:2005/A1:2006” by “ISO 10461:2005 + Amd 1:2006”.

6.2.2.7.3 In (l) (ii), after “porous material”, add “(e.g.: name or trademark)”.

Insert the following note at the end:

“NOTE: *Acetylene cylinders constructed in accordance with the twenty-first revised edition of the Model Regulations which are not marked in accordance with 6.2.2.7.3 (k) or (l) applicable in the twenty-second revised edition of the Model Regulations, may continue to be used until the next periodic inspection and test two years after the coming into force of the twenty-third revised edition of the Model Regulation where they have to be marked according to the twenty-third revised edition of the Model Regulations or be taken out of operation.”*

6.2.2.7.4 (p) Replace “ISO 11114-1:2012” by “ISO 11114-1:2020”.

6.2.2.9.2 (j) Replace “ISO 11114-1:2012” by “ISO 11114-1:2020”.

6.2.2.11 Insert the following note at the end:

“NOTE: *Closures of refillable pressure receptacles manufactured before 1 January 2027 in accordance with the requirements applicable in the twenty-first revised edition of the Model Regulations which are not marked in accordance with the requirements of 6.2.2.11 applicable in the twenty second revised edition may continue to be used.”*

Chapter 6.5

6.5.5.1.7 The amendment does not apply to the English version.

6.5.5.4.16 In the second sentence, replace “ISO 535:1991” by “ISO 535:2014”.

6.5.5.5.3 In the second sentence, replace “ISO 535:1991” by “ISO 535:2014”.

6.5.6.8.4.2 The amendment does not apply to the English version.

Chapter 6.6

6.6.4.4.1 Replace “ISO 535:1991” by “ISO 535:2014”.

6.6.5.3.2.4 In (a), replace “Metal and rigid plastics” by “All types of large packagings other than flexible”.

Chapter 6.7

6.7.4.15.1 In (i) (iv), replace “Degree of filling” by “Maximum allowable mass of gas filled”.

In figure 6.7.4.15.1, under “HOLDING TIMES”, last column, replace “Degree of filling” by “Maximum allowable mass of gas filled”.

6.7.5.2.4 In (a), replace “ISO 11114-1:2012 + A1:2017” by “ISO 11114-1:2020” and replace “ISO 11114-2:2013” by “ISO 11114-2:2021”.

Chapter 6.9

6.9.2.2.3.14.1 Delete “of Class 3”.
