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Inland Transport Committee

Working Party on the Transport of Dangerous Goods**European Agreement concerning the International Carriage
of Dangerous Goods by Road (ADR)****Draft amendments to annexes A and B of ADR**

At its ninety-ninth session, the Working Party on the Transport of Dangerous Goods requested the secretariat to prepare a consolidated list of all the amendments which it had adopted for entry into force on 1 January 2017 so that they could be made the subject of an official proposal in accordance with the procedure set out in article 14 of ADR, which, following usual practice, the Chairperson would be responsible for transmitting to the depositary through his Government. The notification would have to be issued no later than 1 July 2016, with a reference to 1 January 2017 as the scheduled date of entry into force (see ECE/TRANS/WP.15/230, paragraph 56).

This document contains the requested consolidated list of amendments adopted by the Working Party at its ninety-sixth, ninety-seventh, ninety-eighth and ninety-ninth sessions (see ECE/TRANS/WP.15/224, annex II, ECE/TRANS/WP.15/226, annex I, ECE/TRANS/WP.15/228, annex I and ECE/TRANS/WP.15/230, annex I).

Chapter 1.1

1.1.3.2 (a) Amend to read as follows:

“(a) Gases contained in the tanks or cylinders of a vehicle, performing a transport operation and destined for its propulsion or for the operation of any of its equipment used or intended for use during carriage (e.g. refrigerating equipment).

The gases may be carried in fixed tanks or cylinders, directly connected to the vehicle’s engine and/or auxiliary equipment or transportable pressure receptacles, which comply with the pertinent legal provisions.”

1.1.3.2 (b) Delete and insert “(Deleted)”.

1.1.3.3 (a) At the end of the first sentence of the third paragraph, insert: “, irrespective of whether the trailer is towed or carried on another vehicle.”.

Other amendments to the heading of 1.1.3.3 and to 1.1.3.3 (a) do not apply to the English text.

1.1.3.3 (b) Delete and insert “(Deleted)”.

1.1.3.3 (c) Delete and insert “(Deleted)”. Delete corresponding footnote 1 and renumber footnote 2 in 1.1.4.3 accordingly.

1.1.3.6.3 In the second column of the table, for Transport category 0, for Class 9, replace “apparatus” by “articles”.

1.1.3.6.3 In the second column of the table, for Transport category 1, for Class 4.1, at the end replace “and 3231 to 3240” by “, 3231 to 3240, 3533 and 3534”.

1.1.3.6.3 In the second column of the table, for Transport category 2:

In the first line, delete “or articles”. In the third line, after “substances” add “and articles”. For Class 4.1, at the end insert “, 3531 and 3532”.

After Class 4.1, add the following text:

“Class 4.3: UN No. 3292
Class 5.1: UN No. 3356”;

For Class 6.1, before the existing text add “UN Nos. 1700, 2016 and 2017”. Delete “and articles”.

For class 9, replace “UN No. 3245” with “UN Nos. 3090, 3091, 3245, 3480 and 3481”;

1.1.3.6.3 In the second column of the table, for Transport category 3:

In the first line, delete “and articles”. For class 8, replace “and 3477” with “, 3477 and 3506”;

1.1.3.6.3 In the second column of the table, for Transport category 4:

For class 9, replace “and 3509” with “, 3508 and 3509”.

1.1.4.2.1 (a) Replace “shall bear markings” by “shall bear marks”.

1.1.4.2.1 (c) Not applicable to the English text.

1.1.4.2.2 Not applicable to the English text.

Chapter 1.2

1.2.1 Under the definition of “Bulk container”, insert the following definition:

“*Flexible bulk container*” means a flexible container with a capacity not exceeding 15 m³ and includes liners and attached handling devices and service equipment;”.

1.2.1 Under the definition of “CGA”, amend the address in brackets to read as follows: “(CGA, 14501 George Carter Way, Suite 103, Chantilly, VA 20151, United States of America)”.

1.2.1 In the definition of “Aerosol or aerosol dispenser”, insert “an article consisting of” after “means”.

1.2.1 In the definition of “GHS”, replace “fifth revised edition” by “sixth revised edition” and replace “ST/SG/AC.10/30/Rev.5” by “ST/SG/AC.10/30/Rev.6”.

1.2.1 In the definition of “Manual of Tests and Criteria”, replace “fifth revised edition” by “sixth revised edition” and replace “ST/SG/AC.10/11/Rev.5, Amend.1 and Amend.2” by “ST/SG/AC.10/11/Rev.6”.

1.2.1 In the definition of “Large salvage packaging”, replace “or leaking” by “, leaking or non-conforming”.

1.2.1 In the definition of “Salvage pressure receptacle” replace “1 000” by “3 000”.

1.2.1 In the definition of “Tube”, replace “a seamless transportable pressure receptacle of” by “a transportable pressure receptacle of seamless or composite construction having”.

1.2.1 In the definition of “UN Model Regulations”, replace “eighteenth” by “nineteenth” and “ST/SG/AC.10/1/Rev.18” by “ST/SG/AC.10/1/Rev.19”.

1.2.1 Amend the definition for “Cargo transport unit” to read as follows:

“*Cargo transport unit*” means a vehicle, a wagon, a container, a tank-container, a portable tank or an MEGC;”. Delete related Note.

1.2.1 In the definition of “filler”, replace “loads” by “fills”.

1.2.1 In the definition of “Unilateral approval”, replace “by the competent authority of the first Contracting Party to ADR reached by the consignment” by “by the competent authority of a Contracting Party to ADR”.

1.2.1 In the definition of “Vacuum-operated waste tank”, replace “loading and unloading” by “filling and discharging”.

1.2.1 Add the following new definitions in alphabetical order:

“*Loading*” means all actions carried out by the loader, in accordance with the definition of loader;

“*Flexible bulk container*”, see “*Bulk container*”;

“*Unloading*” means all actions carried out by the unloader, in accordance with the definition of unloader;

“*Service life*”, for composite cylinders and tubes, means the number of years the cylinder or tube is permitted to be in service;

“*Design life*”, for composite cylinders and tubes, means the maximum life (in number of years) for which the cylinder or tube is designed and approved in accordance with the applicable standard;

“*Compressed Natural Gas (CNG)*” means a compressed gas composed of natural gas with a high methane content assigned to UN No. 1971;

“*Liquefied Natural Gas (LNG)*” means a refrigerated liquefied gas composed of natural gas with a high methane content assigned to UN No. 1972;

“*Self-accelerating polymerization temperature (SAPT)*” means the lowest temperature at which polymerization may occur with a substance in the packaging, IBC or tank as offered for carriage. The SAPT shall be determined in accordance with the test procedures established for the self-accelerating decomposition temperature for self-reactive substances in accordance with Part II, section 28 of the Manual of Tests and Criteria;

“*Holding time*” means the time that will elapse from the establishment of the initial filling condition until the pressure has risen due to heat influx to the lowest set pressure of the pressure limiting devices (s) of tanks intended for the carriage of refrigerated liquefied gases;

NOTE: For portable tanks, see 6.7.4.1.

“SAPT”, see “*Self-accelerating polymerization temperature*”;

Chapter 1.4

1.4.2.1.1(c) Replace “markings” by “marks”.

1.4.2.1.1 (e) Amend the text after “empty uncleaned vehicles” to read as follows: “and bulk containers are placarded, marked and labelled in accordance with Chapter 5.3 and that empty uncleaned tanks are closed and present the same degree of leakproofness as if they were full.”.

1.4.2.2.1 (c) The amendment does not apply to the English text.

1.4.2.2.1 (f) Amend the text after “the placards,” to read as follows: “marks and orange-coloured plates prescribed for the vehicles in Chapter 5.3 have been affixed.”.

1.4.2.2.1 (g) Amend to read as follows:

“(g) ascertain that the equipment prescribed in ADR for the vehicle, vehicle crew and certain classes is on board the vehicle.”

1.4.2.2.6 Insert a new paragraph to read as follows:

“1.4.2.2.6 The carrier shall provide the vehicle crew with the instructions in writing as prescribed in ADR.”.

1.4.3.1.1 (c) Delete “, when loading dangerous goods in a vehicle or a large or small container,”.

1.4.3.1.1 (d) Amend the text after “requirements concerning” to read as follows: “placarding, marking and orange-coloured plates conforming to Chapter 5.3.”.

1.4.3.3 (h) Amend to read as follows:

“(h) he shall, in preparing the dangerous goods for carriage, ensure that the placards, marks, orange-coloured plates and labels are affixed on the tanks, on the vehicles and on the containers for carriage in bulk in accordance with Chapter 5.3;”.

1.4.3.7 Delete the Note after the heading.

1.4.3.7.1 (c) At the end, add “and handling”.

1.4.3.7.1 (f) Amend the end to read as follows: "...no longer display the placards, marks and orange-coloured plates that had been displayed in accordance with Chapter 5.3."

Chapter 1.6

1.6.1.1 Replace "30 June 2015" by "30 June 2017". Replace "31 December 2014" by "31 December 2016".

1.6.1.15 Not applicable to the English text.

1.6.1.20, 1.6.1.28, 1.6.1.30, 1.6.1.31, 1.6.1.32 Delete and insert "(Deleted)".

1.6.1.25 Amend to read as follows:

"1.6.1.25 Cylinders of 60 litres water capacity or less marked with a UN number in accordance with the provisions of ADR applicable up to 31 December 2012 and which do not conform to the requirements of 5.2.1.1 regarding the size of the UN number and of the letters "UN" applicable as from 1 January 2013 may continue to be used until the next periodic inspection but no later than 30 June 2018."

1.6.1.26 Not applicable to the English text.

1.6.5.4 Replace "December 2014" by "December 2016" and "March 2016" by "March 2018".

Add the following new transitional measures:

"1.6.1.37 Contracting Parties may continue to issue training certificates for dangerous goods safety advisers conforming to the model applicable until 31 December 2016, instead of those conforming to the requirements of 1.8.3.18 applicable from 1 January 2017, until 31 December 2018. Such certificates may continue in use to the end of their five year validity."

"1.6.1.38 Notwithstanding the requirements of special provision 188 of Chapter 3.3 applicable as from 1 January 2017, packages containing lithium cells or batteries may continue to be marked until 31 December 2018 in accordance with the requirements of special provision 188 of Chapter 3.3 in force up to 31 December 2016."

"1.6.1.39 Notwithstanding the requirements of ADR applicable as from 1 January 2017, articles of UN Nos. 0015, 0016 and 0303 containing smoke-producing substance(s) toxic by inhalation according to the criteria for Class 6.1 manufactured before 31 December 2016 may be carried until 31 December 2018 without a "TOXIC" subsidiary risk label (model No. 6.1, see 5.2.2.2.2)."

"1.6.1.40 Notwithstanding the requirements of ADR applicable as from 1 January 2017, large packagings conforming to the packing group III performance level in accordance with special packing provision L2 of packing instruction LP02 of 4.1.4.3 applicable until 31 December 2016 may continue to be used until 31 December 2022 for UN No. 1950."

"1.6.1.41 Notwithstanding the requirements of column (5) of Table A of Chapter 3.2 applicable as from 1 January 2017 to UN Nos. 3090, 3091, 3480 and 3481, the Class 9 label (model No 9, see 5.2.2.2.2) may continue to be used for these UN numbers until 31 December 2018."

1.6.2.3 Replace "the markings conforming" by "the marks conforming".

1.6.3.40, 1.6.4.19, 1.6.4.36 , 1.6.4.41 Delete and insert "(Deleted)".

1.6.4.37 Delete the second sentence.

Add the following new transitional measures:

“1.6.4.47 Tank containers for refrigerated liquefied gases constructed before 1 July 2017 in accordance with the requirements in force up to 31 December 2016 but which do not conform to the requirements of 6.8.3.4.10, 6.8.3.4.11 and 6.8.3.5.4 applicable from 1 January 2017 may continue to be used until the next inspection after 1 July 2017. Until this time, to meet the requirements of 4.3.3.5 and 5.4.1.2.2(d), the actual holding times may be estimated without recourse to the reference holding time.”

“1.6.5.16 EX/II, EX/III, FL and OX vehicles registered before 1 July 2017, fitted with fuel tanks not approved according to ECE Regulation No. 34 may still be used.”

“1.6.5.17 Vehicles first registered or entering into service before 1 April 2018 that do not comply with subsection 9.2.2.8.5 or standards ISO 6722-1:2011 + Cor 01:2012 or ISO 6722-2:2013 for cables of subsection 9.2.2.2.1, but comply with the requirements applicable until 31 December 2016, may continue to be used.”

“1.6.5.18 Vehicles first registered or entering into service before 1 April 2018 approved specifically as OX vehicle may continue to be used for the carriage of substances of UN No. 2015.”

“1.6.5.19 As regards the annual technical inspection of the vehicles first registered or entering into service before 1 April 2018 approved specifically as OX vehicle, the requirements of Part 9 in force up to 31 December 2016 may still be applied.”

“1.6.5.20 Certificates of approval for OX vehicles which conform to the model shown in 9.1.3.5 applicable up to 31 December 2016 may continue to be used.”

Chapter 1.7

1.7.1.5.1 (a) Replace “5.2.1.9” by “5.2.1.10”.

Chapter 1.8

1.8.3.2 In paragraph (b), before “loading or unloading”, insert: “packing, filling,” (twice).

1.8.3.3 In the third, fifth, sixth and ninth indent of the third sub-paragraph, before “loading or unloading”, insert “packing, filling,” (four times). In the tenth and twelfth indent, before “loading and unloading”, insert “packing, filling,” (twice).

1.8.3.6 Before “loading or unloading”, insert “packing, filling.”

1.8.3.9 After “carriage”, insert “packing, filling, loading or unloading”.

1.8.3.10 At the end of the second indent, add: “, including, if necessary, the infrastructure and organisation of electronic examinations in accordance with 1.8.3.12.5, if these are to be carried out;”.

1.8.3.11 (b) In the third indent, replace “orange plates marking” by “orange-coloured plate marking” and “orange plates” by “orange-coloured plates”.

1.8.3.11 (b) In the tenth indent, between the brackets, before “loading and unloading”, insert “packing, filling,”. In the eleventh indent, before “loading and after unloading”, insert: “packing, filling,”.

1.8.3.12.2 Amend to read as follows:

“1.8.3.12.2 The competent authority or an examining body designated by the competent authority shall invigilate every examination. Any manipulation and deception shall be ruled

out as far as possible. Authentication of the candidate shall be ensured. The use in the written test of documentation other than international or national regulations is not permitted. All examination documents shall be recorded and kept as a print-out or electronically as a file.”.

1.8.3.12.4 (a) Amend the fourth indent to read as follows: “- danger marks, labelling and placarding;”.

Add a new 1.8.3.12.5 to read as follows:

“1.8.3.12.5 Written examinations may be performed, in whole or in part, as electronic examinations, where the answers are recorded and evaluated using electronic data processing (EDP) processes, provided the following conditions are met:

(a) The hardware and software shall be checked and accepted by the competent authority or by an examining body designated by the competent authority;

(b) Proper technical functioning shall be ensured. Arrangements as to whether and how the examination can be continued shall be made for a failure of the devices and applications. No aids shall be available on the input devices (e.g. electronic search function), the equipment provided according to 1.8.3.12.3 shall not allow the candidates to communicate with any other device during the examination;

(c) Final inputs of each candidate shall be logged. The determination of the results shall be transparent.”.

1.8.3.18 In the eighth entry (“Valid until ...”), before “loading or unloading”, insert: “packing, filling,”.

1.8.3.18 Delete the last 2 lines of the model certificate.

1.8.8.4.1 (e) Not applicable to the English text.

1.8.8.4.3 (d) Replace “for the marking” by “for marking”.

Chapter 1.9

1.9.5.2.2 For tunnel category D, in the first row of the table, for Class 4.1, at the end replace “and 3251” by “, 3251, 3531, 3532, 3533 and 3534”. For Class 8, delete “and UN No. 3507”. For Class 6.1, after “and TFW” insert “and UN No. 3507”.

1.9.5.2.2 For Tunnel category E, amend the paragraph before the Note to read as follows:

“Restriction for the carriage of all dangerous goods other than those for which ‘(-)’ is marked in Column (15) of Table A of Chapter 3.2 and for all dangerous goods in accordance with the provisions of Chapter 3.4 if the quantities carried exceed 8 tonnes total gross mass per transport unit.”.

1.9.5.3.6 Delete footnote 3.

Chapter 2.1

2.1.1.1 For Class 4.1, after “self-reactive substances” insert “, polymerizing substances”.

2.1.2.2 At the end, insert a new sentence to read as follows: “The substances listed by name in column (2) of Table A of Chapter 3.2 shall be carried according to their classification in Table A or under the conditions specified in 2.1.2.8.”.

Add a new 2.1.2.8 to read as follows:

“2.1.2.8 A consignor who has identified, on the basis of test data, that a substance listed by name in column 2 of Table A of Chapter 3.2 meets classification criteria for a class that is not identified in column 3a or 5 of Table A of Chapter 3.2, may, with the approval of the competent authority, consign the substance:

- Under the most appropriate collective entry listed in sub-sections 2.2.x.3 reflecting all hazards; or
- Under the same UN number and name but with additional hazard communication information as appropriate to reflect the additional subsidiary risk(s) (documentation, label, placard) provided that the class remains unchanged and that any other carriage conditions (e.g. limited quantity, packaging and tank provisions) that would normally apply to substances possessing such a combination of hazards are the same as those applicable to the substance listed.

***NOTE 1:** The competent authority granting the approval may be the competent authority of any ADR Contracting Party who may also recognize an approval granted by the competent authority of a country which is not an ADR Contracting Party 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.*

***NOTE 2:** When a competent authority grants such approvals, it should inform the United Nations Sub-Committee of Experts on the Transport of Dangerous Goods accordingly and submit a relevant proposal of amendment to the Dangerous Goods List of the UN Model Regulations. Should the proposed amendment be rejected, the competent authority should withdraw its approval.*

***NOTE 3:** For carriage in accordance with 2.1.2.8, see also 5.4.1.1.20.”*

2.1.3.4.2 After “UN No. 3151 POLYHALOGENATED BIPHENYLS, LIQUID;”, add a new entry to read as follows: “UN No. 3151 HALOGENATED MONOMETHYLDIPHENYLMETHANES, LIQUID;”. After “UN No. 3152 POLYHALOGENATED BIPHENYLS, SOLID;”, add a new entry to read as follows: “UN No. 3152 HALOGENATED MONOMETHYLDIPHENYLMETHANES, SOLID;”.

2.1.3.5.5, Footnote 2 Amend as follows:

Delete “(replaced by the Directive 2006/12/EC of the European Parliament and of the Council (Official Journal of the European Union No. L 114 of 27 April 2006, page 9))”.

At the end, insert: “; and Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Official Journal of the European Union No. L312 of 22 November 2008, pages 3-30)”.

Chapter 2.2

2.2.1.1.5 In the definition of Division 1.6, in the second sentence, replace “contain only extremely insensitive substance” by “predominantly contain extremely insensitive substances”.

2.2.1.1.6 Amend the definition of Compatibility Group N to read as follows: “Articles predominantly containing extremely insensitive substances”.

2.2.1.1.7.1 In the second sentence, insert a paragraph break after “However,” and replace “;” by “:”. Remainder of the sentence becomes new subparagraph (b). In (b), replace “such articles” by “fireworks”.

Insert a new subparagraph (a) to read as follows:

“(a) waterfalls giving a positive result when tested in the HSL Flash composition test in Appendix 7 of the Manual of Tests and Criteria shall be classified as 1.1G regardless of the results of Test Series 6;”.

2.2.1.1.7.5 In the table, for the entry “Fountain” in the column “Includes: / Synonym”, delete “showers”. In the third column, at the end, add the following Note:

“**NOTE:** *Fountains intended to produce a vertical cascade or curtain of sparks are considered to be waterfalls (see row below).*”.

After the row for “Fountain”, insert a new row to read as follows:

Type	Includes: / Synonym:	Definition	Specification	Classification
Waterfall	cascades, showers	pyrotechnic fountain intended to produce a vertical cascade or curtain of sparks	containing a pyrotechnic substance which gives a positive result when tested in the HSL Flash composition test in Appendix 7 of the Manual of Tests and Criteria regardless of the results of Test Series 6 (see 2.2.1.1.7.1 (a))	1.1G
			containing a pyrotechnic substance which gives a negative result when tested in the HSL Flash composition test in Appendix 7 of the Manual of Tests and Criteria	1.3G

2.2.1.1 Add a new paragraph 2.2.1.1.9 to read as follows:

“2.2.1.1.9 *Classification documentation*

2.2.1.1.9.1 A competent authority assigning an article or substance to Class 1 shall confirm that classification with the applicant in writing.

2.2.1.1.9.2 A competent authority classification document may be in any form and may consist of more than one page, provided pages are numbered consecutively. The document shall have a unique reference.

2.2.1.1.9.3 The information provided shall be easy to identify, legible and durable.

2.2.1.1.9.4 Examples of the information that may be provided in the classification documents are as follows:

- (a) The name of the competent authority and the provisions in national legislation under which it is granted its authority;
- (b) The modal or national regulations for which the classification document is applicable;
- (c) Confirmation that the classification has been approved, made or agreed in accordance with the UN Model Regulations or the relevant modal regulations;
- (d) The name and address of the person in law to which the classification has been assigned and any company registration which uniquely identifies a company or other body corporate under national legislation;
- (e) The name under which the explosives will be placed onto the market or otherwise supplied for carriage;
- (f) The proper shipping name, UN number, class, division and corresponding compatibility group of the explosives;

- (g) Where appropriate, the maximum net explosive mass of the package or article;
- (h) The name, signature, stamp, seal or other identification of the person authorised by the competent authority to issue the classification document is clearly visible;
- (i) Where safety in carriage or the division is assessed as being dependent upon the packaging, the packaging mark or a description of the permitted:
 - Inner packagings
 - Intermediate packagings
 - Outer packagings
- (j) The classification document states the part number, stock number or other identifying reference under which the explosives will be placed onto the market or otherwise supplied for carriage;
- (k) The name and address of the person in law who manufactured the explosives and any company registration which uniquely identifies a company or other body corporate under national legislation;
- (l) Any additional information regarding the applicable packing instruction and special packing provisions where appropriate;
- (m) The basis for assigning the classification, i.e. whether on the basis of test results, default for fireworks, analogy with classified explosive, by definition from Table A of Chapter 3.2 etc.;
- (n) Any special conditions or limitations that the competent authority has identified as relevant to the safety for carriage of the explosives, the communication of the hazard and international carriage;
- (o) The expiry date of the classification document is given where the competent authority considers one to be appropriate.”.

2.2.1.4 In the definition of “ROCKET MOTORS”, after “0281”, insert “, 0510”.

2.2.2.2.1 Amend to read as follows:

“2.2.2.2.1 Chemically unstable gases of Class 2 shall not be accepted for carriage unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of carriage or unless carried in accordance with special packing provision (r) of packing instruction P200 (10) of 4.1.4.1, as applicable. For the precautions necessary to prevent polymerization, see special provision 386 of Chapter 3.3. To this end particular care shall be taken to ensure that receptacles and tanks do not contain any substances liable to promote these reactions.”.

2.2.3.1.5 Existing text becomes 2.2.3.1.5.1. At the beginning, replace “viscous liquids” by “Except as provided for in 2.2.3.1.5.2, viscous liquids”.

Before this paragraph, add a new heading 2.2.3.1.5 to read as follows:

“2.2.3.1.5 *Viscous liquids*”.

Insert a new 2.2.3.1.5.2 to read as follows:

“2.2.3.1.5.2 Viscous liquids which are also environmentally hazardous, but meet all other criteria in 2.2.3.1.5.1, are not subject to any other provisions of ADR when they are carried in single or combination packagings containing a net quantity per single or inner packaging

of 5 litres or less, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.”.

2.2.3.2.2 Amend to read as follows:

“2.2.3.2.2 Chemically unstable substances of Class 3 shall not be accepted for carriage unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of carriage. For the precautions necessary to prevent polymerization, see special provision 386 of Chapter 3.3. To this end particular care shall be taken to ensure that receptacles and tanks do not contain any substances liable to promote these reactions.”.

2.2.3.3 For “F3 articles”, at the end of the proper shipping name for UN 3269, add “, liquid base material”.

2.2.41 In the heading of Class 4.1, after “self-reactive substances”, insert “, polymerizing substances”.

2.2.41.1.1 In the first paragraph, replace “and self-reactive liquids or solids” by “, self-reactive liquids or solids and polymerizing substances”. In the second paragraph, insert a new indent at the end to read:

“- polymerizing substances (see 2.2.41.1.20 and 2.2.41.1.21).”.

2.2.41.1.2 At the end, add the following new subdivisions:

“PM Polymerizing substances

PM1 Not requiring temperature control;

PM2 Requiring temperature control.”.

2.2.41.1.2 After “F3 Inorganic;”, insert “F4 Articles;”

2.2.41 Insert the following new sub-sections 2.2.41.1.20 and 2.2.41.1.21:

“Polymerizing substances

Definitions and properties

2.2.41.1.20 *Polymerizing substances* are substances which, without stabilization, are liable to undergo a strongly exothermic reaction resulting in the formation of larger molecules or resulting in the formation of polymers under conditions normally encountered in carriage. Such substances are considered to be polymerizing substances of Class 4.1 when:

- (a) Their self-accelerating polymerization temperature (SAPT) is 75 °C or less under the conditions (with or without chemical stabilization as offered for carriage) and in the packaging, IBC or tank in which the substance or mixture is to be carried;
- (b) They exhibit a heat of reaction of more than 300 J/g; and
- (c) They do not meet any other criteria for inclusion in classes 1 to 8.

A mixture meeting the criteria of a polymerizing substance shall be classified as a polymerizing substance of Class 4.1.

Temperature control requirements

2.2.41.1.21 Polymerizing substances are subject to temperature control in carriage if their self-accelerating polymerization temperature (SAPT) is:

- (a) When offered for carriage in a packaging or IBC, 50 °C or less in the packaging or IBC in which the substance is to be carried; or

(b) When offered for carriage in a tank, 45 °C or less in the tank in which the substance is to be carried.”.

2.2.41.3 Under “flammable solids - without subsidiary risk”, insert the following new arm:

articles F4	3527 POLYESTER RESIN KIT, solid base material
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At the end, add the following arm:

Polymerizing substances PM	not requiring temperature control	PM1	3531 POLYMERIZING SUBSTANCE, SOLID, STABILIZED, N.O.S. 3532 POLYMERIZING SUBSTANCE, LIQUID, STABILIZED, N.O.S.
	requiring temperature control	PM2	3533 POLYMERIZING SUBSTANCE, SOLID, TEMPERATURE CONTROLLED, N.O.S. 3534 POLYMERIZING SUBSTANCE, LIQUID, TEMPERATURE CONTROLLED, N.O.S.

2.2.52.4 In the table, amend the entries listed below as indicated:

<i>Organic peroxide</i>		<i>Column</i>	<i>Amendment</i>
DIBENZOYL PEROXIDE	(first row)	Concentration (%)	Replace “>51 – 100” by “>52 – 100”
tert-BUTYL CUMYL PEROXIDE	(first row)	Number (Generic entry)	Replace “3107” by “3109”
DICETYL PEROXYDICARBONATE	(first row)	Packing Method	Replace “OP7” by “OP8”
DICETYL PEROXYDICARBONATE	(first row)	Number (Generic entry)	Replace “3116” by “3120”
tert-BUTYL PEROXY-3,5,5-TRIMETHYLHEXANOATE	(first row)	Concentration (%)	Replace “>32-100” by “>37-100”
tert-BUTYL PEROXY-3,5,5-TRIMETHYLHEXANOATE	(third row)	Concentration (%)	Replace “≤ 32” by “≤37”
tert-BUTYL PEROXY-3,5,5-TRIMETHYLHEXANOATE	(third row)	Diluent type B (%)	Replace “≥ 68” by “≥ 63”

2.2.61.2.1 Amend to read as follows:

“2.2.61.2.1 Chemically unstable substances of Class 6.1 shall not be accepted for carriage unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of carriage. For the precautions necessary to prevent polymerization, see special provision 386 of Chapter 3.3. To this end particular care shall be taken to ensure that receptacles and tanks do not contain any substances liable to promote these reactions.”.

2.2.62.1.1 Amend Note 1 to read as follows:

“NOTE 1: *Genetically modified microorganisms and organisms, biological products, diagnostic specimens and intentionally infected live animals shall be assigned to this Class if they meet the conditions for this Class.*

The carriage of unintentionally or naturally infected live animals is subject only to the relevant rules and regulations of the respective countries of origin, transit and destination.”.

2.2.62.1.12.1 Delete footnote 6. Renumber the following footnotes accordingly.

Add a new note at the end to read as follows:

“NOTE: *The approval of the competent authorities shall be issued on the basis of the relevant rules for the carriage of live animals, taking into consideration dangerous goods aspects. The authorities that are competent to lay down these conditions and rules for approval shall be regulated at national level.*

If there is no approval by a competent authority of a Contracting Party to ADR, the competent authority of a Contracting Party to ADR may recognize an approval issued by the competent authority of a country that is not a Contracting Party to ADR.

Rules for the carriage of livestock are, for example, contained in Council Regulation (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport (Official Journal of the European Community No L 3 of 5 January 2005) as amended.”.

2.2.7.2.4.1.3 (b), (b) (ii) and (b) (iii) Replace “marking “RADIOACTIVE”” by “mark “RADIOACTIVE”” wherever it appears.

2.2.7.2.4.1.4 (b) Replace “marking “RADIOACTIVE”” by “mark “RADIOACTIVE””.

2.2.8.2.1 Amend to read as follows:

“2.2.8.2.1 Chemically unstable substances of Class 8 shall not be accepted for carriage unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of carriage. For the precautions necessary to prevent polymerization, see special provision 386 of Chapter 3.3. To this end particular care shall be taken to ensure that receptacles and tanks do not contain any substances liable to promote these reactions.”.

2.2.9.1.2 In the M2 entry, replace “apparatus” by “articles”.

2.2.9.1.5 In the title and in the text, replace “apparatus” by “articles” wherever it appears (4 times).

2.2.9.1.7 Insert the following new first paragraph:

“Lithium batteries shall meet the following requirements, except when otherwise provided for in ADR (e.g. for prototype batteries and small production runs under special provision 310 or damaged batteries under special provision 376).”.

2.2.9.1.7 Delete the last Note.

2.2.9.1.10.2.5 In the second paragraph, in the first sentence, amend the end to read as follows: “OECD Test Guidelines 107, 117 or 123.”.

2.2.9.1.11 For Note 2, amend the text of footnote 16 (former 17) to read as follows:

“See Part C of Directive 2001/18/EC of the European Parliament and of the Council on the deliberate release into the environment of genetically modified organisms and repealing Council Directive 90/220/EEC (Official Journal of the European Communities, No. L 106, of 17 April 2001, pp 8-14) and Regulation (EC) No. 1829/2003 of the European Parliament and of the Council on genetically modified food and feed (Official Journal of the European

Union, No. L 268, of 18 October 2003, pp 1-23), which set out the authorization procedures for the European Union.”.

Insert a new Note 3 to read as follows and renumber existing Note 3 as Note 4:

“NOTE 3: *Genetically modified live animals which, in accordance with the current state of scientific knowledge, have no known pathogenic effect on humans, animals and plants and are carried in receptacles that are suitable for safely preventing both the escape of the animals and unauthorized access to them, are not subject to the provisions of ADR. The provisions specified by the International Air Transport Association (IATA) for air transport “Live Animals Regulations, LAR” can be drawn on as guidelines for suitable receptacles for the transport of live animals.”.*

2.2.9.1.14 In the list before the Note, after “Electric double layer capacitors (with an energy storage capacity greater than 0.3 Wh)” add a new line to read:

“Engines and machinery, internal combustion.”.

2.2.9.1.14 In the Note, delete the entries for UN Nos. 3166 and 3171.

2.2.9.3 In the title of M2, replace “apparatus” by “articles”.

2.2.9.3, for M2 After “3151 POLYHALOGENATED BIPHENYLS, LIQUID or”, add a new entry to read as follows: “3151 HALOGENATED MONOMETHYLDIPHENYLMETHANES, LIQUID or”. After “3152 POLYHALOGENATED BIPHENYLS, SOLID or”, add a new entry to read as follows: “3152 HALOGENATED MONOMETHYLDIPHENYLMETHANES, SOLID or”.

2.2.9.3 In M11, insert the following new entries:

“3166 VEHICLE, FLAMMABLE GAS POWERED or 3166 VEHICLE, FLAMMABLE LIQUID POWERED or 3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or 3166 VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED”

“3171 BATTERY POWERED VEHICLE or 3171 BATTERY POWERED EQUIPMENT”

Chapter 3.1

3.1.2.2 At the end of the first sentence, replace “package marking” by “package marks”.

3.1.2.3 At the end of the second sentence, replace “package marking” by “package marks”.

3.1.2.6 In the introductory sentence, before subparagraphs (a) and (b), at the end, before “then:” insert “or the evolution of excessive heat, or when chemical stabilization is used in combination with temperature control,”.

3.1.2.6 (a) Amend to read as follows:

“(a) For liquids and solids where the SAPT¹ (measured without or with inhibitor, when chemical stabilization is applied) is less than or equal to that prescribed in 2.2.41.1.21, the provisions of 2.2.41.1.17, special provision 386 of Chapter 3.3, special provision V8 of Chapter 7.2, special provision S4 of Chapter 8.5 and the requirements of Chapter 9.6 apply except that the term “SADT” as used in these paragraphs is understood to include also “SAPT” when the substance concerned reacts by polymerization;”.

Footnote ¹ reads as follows: “¹ For the definition of self-accelerating polymerization temperature (SAPT), see 1.2.1.”.

Chapter 3.2

3.2.1 In the description for column (17) amend the third sentence after the heading to read as follows: “If no special provision, identified by the code “VC” or a reference to a specific paragraph, explicitly authorizing this mode of carriage is indicated in this column, and no special provision, identified by the code “BK” or a reference to a specific paragraph, explicitly authorizing this mode of carriage is indicated in column (10), carriage in bulk is not permitted.”.

3.2.1 In the description for “Column 20”, replace “orange-coloured marking” by “orange-coloured plates”.

Chapter 3.2, Table A

For UN No. 0015, insert a new row with the same information as for the other entries for UN No. 0015 except that the designation in column (2) reads “AMMUNITION, SMOKE with or without burster, expelling charge or propelling charge, containing toxic by inhalation substances” and the codes for labels in column (5) read “1 +6.1”.

For UN No. 0016, insert a new row with the same information as for the other entries for UN No. 0016 except that the designation in column (2) reads “AMMUNITION, SMOKE with or without burster, expelling charge or propelling charge, containing toxic by inhalation substances” and the codes for labels in column (5) read “1 +6.1”.

For UN No. 0303, insert a new row with the same information as for the other entries for UN No. 0303 except that the designation in column (2) reads “AMMUNITION, SMOKE with or without burster, expelling charge or propelling charge, containing toxic by inhalation substances” and the codes for labels in column (5) read “1.4 +6.1”.

For UN Nos. 1005 and 3516, add “379” in column (6).

For UN Nos. 1006, 1013, 1046, 1056, 1065, 1066, 1956, 2036, add “378” in column (6).

For UN Nos. 1010, 1051, 1060, 1081, 1082, 1085, 1086, 1087, 1092, 1093, 1143, 1167, 1185, 1218, 1246, 1247, 1251, 1301, 1302, 1303, 1304, 1545, 1589, 1614, 1724, 1829, 1860, 1917, 1919, 1921, 1991, 2055, 2200, 2218, 2227, 2251, 2277, 2283, 2348, 2352, 2383, 2396, 2452, 2521, 2527, 2531, 2607, 2618, 2838, 3022, 3073 and 3079, in column (6) insert “386”. Insert “V8” in column (16) and insert “S4” in column (19).

For UN Nos. 1092, 1098, 1143, 1163, 1238, 1239, 1244, 1595, 1695, 1752, 1809, 2334, 2337, 2646 and 3023, in column (11), delete “TP35”.

For UN Nos. 1135, 1182, 1251, 1541, 1580, 1605, 1670, 1810, 1838, 1892, 2232, 2382, 2474, 2477, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2521, 2605, 2606, 2644, 2668, 3079 and 3246, in column (11), delete “TP37”.

For UN No. 1202, in column (2), replace “EN 590:2009 + A1:2010” by “EN 590:2013 + AC:2014” (twice).

For UN Nos. 1202, 1203, 1223, 1268 (all entries), 1863 (all entries) and 3475, in column (6) delete “363”.

For UN Nos. 1334, 1350, 1454, 1474, 1486, 1498, 1499, 1942, 2067, 2213, 3077, 3377 and 3378 PG III, in column (10) add “BK3”.

For UN No. 1415, add “T9” in column (10). Add “TP7” and “TP33” in column (11).

For UN No. 1845, replace “NOT SUBJECT TO ADR - When used as a coolant, see 5.5.3” by “NOT SUBJECT TO ADR except for 5.5.3”.

For UN No. 1950, in column (8), replace “LP02” by “LP200”.

For UN No. 1966, delete “TP23” in column (11).

For UN No. 2000, insert “383” in column (6).

For UN No. 2015 (both entries), in column (14) replace “OX” by “FL”.

For UN No. 2211, replace “207” by “382” in column (6).

For UN Nos. 2211 and 3314, in column (18) add “CV36”.

For UN No. 2813, all entries, in column (9a), delete “PP83”.

For UN Nos. 2814 (first entry), 2900 (first entry), 3077 and 3082, in column (15), replace “(E)” by “(-)”.

For UN No. 2815, in column (5) insert “+ 6.1” and in column (3b) replace “C7” by “CT1”. In column (20), replace “80” by “86”.

For UN Nos. 2977 and 2978, in column (5) insert “+ 6.1” before “+ 8”. In column (20), replace “78” by “768”.

For UN Nos. 3090, 3091, 3480 and 3481, in column (5), replace “9” by “9A” and in column (8), insert “P910”.

For UN Nos. 3091 and 3481, insert “310” in column (6).

For UN No. 3151, amend column (2) to read as follows: “POLYHALOGENATED BIPHENYLS, LIQUID or HALOGENATED MONOMETHYLDIPHENYLMETHANES, LIQUID or POLYHALOGENATED TERPHENYLS, LIQUID”.

For UN No. 3152, amend column (2) to read as follows: “POLYHALOGENATED BIPHENYLS, SOLID or HALOGENATED MONOMETHYLDIPHENYLMETHANES, SOLID or POLYHALOGENATED TERPHENYLS, SOLID”.

Amend the entries for UN Nos. 3166 and 3171 to read as follows:

(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7a) to (20)
3166	VEHICLE, FLAMMABLE GAS POWERED or VEHICLE, FLAMMABLE LIQUID POWERED or VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED	9	M11			312 385 666 667	
3171	BATTERY POWERED VEHICLE or BATTERY POWERED EQUIPMENT	9	M11			240 666 667	

For UN No. 3257, in column (6), insert “668”.

For UN No. 3269, packing groups II and III, in column (2) add the following text at the end of the description: “, liquid base material”.

For UN No. 3507, in column (3), replace “8” by “6.1” and in column (5), replace “8” by “6.1 +8”. In column (8), replace “P805” by “P603”.

Add the following new entries:

(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9a)	(9b)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3527	POLYESTER RESIN KIT, solid base material	4.1	F4	II	4.1	236 340	5kg	E0	P412								2 (E)					
3527	POLYESTER RESIN KIT, solid base material	4.1	F4	III	4.1	236 340	5kg	E0	P412								3 (E)					
0510	ROCKET MOTORS	1	1.4C		1.4		0	E0	P130 LP101	PP67 L1	MP22						2 (E)	V2		CV1 CV2 CV3	S1	
3528	ENGINE, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED or ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or MACHINERY, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED or MACHINERY, FUEL CELL, FLAMMABLE LIQUID POWERED	3			3	363 667	0	E0	P005													

(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9a)	(9b)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3529	ENGINE, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or MACHINERY, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or MACHINERY, FUEL CELL, FLAMMABLE GAS POWERED	2			2.1	363 667	0	E0	P005													
3530	ENGINE, INTERNAL COMBUSTION or MACHINERY, INTERNAL COMBUSTION	9			9	363 667	0	E0	P005													
3531	POLYMERIZING SUBSTANCE, SOLID, STABILIZED, N.O.S.	4.1	PM1	III	4.1	274 386	0	E0	P002 IBC07	PP92 B18		T7	TP4 TP6 TP33	SGAN+	TU30 TE11	AT	2 (D)	V1		CV15 CV22		40
3532	POLYMERIZING SUBSTANCE, LIQUID, STABILIZED, N.O.S.	4.1	PM1	III	4.1	274 386	0	E0	P001 IBC03	PP93 B19		T7	TP4 TP6	L4BN+	TU30 TE11	AT	2 (D)	V1		CV15 CV22		40
3533	POLYMERIZING SUBSTANCE, SOLID, TEMPERATURE CONTROLLED, N.O.S.	4.1	PM2	III	4.1	274 386	0	E0	P002 IBC07	PP92 B18		T7	TP4 TP6 TP33	SGAN+	TU30 TE11	AT	1 (D)	V8		CV15 CV21 CV22	S4	40

(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9a)	(9b)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3534	POLYMERIZING SUBSTANCE, LIQUID, TEMPERATURE CONTROLLED, N.O.S.	4.1	PM2	III	4.1	274 386	0	E0	P001 IBC03	PP93 B19		T7	TP4 TP6	L4BN+	TU30 TE11	AT	1 (D)	V8		CV15 CV21 CV22	S4	40

Chapter 3.3

3.3.1 Add the following second sentence: “Where a special provision includes a requirement for package marking, the provisions of 5.2.1.2 (a) and (b) shall be met. If the required mark is in the form of specific wording indicated in quotation marks, such as “Damaged Lithium Batteries”, the size of the mark shall be at least 12 mm, unless otherwise indicated in the special provision or elsewhere in ADR.”.

SP 172 (b) Replace “vehicles or containers” by “cargo transport units”.

SP 188 (f) Amend to read as follows:

“(f) Each package shall be marked with the appropriate lithium battery mark, as illustrated in 5.2.1.9;

This requirement does not apply to:

(i) Packages containing only button cell batteries installed in equipment (including circuit boards); and

(ii) Packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment.”.

SP 188 (g) Delete.

SP 188 (h) and (i) Renumber as (g) and (h) respectively.

SP 188 Add the following paragraph at the end:

“A single cell battery as defined in Part III, sub-section 38.3.2.3 of the *Manual of Tests and Criteria* is considered a “cell” and shall be carried according to the requirements for “cells” for the purpose of this special provision.”.

SP 207 Delete “Polymeric beads and”.

SP 216 Replace “,vehicle or container” by “or cargo transport unit”.

SP 217 Replace “,vehicle or container” by “or cargo transport unit”.

SP 218 Replace “,vehicle or container” by “or cargo transport unit”.

SP 225 In the last Note, replace “applicable to the relevant gas” by “applicable to the relevant dangerous goods”.

SP 236 Amend to read as follows:

“236 Polyester resin kits consist of two components: a base material (either Class 3 or Class 4.1, packing group II or III) and an activator (organic peroxide). The organic peroxide shall be type D, E, or F, not requiring temperature control. The packing group shall be II or III, according to the criteria of either Class 3 or Class 4.1, as appropriate, applied to the base material. The quantity limit shown in column (7a) of Table A of Chapter 3.2 applies to the base material.”.

SP 240 Amend to read as follows:

“240 This entry 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. Lithium batteries shall meet the requirements of 2.2.9.1.7, except as otherwise provided for in special provision 667.

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 electrically-

powered cars, motorcycles, scooters, three- and four-wheeled vehicles or motorcycles, trucks, locomotives, bicycles (pedal cycles with an electric motor) and other vehicles of this type (e.g. self-balancing vehicles or vehicles not equipped with at least one seating position), wheel chairs, 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. 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 shall be assigned to the entries UN 3166 VEHICLE, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FLAMMABLE LIQUID POWERED, as appropriate. Vehicles which contain a fuel cell shall be assigned to the entries UN 3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED, as appropriate.

Vehicles may contain other dangerous goods than batteries (e.g. fire extinguishers, compressed gas accumulators or safety devices) required for their functioning or safe operation without being subject to any additional requirements for these other dangerous goods, unless otherwise specified in ADR.”.

SP 295 Not applicable to the English text.

SP 310 Amend to read as follows:

“310 The testing requirements in the Manual of Tests and Criteria, part III sub-section 38.3 do not apply to production runs, consisting of not more than 100 cells and batteries, or to pre-production prototypes of cells and batteries when these prototypes are carried for testing when packaged in accordance with packing instruction P910 of 4.1.4.1

The transport document shall include the following statement: “Carriage in accordance with special provision 310”.

Damaged or defective cells, batteries, or cells and batteries contained in equipment shall be carried in accordance with special provision 376 and packaged in accordance with packing instructions P908 of 4.1.4.1 or LP904 of 4.1.4.3, as applicable.

Cells, batteries or cells and batteries contained in equipment carried for disposal or recycling may be packaged in accordance with special provision 377 and packing instruction P909 of 4.1.4.1.”.

SP 312 Amend to read as follows:

“312 Vehicles powered by a fuel cell engine shall be assigned to UN No. 3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or UN No. 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.

Lithium batteries shall meet the requirements of 2.2.9.1.7, except as otherwise provided for in special provision 667.”.

SP 317 Amend to read as follows:

“317 “Fissile-excepted” applies only to those fissile material and packages containing fissile material which are excepted in accordance with 2.2.7.2.3.5.”.

SP 327 In the second sentence, insert “movement and” after “protected against”.

SP 327 In the third sentence, replace “LP02” by “LP200”.

SP 335 Replace “vehicle or container” by “cargo transport unit”, 3 times.

SP 339 Not applicable to the English text.

SP 356 Delete “installed in vehicles, wagons, vessels or aircraft or in completed components or”.

SP 363 Amend to read as follows:

“363 (a) This entry applies to engines or machinery, powered by fuels classified as dangerous goods via internal combustion systems or fuel cells (e.g. combustion engines, generators, compressors, turbines, heating units, etc.), in quantities above those specified in column (7a) of Table A of Chapter 3.2, except vehicle equipment assigned to UN No. 3166 referred to in SP 666.

NOTE: *This entry does not apply to equipment referred to in 1.1.3.3.*

(b) Engines or machinery which are empty of liquid or gaseous fuels and which do not contain other dangerous goods, are not subject to ADR.

NOTE 1: *An engine or machinery is considered to be empty of liquid fuel when the liquid fuel tank has been drained and the engine or machinery cannot be operated due to a lack of fuel. Engine or machinery components such as fuel lines, fuel filters and injectors do not need to be cleaned, drained or purged to be considered empty of liquid fuels. In addition, the liquid fuel tank does not need to be cleaned or purged.*

NOTE 2: *An engine or machinery is considered to be empty of gaseous fuels when the gaseous fuel tanks are empty of liquid (for liquefied gases), the pressure in the tanks does not exceed 2 bar and the fuel shut-off or isolation valve is closed and secured.*

(c) Engines and machinery containing fuels meeting the classification criteria of Class 3, shall be assigned to the entries UN No. 3528 ENGINE, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED or UN No. 3528 ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or UN No. 3528 MACHINERY, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED or UN No. 3528 MACHINERY, FUEL CELL, FLAMMABLE LIQUID POWERED, as appropriate.

(d) Engines and machinery containing fuels meeting the classification criteria of flammable gases of Class 2, shall be assigned to the entries UN No. 3529 ENGINE, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or UN No. 3529 ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or UN No. 3529 MACHINERY, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or UN No. 3529 MACHINERY, FUEL CELL, FLAMMABLE GAS POWERED, as appropriate.

Engines and machinery powered by both a flammable gas and a flammable liquid shall be assigned to the appropriate UN No. 3529 entry.

(e) Engines and machinery containing liquid fuels meeting the classification criteria of 2.2.9.1.10 for environmentally hazardous substances and not meeting the classification criteria of any other class shall be assigned to the entries UN No. 3530 ENGINE, INTERNAL COMBUSTION or UN No. 3530 MACHINERY, INTERNAL COMBUSTION, as appropriate.

(f) Engines or machinery may contain other dangerous goods than fuels (e.g. batteries, fire extinguishers, compressed gas accumulators or safety devices) required for their functioning or safe operation without being subject to any additional requirements for these other dangerous goods, unless otherwise specified in ADR. However, lithium batteries shall meet the requirements of 2.2.9.1.7, except as provided for in special provision 667.

(g) The engines or machinery are not subject to any other requirements of ADR if the following requirements are met:

- (i) The engine or machinery, including the means of containment containing dangerous goods, shall be in compliance with the construction requirements specified by the competent authority of the country of manufacture²;
- (ii) Any valves or openings (e.g. venting devices) shall be closed during carriage;
- (iii) The engines or machinery shall be oriented to prevent inadvertent leakage of dangerous goods and secured by means capable of restraining the engines or machinery to prevent any movement during carriage which would change the orientation or cause them to be damaged;
- (iv) for UN No. 3528 and UN No. 3530:

Where the engine or machinery contains more than 60 l of liquid fuel and has a capacity of more than 450 l but not more than 3 000 l, it shall be labelled on two opposite sides in accordance with 5.2.2.

Where the engine or machinery contains more than 60 l of liquid fuel and has a capacity of more than 3 000 l, it shall be placarded on two opposite sides. Placards shall correspond to the labels required in Column (5) of Table A of Chapter 3.2 and shall conform to the specifications given in 5.3.1.7. Placards shall be displayed on a background of contrasting colour, or shall have either a dotted or solid outer boundary line.

- (v) for UN No. 3529:

Where the fuel tank of the engine or machinery has a water capacity of more than 450 l but not more than 1 000 l, it shall be labelled on two opposite sides in accordance with 5.2.2.

² For example, compliance with the relevant provisions of Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (Official Journal of the European Union No. L 157 of 9 June 2006, pp. 0024-0086).

Where the fuel tank of the engine or machinery has a water capacity of more than 1 000 l, it shall be placarded on two opposite sides. Placards shall correspond to the labels required in Column (5) of Table A of Chapter 3.2 and shall conform to the specifications given in 5.3.1.7. Placards shall be displayed on a background of contrasting colour, or shall have either a dotted or solid outer boundary line.

- (vi) A transport document in accordance with 5.4.1 is required only when the engine or machinery contains more than 1 000 l of liquid fuels, for UN 3528 and UN 3530, or the fuel tank has a water capacity of more than 1 000 l, for UN 3529.

This transport document shall contain the following additional statement “Transport in accordance with special provision 363”.

SP 369 Amend the first paragraph to read as follows:

“In accordance with 2.1.3.5.3 (a), this radioactive material in an excepted package possessing toxic and corrosive properties is classified in Class 6.1 radioactivity and corrosivity subsidiary risks.”.

SP 369 Amend the third paragraph to read as follows:

“In addition to the provisions applicable to the carriage of Class 6.1 substances with a corrosivity subsidiary risk, the provisions of 5.1.3.2, 5.1.5.2.2, 5.1.5.4.1 (b), 7.5.11 CV33 (3.1), (5.1) to (5.4) and (6) shall apply.”.

SP 370 In the second indent, replace “that is not too sensitive for acceptance into Class 1” with “that gives a positive result”.

SP 373 (b) (i) and (c) (ii) Insert “or adsorbent” after “absorbent”. Insert “or adsorb” after “absorb”.

SP 373 In the penultimate paragraph, replace “carriage in accordance” by “transport in accordance”.

SP 376 Amend the end of the last sentence to read as follows: “...shall not be carried except under conditions approved by the competent authority of any ADR Contracting Party who may also recognize an approval granted by the competent authority of a country which is not an ADR Contracting Party 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.”.

Delete “378-499 (Reserved)”.

SP 581 Amend to read as follows:

“581 This entry covers mixtures of propadiene with 1 to 4% methylacetylene as well as the following mixtures:

Mixture	Content, % by volume			Permitted technical name for purposes of 5.4.1.1
	Methylacetylene and propadiene, not more than	Propane and propylene, not more than	C4-saturated hydrocarbons, not less than	
P1	63	24	14	“Mixture P1”
P2	48	50	5	“Mixture P2”

”

SP 633 Replace “marking” by “mark”, twice.

SP 653 In the last indent, replace “marking” by “mark”.

SP 655 In the first sentence, replace “Directive 97/23/EC⁴” by “Directive 97/23/EC⁴ or Directive 2014/68/EU⁵”. At the end of the second sentence, add “or Directive 2014/68/EU”.

Add a new footnote 5 to read as follows:

⁵ *Directive 2014/68/EU of the European Parliament and of the Council of 15 May 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of pressure equipment (PED) (Official Journal of the European Union No. L 189 of 27 June 2014, p. 164 - 259).*”.

Footnotes 5-9 are renumbered 6-10.

SP 658 (b) Insert “or large container” after “vehicle”.

SP 660 (f) In the last sentence, replace “markings” by “marks”.

SP 660 Amend footnote 5 to read as follows:

⁵ *ECE Regulation No. 67 (Uniform provisions concerning the approval of:*
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.)”.

SP 663 Under “Scope”, in the last indent, After “polyhalogenated biphenyls” insert “, halogenated monomethyldiphenylmethanes”.

SP 664 Amend the last sentence of paragraph (a) (ii) to read as follows:

“Welding shall be carried out in accordance with the first paragraph of 6.8.2.1.23, except that other suitable methods may be applied to confirm the quality of the welding.”.

Add the following new special provisions:

“378 Radiation detectors containing this gas in non-refillable pressure receptacles not meeting the requirements of Chapter 6.2 and packing instruction P200 of 4.1.4.1 may be carried under this entry provided:

- (a) The working pressure in each receptacle does not exceed 50 bar;
- (b) The receptacle capacity does not exceed 12 litres;
- (c) Each receptacle has a minimum burst pressure of at least 3 times the working pressure when a relief device is fitted and at least 4 times the working pressure when no relief device is fitted;
- (d) Each receptacle is manufactured from material which will not fragment upon rupture;
- (e) Each detector is manufactured under a registered quality assurance programme;

NOTE: *ISO 9001:2008 may be used for this purpose.*

(f) Detectors are carried in strong outer packagings. The complete package shall be capable of withstanding a 1.2 metre drop test without breakage of the detector or rupture of the outer packaging. Equipment that includes a detector shall be packed in a strong outer

packaging unless the detector is afforded equivalent protection by the equipment in which it is contained; and

(g) The transport document includes the following statement “Transport in accordance with special provision 378”.

Radiation detectors, including detectors in radiation detection systems, are not subject to any other requirements of ADR if the detectors meet the requirements in (a) to (f) above and the capacity of detector receptacles does not exceed 50 ml.”.

“379 Anhydrous ammonia adsorbed or absorbed on a solid contained in ammonia dispensing systems or receptacles intended to form part of such systems are not subject to the other provisions of ADR if the following conditions are observed:

- (a) The adsorption or absorption presents the following properties:
 - (i) The pressure at a temperature of 20 °C in the receptacle is less than 0.6 bar;
 - (ii) The pressure at a temperature of 35 °C in the receptacle is less than 1 bar;
 - (iii) The pressure at a temperature of 85 °C in the receptacle is less than 12 bar.
- (b) The adsorbent or absorbent material shall not have dangerous properties listed in classes 1 to 8;
- (c) The maximum contents of a receptacle shall be 10 kg of ammonia; and
- (d) Receptacles containing adsorbed or absorbed ammonia shall meet the following conditions:
 - (i) Receptacles shall be made of a material compatible with ammonia as specified in ISO 11114-1:2012;
 - (ii) Receptacles and their means of closure shall be hermetically sealed and able to contain the generated ammonia;
 - (iii) Each receptacle shall be able to withstand the pressure generated at 85 °C with a volumetric expansion no greater than 0.1%;
 - (iv) Each receptacle shall be fitted with a device that allows for gas evacuation once pressure exceeds 15 bar without violent rupture, explosion or projection; and
 - (v) Each receptacle shall be able to withstand a pressure of 20 bar without leakage when the pressure relief device is deactivated.

When carried in an ammonia dispenser, the receptacles shall be connected to the dispenser in such a way that the assembly is guaranteed to have the same strength as a single receptacle.

The properties of mechanical strength mentioned in this special provision shall be tested using a prototype of a receptacle and/or dispenser filled to nominal capacity, by increasing the temperature until the specified pressures are reached.

The test results shall be documented, shall be traceable and shall be communicated to the relevant authorities upon request.”.

“380 *(Reserved)*”.

“381 *(Reserved)*”.

“382 Polymeric beads may be made from polystyrene, poly (methyl methacrylate) or other polymeric material. When it can be demonstrated that no flammable vapour, resulting in a flammable atmosphere, is evolved according to test U1 (Test method for substances

liable to evolve flammable vapours) of Part III, sub-section 38.4.4 of the Manual of Tests and Criteria, polymeric beads, expandable need not be classified under this UN number. This test should only be performed when de-classification of a substance is considered.”.

“383 Table tennis balls manufactured from celluloid are not subject to ADR where the net mass of each table tennis ball does not exceed 3.0 g and the total net mass of table tennis balls does not exceed 500 g per package.”.

“384 (*Reserved*)”.

“385 This entry applies to vehicles powered by flammable liquid or gas internal combustion engines or fuel cells.

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 batteries installed shall be assigned to this entry. Vehicles powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, carried with the batteries installed, shall be assigned to the entry UN No. 3171 BATTERYPOWERED VEHICLE (see special provision 240).

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, trucks, locomotives, scooters, three- and four-wheeled vehicles or motorcycles, lawn tractors, self-propelled farming and construction equipment, boats and aircraft.

Dangerous goods such as batteries, air bags, 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 ADR. However, lithium batteries shall meet the requirements of 2.2.9.1.7, except as otherwise provided for in special provision 667. ”.

“386 When substances are stabilized by temperature control, the provisions of 2.2.41.1.17, special provision V8 of Chapter 7.2, special provision S4 of Chapter 8.5 and the requirements of Chapter 9.6 apply. When chemical stabilization is employed, the person offering the packaging, IBC or tank for carriage shall ensure that the level of stabilization is sufficient to prevent the substance in the packaging, IBC or tank from dangerous polymerization at a bulk mean temperature of 50 °C, or, in the case of a portable tank, 45 °C. Where chemical stabilization becomes ineffective at lower temperatures within the anticipated duration of carriage, temperature control is required. In making this determination factors to be taken into consideration include, but are not limited to, the capacity and geometry of the packaging, IBC or tank and the effect of any insulation present, the temperature of the substance when offered for carriage, the duration of the journey and the ambient temperature conditions typically encountered in the journey (considering also the season of year), the effectiveness and other properties of the stabilizer employed, applicable operational controls imposed by regulation (e.g. requirements to protect from sources of heat, including other cargo carried at a temperature above ambient) and any other relevant factors.”.

“387-499 (*Reserved*)”.

“665 (*Reserved*)”.

“666 Vehicles assigned to UN No. 3166 or UN No. 3171 and battery powered equipment assigned to UN 3171 in conformity with special provisions 240, 312 and 385, as well as any dangerous goods they contain that are necessary for their operation or the operation of their equipment, when carried as a load, are not subject to any other provisions of ADR, provided the following conditions are met:

- (a) For liquid fuels, any valves between the engine or equipment and the fuel tank shall be closed during carriage unless it is essential for the equipment to remain operational. Where appropriate, the vehicles shall be loaded upright and secured against falling;
- (b) For gaseous fuels, the valve between the gas tank and engine shall be closed and the electric contact open;
- (c) Metal hydride storage systems shall be approved by the competent authority of the country of manufacture. If the country of manufacture is not a contracting party to ADR the approval shall be recognized by the competent authority of a contracting party to ADR;
- (d) The provisions of (a) and (b) do not apply to vehicles which are empty of liquid or gaseous fuels,

NOTE 1: A vehicle is considered to be empty of liquid fuel when the liquid fuel tank has been drained and the vehicle cannot be operated due to a lack of fuel. Vehicle components such as fuel lines, fuel filters and injectors do not need to be cleaned, drained or purged to be considered empty of liquid fuels. In addition, the liquid fuel tank does not need to be cleaned or purged.

NOTE 2: A vehicle is considered to be empty of gaseous fuels when the gaseous fuel tanks are empty of liquid (for liquefied gases), the pressure in the tanks does not exceed 2 bar and the fuel shut-off or isolation valve is closed and secured.”.

Footnote * does not apply to the English text.

“667 (a) The requirements of 2.2.9.1.7 (a) do not apply when pre-production prototype lithium cells or batteries or lithium cells or batteries of a small production run, consisting of not more than 100 cells or batteries, are installed in the vehicle, engine or machinery;

(b) The requirements of 2.2.9.1.7 do not apply to lithium cells or batteries installed in damaged or defective vehicles, engine or machinery. In such cases the following conditions shall be met:

- (i) If the damage or defect has no significant impact on the safety of the cell or battery, damaged and defective vehicles, engines or machinery, may be carried under the conditions defined in special provisions 363 or 666, as appropriate;
- (ii) If the damage or defect has a significant impact on the safety of the cell or battery, the lithium cell or battery shall be removed and carried according to special provision 376.

However if it is not possible to safely remove the cell or battery or it is not possible to verify the status of the cell or battery, the vehicle, engine or machinery may be towed or carried as specified in (i).”.

“668 Elevated temperature substances for the purpose of applying road markings are not subject to the requirements of ADR, provided that the following conditions are met:

- (a) They do not fulfil the criteria of any class other than Class 9;
- (b) The temperature of the outer surface of the boiler does not exceed 70 °C;
- (c) The boiler is closed in such a way that any loss of product is prevented during carriage;
- (d) The maximum capacity of the boiler is limited to 3 000 l.”.

Chapter 3.4

3.4.1 (e) Replace “5.2.1.9” by “5.2.1.10”.

3.4.7 In the heading, replace “Marking for” by “Marking of”.

3.4.7.1 Replace “marking” by “mark” wherever it appears (4 times).

3.4.7.2 At the end of the first sentence, replace “marking” by “mark”.

3.4.8 In the heading, replace “Marking for” by “Marking of”.

3.4.8.1 Replace “marking” by “mark” wherever it appears (4 times).

3.4.8.2 At the end of the first sentence, replace “marking” by “mark”.

3.4.9 Replace “marking” by “mark” (twice) and “markings” by “marks”.

3.4.10 Replace “marking” by “mark”.

3.4.11 Amend to read as follows:

“3.4.11 Use of overpacks

For an overpack containing dangerous goods packed in limited quantities, the following applies:

Unless the marks representative of all dangerous goods in an overpack are visible, the overpack shall be:

- marked with the word “OVERPACK”. The lettering of the “OVERPACK” mark shall be at least 12 mm high. The mark shall be in an official language of the country of origin and also, if that language is not English, French or German, in English, French or German, unless agreements, if any, concluded between the countries concerned in the transport operation provide otherwise; and

- marked with the marks required by this Chapter.

Except for air transport, the other provisions of 5.1.2.1 apply only if other dangerous goods which are not packed in limited quantities are contained in the overpack and only in relation to these other dangerous goods.”.

3.4.13 (a) Amend the end of the second sentence to read as follows: “...and the marks in accordance with 3.4.15.”.

3.4.13 (b) Amend the end of the first paragraph to read as follows: “...and the marks in accordance with 3.4.15.”. In the second paragraph, replace “marking affixed to the container is” by “marks affixed to the container are” and at the end, replace “markings” by “marks”.

3.4.14 Replace “Markings” by “The marks”.

3.4.15 Amend to read as follows:

“3.4.15 The marks specified in 3.4.13 shall be the same as the one required in 3.4.7, except that their minimum dimensions shall be 250 mm x 250 mm. These marks shall be removed or covered if no dangerous goods in limited quantities are carried.”.

Chapter 3.5

3.5.2 (b) After the first sentence, amend the remainder of sub-paragraph (b) to read as follows:

“For liquid dangerous goods, the intermediate or outer packaging shall contain sufficient absorbent material to absorb the entire contents of the inner packagings. When placed in the intermediate packaging, the absorbent material may be the cushioning material. Dangerous goods shall not react dangerously with cushioning, absorbent material and packaging material or reduce the integrity or function of the materials. Regardless of its orientation, the package shall completely contain the contents in case of breakage or leakage;”.

3.5.2 (e) Replace “markings” by “marks”.

3.5.4.2 In the paragraph after the figure, replace “marking” by “mark”.

3.5.4.3 Amend to read as follows:

“3.5.4.3 Use of overpacks

For an overpack containing dangerous goods packed in excepted quantities, the following applies:

Unless the marks representative of all dangerous goods in an overpack are visible, the overpack shall be:

– marked with the word “OVERPACK”. The lettering of the “OVERPACK” mark shall be at least 12 mm high. The mark shall be in an official language of the country of origin and also, if that language is not English, French or German, in English, French or German, unless agreements, if any, concluded between the countries concerned in the transport operation provide otherwise; and

– marked with the marks required by this Chapter.

The other provisions of 5.1.2.1 apply only if other dangerous goods which are not packed in excepted quantities are contained in the overpack and only in relation to these other dangerous goods.”.

Chapter 4.1

4.1.1 In the NOTE, replace “LP02” by “LP200”.

4.1.1.1 In the first sentence, replace “between transport units” by “between cargo transport units”, twice.

4.1.1.5 In the second sentence, replace “markings” by “marks”. Replace “5.2.1.9” by “5.2.1.10”.

4.1.1.12 Amend the introductory sentence to read as follows:

“4.1.1.12 Every packaging as specified in Chapter 6.1 intended to contain liquids shall successfully undergo a suitable leakproofness test. This test is part of a quality assurance programme as stipulated in 6.1.1.4 which shows the capability of meeting the appropriate test level indicated in 6.1.5.4.3.”.

4.1.1.17 Not applicable to the English text.

4.1.1.19.1 Amend the second sentence to read as follows: “This does not prevent the use of a larger size packaging or large packaging of appropriate type and performance level and under the conditions of 4.1.1.19.2 and 4.1.1.19.3.”.

4.1.1.20.1 In the Note, replace “markings” by “marks”.

4.1.1.20.2 Add a second sentence to read as follows: “The maximum size of the placed pressure receptacle is limited to a water capacity of 1 000 litres.”. Add a penultimate

sentence to read as follows: “In this case the total sum of water capacities of the placed pressure receptacles shall not exceed 1 000 litres.”.

4.1.1.21.6 In the Table, for “1202 Diesel fuel” and “1202 Heating oil, light”, in column (2b) replace “EN 590:2009 + A1:2010” by “EN 590:2013 + AC:2014”.

4.1.1.21.6 In Table 4.1.1.21.6, for UN No. 2815, amend the classification code to read “CT1”.

4.1.2.4 At the end of the introductory sentence, before the subparagraphs, replace “marking” by “mark”.

4.1.3.8.1 (a) Replace “between transport units” by “between cargo transport units”, twice.

4.1.3.8.1 (e) Replace “or to the transport unit or container” by “or to the cargo transport unit”.

4.1.4.1 For packing instruction P001, add a new special packing provision “PP93” to read:

“PP93 For UN Nos. 3532 and 3534, packagings shall be designed and constructed to permit the release of gas or vapour to prevent a build-up of pressure that could rupture the packagings in the event of loss of stabilization.”.

4.1.4.1 For packing instruction P002, add a new special packing provision “PP92” to read:

“PP92 For UN Nos. 3531 and 3533, packagings shall be designed and constructed to permit the release of gas or vapour to prevent a build-up of pressure that could rupture the packagings in the event of loss of stabilization.”.

4.1.4.1, packing instructions P112 (c), P114 (b) and P406 In special packing provision PP48, add a new last sentence to read as follows: “Packagings of other material with a small amount of metal, for example metal closures or other metal fittings such as those mentioned in 6.1.4, are not considered metal packagings.”.

4.1.4.1, packing instruction P130 In special packing provision PP67, replace “and 0502” by “, 0502 and 0510”.

4.1.4.1, packing instruction P131 Under “Outer packagings”, for “Boxes”, move the line “plastics, solid (4H2)” after “fibreboard (4G)”.

4.1.4.1, packing instruction P137 Under “Outer packagings”, for “Boxes”, move the line “plastics, solid (4H2)” after “fibreboard (4G)”.

4.1.4.1, packing instruction P137 In special packing provision PP70, replace “the package marked THIS SIDE UP” by “the package shall be marked in accordance with 5.2.1.10.1”.

4.1.4.1, packing instruction P200 (3) (d) Amend the NOTE to read as follows:

“NOTE: For pressure receptacles which make use of composite materials, the maximum test period shall be 5 years. The test period may be extended to that specified in Tables 1 and 2 (i.e. up to 10 years), if approved by the competent authority or body designated by this authority which issued the type approval.”.

4.1.4.1, packing instruction P200 (3) (f) Amend to read as follows:

“(f) The maximum working pressure of the pressure receptacles for compressed gases (where no value is given, the working pressure shall not exceed two thirds of the test pressure) or the maximum filling ratio(s) dependent on the test pressure(s) for liquefied and dissolved gases;”.

4.1.4.1, packing instruction P200 (5) Insert a new subparagraph (e) to read as follows:

“(e) For liquefied gases charged with compressed gases, both components – the liquid phase and the compressed gas – have to be taken into consideration in the calculation of the internal pressure in the pressure receptacle.

The maximum mass of contents per litre of water capacity shall not exceed 0.95 times the density of the liquid phase at 50 °C; in addition, the liquid phase shall not completely fill the pressure receptacle at any temperature up to 60 °C.

When filled, the internal pressure at 65 °C shall not exceed the test pressure of the pressure receptacles. The vapour pressures and volumetric expansions of all substances in the pressure receptacles shall be considered. When experimental data is not available, the following steps shall be carried out:

(i) Calculation of the vapour pressure of the liquid component and of the partial pressure of the compressed gas at 15 °C (filling temperature);

(ii) Calculation of the volumetric expansion of the liquid phase resulting from the heating from 15 °C to 65 °C and calculation of the remaining volume for the gaseous phase;

(iii) Calculation of the partial pressure of the compressed gas at 65 °C considering the volumetric expansion of the liquid phase;

NOTE: The compressibility factor of the compressed gas at 15 °C and 65 °C shall be considered.

(iv) Calculation of the vapour pressure of the liquid component at 65 °C;

(v) The total pressure is the sum of the vapour pressure of the liquid component and the partial pressure of the compressed gas at 65 °C;

(vi) Consideration of the solubility of the compressed gas at 65 °C in the liquid phase;

The test pressure of the pressure receptacle shall not be less than the calculated total pressure minus 100 kPa (1bar).

If the solubility of the compressed gas in the liquid component is not known for the calculation, the test pressure can be calculated without taking the gas solubility (sub-paragraph (vi)) into account.”.

4.1.4.1, packing instruction P200 (7) (a) Amend the first indent to read as follows:

“ - of the conformity of receptacles and accessories with ADR;”.

Amend the last indent to read as follows:

“ - of marks and identification.”.

4.1.4.1, packing instruction P200 (9) Amend the last paragraph to read as follows:

“For pressure receptacles which make use of composite materials, the maximum test period shall be 5 years. The test period may be extended to that specified in Tables 1 and 2 (i.e. up to 10 years), if approved by the competent authority or body designated by this authority which issued the type approval.”.

4.1.4.1, packing instruction P200 (10) Amend as follows:

In special provision p, in the two first paragraphs, replace “or ISO 3807-2:2000” by “, ISO 3807-2:2000 or ISO 3807:2013”. In the last paragraph, replace “conforming to ISO 3807-2:2000” by “fitted with a fusible plug”.

In special provision u, replace “ISO 7866:2012” by “ISO 7866:2012 + Cor 1:2014”.

4.1.4.1, packing instruction P200 (11) In the table, after the third row, insert the following new rows:

(7) (a)	ISO 10691:2004	Gas cylinders – Refillable welded steel cylinders for liquefied petroleum gas (LPG) – Procedures for checking before, during and after filling.
(7) (a)	ISO 11755:2005	Gas cylinders – Cylinder bundles for compressed and liquefied gases (excluding acetylene) – Inspection at time of filling
(7) (a)	ISO 24431:2006	Gas cylinders – Cylinders for compressed and liquefied gases (excluding acetylene) – Inspection at time of filling
(7) (a) and (10) p	ISO 11372:2011	Gas cylinders – Acetylene cylinders – Filling conditions and filling inspection <i>NOTE: The EN version of this ISO standard fulfils the requirements and may also be used.</i>
(7) (a) and (10) p	ISO 13088:2011	Gas cylinders – Acetylene cylinder bundles – Filling conditions and filling inspection <i>NOTE: The EN version of this ISO standard fulfils the requirements and may also be used.</i>

Delete the two last rows.

4.1.4.1, packing instruction P200 (12) 4. In the text under the heading and in the Note, replace “marking” by “mark”.

4.1.4.1, packing instruction P200 (13) 4. In the second sentence, replace “marking” by “mark”.

4.1.4.1, packing instruction P200, table 2 In column “Special packing provisions”, for UN No. 1058, insert “z”.

4.1.4.1, packing instruction P205 (6) Replace “markings” by “mark”.

4.1.4.1, packing instruction P206 (3) At the end add the following paragraph:

“For liquids charged with a compressed gas both components – the liquid phase and the compressed gas – have to be taken into consideration in the calculation of the internal pressure in the pressure receptacle. When experimental data is not available, the following steps shall be carried out:

(a) Calculation of the vapour pressure of the liquid component and of the partial pressure of the compressed gas at 15 °C (filling temperature);

(b) Calculation of the volumetric expansion of the liquid phase resulting from the heating from 15 °C to 65 °C and calculation of the remaining volume for the gaseous phase;

(c) Calculation of the partial pressure of the compressed gas at 65 °C considering the volumetric expansion of the liquid phase;

NOTE: The compressibility factor of the compressed gas at 15 °C and 65 °C shall be considered.

(d) Calculation of the vapour pressure of the liquid component at 65 °C;

(e) The total pressure is the sum of the vapour pressure of the liquid component and the partial pressure of the compressed gas at 65 °C;

- (f) Consideration of the solubility of the compressed gas at 65 °C in the liquid phase.

The test pressure of the cylinders or pressure drums shall not be less than the calculated total pressure minus 100 kPa (1bar).

If the solubility of the compressed gas in the liquid component is not known for the calculation, the test pressure can be calculated without taking the gas solubility (sub-paragraph (f)) into account.”.

4.1.4.1, packing instruction P207 In the last sentence before the special packing provision, insert the word “excessive” after “to prevent”.

4.1.4.1, packing instructions P403 and P410 Delete special packing provision “PP83” and insert “PP83 *Deleted*”.

4.1.4.1, packing instruction P502 Amend special packing provision “PP28” to read as follows: “**PP28** For UN No. 1873, parts of packagings which are in direct contact with perchloric acid shall be constructed of glass or plastics.”.

4.1.4.1, packing instruction P650 (1) Replace “vehicles or containers” by “cargo transport units”, twice.

4.1.4.1, packing instruction P650 (10) Replace “markings” by “marks”.

4.1.4.1, packing instruction P650 (14) Replace “vehicle or container” by “cargo transport unit”.

4.1.4.1, packing instruction P805 Renumber as “P603” and reorder accordingly.

4.1.4.1, packing instruction P902 Under “Unpackaged articles”, replace “, vehicles or containers” by “or cargo transport units”.

4.1.4.1, packing instruction P903 The amendment does not apply to the English text.

4.1.4.1, packing instruction P906 (1) Amend to read as follows: “For liquids and solids containing or contaminated with PCBs, polyhalogenated biphenyls, polyhalogenated terphenyls or halogenated monomethyldiphenylmethanes: Packagings in accordance with P001 or P002, as appropriate.”.

4.1.4.1, packing instruction P906 (2) (b) Amend the end of the first sentence to read as follows: “PCBs, polyhalogenated biphenyls, polyhalogenated terphenyls or halogenated monomethyldiphenylmethanes present in them.”.

4.1.4.1, packing instruction P909 (3) Amend the beginning of the last sentence to read: “Equipment may also be...”. Remainder unchanged.

4.1.4.1 Add new packing instructions to read:

P005	PACKING INSTRUCTION	P005
This instruction applies to UN Nos. 3528, 3529 and 3530.		
<p>If the engine or machinery is constructed and designed so that the means of containment containing the dangerous goods affords adequate protection, an outer packaging is not required.</p> <p>Dangerous goods in engines or machinery 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, or they shall be fixed in such a way that they will not become loose during normal conditions of carriage, e.g. in cradles or crates or other handling devices.</p> <p>In addition, the manner in which means of containment are contained within the engine or machinery, shall be such that under normal conditions of carriage, damage to the means of containment containing the dangerous goods is prevented; and in the event of damage to the means of containment containing liquid dangerous goods, no leakage of the dangerous goods from the engine or machinery is possible (a leakproof liner may be used to satisfy this requirement).</p> <p>Means of containment 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 engine or machinery during normal conditions of carriage. Cushioning material shall not react dangerously with the content of the means of containment. Any leakage of the contents shall not substantially impair the protective properties of the cushioning material.</p>		
<p>Additional requirement:</p> <p>Other dangerous goods (e.g. batteries, fire extinguishers, compressed gas accumulators or safety devices) required for the functioning or safe operation of the engine or machinery shall be securely mounted in the engine or machine.</p>		

P412	PACKING INSTRUCTION	P412
This instruction applies to UN No. 3527		
<p>The following combination packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:</p> <p>(1) Outer packagings: Drums (1A1, 1A2, 1B1, 1B2, 1N1, 1N2, 1H1, 1H2, 1D, 1G); Boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2) Jerricans (3A1, 3A2, 3B1, 3B2, 3H1, 3H2);</p> <p>(2) Inner packagings: (a) The activator (organic peroxide) shall have a maximum quantity of 125 ml per inner packaging if liquid, and 500 g per inner packaging if solid. (b) The base material and the activator shall be each separately packed in inner packagings.</p> <p>The components may be placed in the same outer packaging provided that they will not interact dangerously in the event of a leakage.</p> <p>Packagings shall conform to the packing group II or III performance level according to the criteria for Class 4.1 applied to the base material.</p>		

P910	PACKING INSTRUCTION	P910
<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 packagings are authorized provided that the general provisions of 4.1.1 and 4.1.3 are met:</p>		
<p>(1) For cells and batteries, including when packed with equipment: Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G); Boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2); Jerricans (3A2, 3B2, 3H2).</p> <p>Packagings shall conform to the packing group II performance level and shall meet the following requirements:</p> <p>(a) Batteries and cells, including equipment, of different sizes, shapes or masses shall be packaged 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;</p> <p>(b) Each cell or battery shall be individually packed in an inner packaging and placed inside an outer packaging;</p> <p>(c) Each inner packaging shall be completely surrounded by sufficient non-combustible and non-conductive thermal insulation material to protect against a dangerous evolution of heat;</p> <p>(d) Appropriate measures shall be taken to minimize the effects of vibration and shocks and prevent movement of the cells or batteries within the package that may lead to damage and a dangerous condition during carriage. Cushioning material that is non-combustible and non-conductive may be used to meet this requirement;</p> <p>(e) Non-combustibility shall be assessed according to a standard recognized in the country where the packaging is designed or manufactured;</p> <p>(f) A cell or battery with a net mass of more than 30 kg shall be limited to one cell or battery per outer packaging.</p>		
<p>(2) For cells and batteries contained in equipment: Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G); Boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2); Jerricans (3A2, 3B2, 3H2).</p> <p>Packagings shall conform to the packing group II performance level and shall meet the following requirements:</p> <p>(a) Equipment of different sizes, shapes or masses shall be packaged 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;</p> <p>(b) The equipment shall be constructed or packaged in such a manner as to prevent accidental operation during carriage;</p> <p>(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 non-conductive; and</p> <p>(d) Non-combustibility shall be assessed according to a standard recognized in the country where the packaging is designed or manufactured.</p>		

P910	PACKING INSTRUCTION	P910
<p>(3) The equipment or the batteries may be carried unpackaged under conditions specified by the competent authority. Additional conditions that may be considered in the approval process include, but are not limited to:</p> <p>(a) The equipment or the battery shall be strong enough to withstand the shocks and loadings normally encountered during carriage, 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</p> <p>(b) The equipment or the battery 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 carriage.</p>		
<p>Additional requirements</p> <p>The cells and batteries shall be protected against short circuit;</p> <p>Protection against short circuits includes, but is not limited to,</p> <ul style="list-style-type: none"> - individual protection of the battery terminals, - inner packaging to prevent contact between cells and batteries, - batteries with recessed terminals designed to protect against short circuits, or - the use of a non-conductive and non-combustible cushioning material to fill empty space between the cells or batteries in the packaging. 		

4.1.4.2, packing instruction IBC03 Add a new special packing provision “B19” to read:

“B19 For UN Nos. 3532 and 3534, IBCs shall be designed and constructed to permit the release of gas or vapour to prevent a build-up of pressure that could rupture the IBCs in the event of loss of stabilization.”.

4.1.4.2, packing instruction IBC07 Add a new special packing provision “B18” to read:

“Special packing provision

B18 For UN Nos. 3531 and 3533, IBCs shall be designed and constructed to permit the release of gas or vapour to prevent a build-up of pressure that could rupture the IBCs in the event of loss of stabilization.”.

4.1.4.2, packing instruction IBC520 Add the following new entries:

<i>UN No.</i>	<i>Organic peroxide</i>	<i>Type of IBC</i>	<i>Maximum quantity (litres)</i>	<i>Control temperature</i>	<i>Emergency Temperature</i>
3109	tert-Butyl cumyl peroxide	31HA1	1000		
3119	1,1,3,3-Tetramethylbutyl peroxy-2-ethylhexanoate, not more than 67%, in diluent type A	31HA1	1000	+15 °C	+20 °C

4.1.4.2, packing instruction IBC520 For UN No. 3119, in the entry for “Di-(2-ethylhexyl) peroxydicarbonate, not more than 62%, stable dispersion, in water”, add the following new row:

<i>Type of IBC</i>	<i>Maximum quantity (litres)</i>	<i>Control temperature</i>	<i>Emergency Temperature</i>
31HA1	1000	-20 °C	-10 °C

4.1.4.3, packing instruction LP02 Delete special packing instruction L2 and add:

“L2 Deleted”.

4.1.4.3, packing instruction LP101 In special packing provision L1, replace “and 0502” by “, 0502 and 0510”.

4.1.4.3, LP902 Under “Unpackaged articles”, replace “, vehicles or containers” by “or cargo transport units”.

4.1.4.3 Add the following packing instruction:

LP200	PACKING INSTRUCTION	LP200
This instruction applies to UN No. 1950.		
The following large packagings are authorized for aerosols, provided that the general provisions of 4.1.1 and 4.1.3 are met: Rigid large packagings conforming to the packing group II 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).		
Special packing provision:		
L2	The large packagings shall be designed and constructed to prevent dangerous movement of the aerosols and inadvertent discharge during normal conditions of carriage. For waste aerosols carried in accordance with special provision 327, the large packagings shall have a means of retaining any free liquid that might escape during carriage, e.g. absorbent material. The large packagings shall be adequately ventilated to prevent the creation of a flammable atmosphere and the build-up of pressure.	

4.1.6.15 For 4.1.6.2, replace “ISO 11114-2:2000” with “ISO 11114-2:2013”.

4.1.6.15 For 4.1.6.8, after “annex A of ISO 10297:2006”, insert “or annex A of ISO 10297:2014”.

4.1.6.12 (c) Replace “markings” by “marks”.

4.1.6.13 (d) Replace “markings” by “marks”.

4.1.8.2 Replace “4.1.1.3, 4.1.1.9 to 4.1.1.12” by “4.1.1.10 to 4.1.1.12”.

4.1.8.4 Replace “marking” by “mark”.

Chapter 4.2

4.2.1.13.14 Replace “marking” by “mark”.

4.2.4.5.6 (c) Replace “markings” by “marks”.

4.2.4.6 (d) Replace “markings” by “marks”.

4.2.5.3, TP23, TP 35 and TP 37 Delete and insert “*Deleted.*”.

Chapter 4.3

4.3.2.1.7 Replace “6.8.3.4.16” by “6.8.3.4.18”.

4.3.3 Insert a new sub-section 4.3.3.5 to read as follows:

“4.3.3.5

The actual holding time shall be determined for each journey of a tank-container carrying a refrigerated liquefied gas on the basis of the following:

- (a) The reference holding time for the refrigerated liquefied gas to be carried (see 6.8.3.4.10) as indicated on the plate referred to in 6.8.3.5.4;
- (b) The actual filling density;
- (c) The actual filling pressure;
- (d) The lowest set pressure of the pressure limiting device(s);
- (e) The deterioration of the insulation⁴.

NOTE: ISO 21014:2006 ‘Cryogenic vessels – Cryogenic insulation performance’ details methods of determining the insulation performance of cryogenic vessels and provides a method of calculating the holding time.

The date at which the actual holding time ends shall be entered on the transport document (see 5.4.1.2.2. (d)).

Tank-containers shall not be offered for carriage:

- (a) In an ullage condition liable to produce an unacceptable hydraulic force due to surge within the shell;
- (b) When leaking;
- (c) When damaged to such an extent that the integrity of the tank-container or its lifting or securing arrangements may be affected;
- (d) Unless the service equipment has been examined and found to be in good working order;
- (e) Unless the actual holding time for the refrigerated liquefied gas being carried has been determined;
- (f) Unless the duration of carriage, after taking into consideration any delays which might be encountered, does not exceed the actual holding time;
- (g) Unless the pressure is steady and has been lowered to a level such that the actual holding time may be achieved⁴.

Footnote 4 reads as follows:

“⁴ “Guidance is provided in the European Industrial Gases Association (EIGA) document “Methods to prevent the premature activation of relief devices on tanks” available at www.eiga.eu.”

4.3.4.1.3 (b) Add the following lines:

“UN No. 3531 polymerizing substance, solid, stabilized, n.o.s, UN No. 3533 polymerizing substance, solid, stabilized, temperature controlled, n.o.s.: code SGAN;

UN No. 3532 polymerizing substance, liquid, stabilized, n.o.s, UN No. 3534 polymerizing substance, liquid, stabilized, temperature controlled, n.o.s.: code L4BN.”

4.3.5 Amend TU16 and TU21 to read as follows:

“TU16 Uncleaned empty tanks, shall, when handed over for carriage, either:

- be filled with nitrogen (with or without water); or
- be filled with water to not less than 96% and not more than 98% of their capacity. When low ambient temperatures are to be expected during the journey, sufficient anti-freeze agent shall be added to prevent freezing of the water. The anti-freeze agent shall be free from corrosive action and not liable to react with the substance.”

“TU21 The substance shall be covered with a protective agent by one of the following measures:

(a) water to a depth of not less than 12 cm at the time of filling. The degree of filling of the substance and the water at a temperature of 60 °C shall not exceed 98%; or

(b) nitrogen, in which case the degree of filling at a temperature of 60 °C shall not exceed 96%; or

(c) a combination of water and nitrogen, in which case the substance shall be covered with a water layer and the remaining space filled with nitrogen. The degree of filling of the substance and the water at a temperature of 60 °C shall not exceed 98%.

When water is used as a protective agent according to (a) or (c) and low ambient temperatures are to be expected during the journey, sufficient anti-freeze agent shall be added to prevent freezing of the water. The anti-freeze agent shall be free from corrosive action and not liable to react with the substance.

When nitrogen is used as a protective agent according to (b) or (c), the remaining space shall be filled with nitrogen in such a way that, even after cooling, the pressure at no time falls below atmospheric pressure. The tank shall be closed in such a way that no leakage of gas occurs.”

Chapter 5.1

5.1.2.1 (a) Amend to read as follows:

“(a) Unless marks and labels required in Chapter 5.2, except 5.2.1.3 to 5.2.1.6, 5.2.1.7.2 to 5.2.1.7.8 and 5.2.1.10, representative of all dangerous goods in the overpack are visible, the overpack shall be:

- (i) marked with the word “OVERPACK”. The lettering of the “OVERPACK” mark shall be at least 12 mm high. The mark shall be in an official language of the country of origin and also, if that language is not English, French or German, in English, French or German, unless agreements, if any, concluded between the countries concerned in the transport operation provide otherwise; and

(ii) labelled and marked with the UN number and other marks, as required for packages in Chapter 5.2 except 5.2.1.3 to 5.2.1.6, 5.2.1.7.2 to 5.2.1.7.8 and 5.2.1.10, for each item of dangerous goods contained in the overpack. Each applicable mark or label only needs to be applied once.

Labelling of overpacks containing radioactive material shall be in accordance with 5.2.2.1.11.”.

5.1.2.1 (b) Replace “marking” by “marks”. Replace “5.2.1.9” by “5.2.1.10” and “5.2.1.9.1” by “5.2.1.10.1”.

5.1.2.3 Replace “markings” by “marks” (twice). Replace “5.2.1.9” by “5.2.1.10”.

Chapter 5.2

5.2.1 In the Note, replace “markings” by “marks”.

5.2.1.1 Replace “marking” by “mark”.

5.2.1.1 The other amendment does not apply to the English text.

5.2.1.2 Replace “markings” by “marks”.

5.2.1.3 In the second sentence, replace “marking” by “mark”.

5.2.1.5 In the second sentence replace “marking” by “mark”.

5.2.1.6 In the last paragraph, replace “These marks” by “These particulars” and replace “marking” by “mark”.

5.2.1.7.1 In the second sentence replace “markings” by “marks”.

5.2.1.7.7 Replace “marking” by “mark”.

5.2.1.8.2 Replace “markings” by “marks”.

5.2.1.8.3 In the paragraph after the figure, replace “marking” by “mark” (twice).

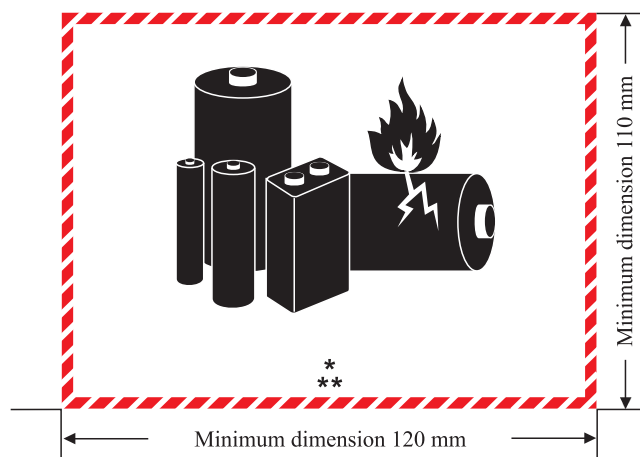
5.2.1 Add a new 5.2.1.9 to read as follows:

“5.2.1.9 Lithium battery mark

5.2.1.9.1 Packages containing lithium cells or batteries prepared in accordance with special provision 188 shall be marked as shown in Figure 5.2.1.9.2.

5.2.1.9.2 The mark shall indicate the UN number preceded by the letters “UN”, i.e. ‘UN 3090’ for lithium metal cells or batteries or ‘UN 3480’ for lithium ion cells or batteries. Where the lithium cells or batteries are contained in, or packed with, equipment, the UN number preceded by the letters “UN”, i.e. ‘UN 3091’ or ‘UN 3481’ as appropriate shall be indicated. Where a package contains lithium cells or batteries assigned to different UN numbers, all applicable UN numbers shall be indicated on one or more marks.

Figure 5.2.1.9.2



Lithium battery mark

* Place for UN number(s)

** Place for telephone number for additional information

The mark shall be in the form of a rectangle with hatched edging. The dimensions shall be a minimum of 120 mm wide x 110 mm high and the minimum width of the hatching shall be 5 mm. The symbol (group of batteries, one damaged and emitting flame, above the UN number for lithium ion or lithium metal batteries or cells) shall be black on white. The hatching shall be red. If the size of the package so requires, the dimensions/line thickness may be reduced to not less than 105 mm wide x 74 mm high. Where dimensions are not specified, all features shall be in approximate proportion to those shown.”

Renumber 5.2.1.9 as 5.2.1.10 and renumber as appropriate subsequent paragraphs, references and figures in this sub-section.

5.2.2.1.2 Replace “marking” by “mark”.

5.2.2.1.6 (b) Replace “marking” by “mark”.

5.2.2.1.11.1 In the penultimate sentence, replace “markings” by “marks”.

5.2.2.2.1.1 Figure 5.2.2.2.1.1, in the text for figure note **, insert “/symbol” after “text/number”.

5.2.2.2.1.2 After the first paragraph, add a new Note to read as follows:

“NOTE: When the diameter of the cylinder is too small to permit the display of the reduced size labels on the non-cylindrical upper part of the cylinder, the reduced sized labels may be displayed on the cylindrical part.”

5.2.2.2.1.3 After sub-paragraph (c), add the following new paragraph:

“However for label model No. 9A, the upper half of the label shall only contain the seven vertical stripes of the symbol and the lower half shall contain the group of batteries of the symbol and the class number.”

At the beginning of the last paragraph, insert “Except for label model No. 9A,”.

5.2.2.2.2 Under “**CLASS 9 HAZARD Miscellaneous dangerous substances and articles**”, after the generic No. 9 label, add the following: “



(No.9A)

Symbol (seven vertical black stripes in upper half; battery group, one broken and emitting flame in lower half): black; Background: white; Figure “9” underlined in bottom corner”.

Chapter 5.3

5.3.1 Insert a new 5.3.1.1.4 to read as follows:

“5.3.1.1.4 For Class 9 the placard shall correspond to the label model No. 9 as in 5.2.2.2.2; label model No. 9A shall not be used for placarding purposes.”.

Renumber existing paragraphs accordingly.

5.3.1.2 At the end, add the following new sentence: “If all compartments have to bear the same placards, these placards need to be displayed only once along each side and at both ends of the tank container or portable tank.”.

5.3.1.4.1 In the last sentence of the second paragraph, at the beginning, delete “However, in such case,”.

5.3.2.1.8 Replace “Orange-coloured marking” by “Orange-coloured plates”.

5.3.2.3.2 For hazard identification number 40, at the end insert “, or polymerizing substance”.

5.3.2.3.2 After “70 radioactive material” insert a new line to read “768 radioactive material, toxic, corrosive”.

5.3.3 In the second paragraph, replace “marking” by “mark” and insert a new fourth sentence to read as follows: “For tank-containers or portable tanks with a capacity of not more than 3 000 litres and with an available surface area insufficient to affix the prescribed marks, the minimum dimensions of the sides may be reduced to 100 mm.”.

5.3.6.2 Add a new penultimate sentence to read as follows: “For tank-containers or portable tanks with a capacity of not more than 3 000 litres and with an available surface area insufficient to affix the prescribed marks, the minimum dimensions may be reduced to 100 mm x 100 mm.”.

Chapter 5.4

5.4.1.1.1 (c) Insert a new third indent as follows:

“– for lithium batteries of UN numbers 3090, 3091, 3480 and 3481: the Class number “9”.”.

Amend the beginning of the new fourth indent (former third indent) to read: “for other substances and articles”.

5.4.1.1.6.2.1 Amend last paragraph to read as follows:

“In addition, in such a case:

(a) If the dangerous goods last loaded are goods of Class 2, the information prescribed in 5.4.1.1.1 (c) may be replaced by the number of the class “2”;

(b) If the dangerous goods last loaded are goods of Classes 3, 4.1, 4.2, 4.3, 5.1, 5.2, 6.1, 8 or 9, the information of the goods last loaded, as described in 5.4.1.1.1 (c) may be replaced by the words “WITH RESIDUES OF [...]” followed by the class(es) and subsidiary risk(s) corresponding to the different residues, in the class numbering order.

Example: Empty packagings, uncleaned, having contained goods of Class 3 carried together with empty packagings, uncleaned, having contained goods of Class 8 with a Class 6.1 subsidiary risk may be referred to in the transport document as:

“EMPTY PACKAGINGS, WITH RESIDUES OF 3, 6.1, 8”.”.

Insert a new 5.4.1.1.20 and 5.4.1.1.21 to read as follows:

“5.4.1.1.20 *Special provisions for the carriage of substances classified in accordance with 2.1.2.8*

For carriage in accordance with 2.1.2.8, a statement shall be included in the transport document, as follows “Classified in accordance with 2.1.2.8”.

5.4.1.1.21 *Special provisions for the carriage of UN Nos. 3528, 3529 and 3530*

For carriage of UN Nos. 3528, 3529 and 3530, the transport document, when required according to special provision 363 of Chapter 3.3, shall contain the following additional statement “Transport in accordance with special provision 363”.”.

5.4.1.2.2 (c) Amend to read as follows:

“(c) (Reserved)”.

5.4.1.2.2(d) Amend to read as follows:

“(d) In the case of tank-containers carrying refrigerated liquefied gases the consignor shall enter in the transport document the date at which the actual holding time ends, in the following format:

“End of holding time: (DD/MM/YYYY)”.”.

5.4.1.2.3 In the heading, after “self-reactive substances” insert “and polymerizing substances”.

5.4.1.2.3.1 After “self-reactive substances” insert “or polymerizing substances”. In the text in parenthesis, after “see 2.2.41.1.17;” insert “for polymerizing substance see 2.2.41.1.21”.

5.4.2 Amend as follows:

In the title, replace “Large container” by “Container”.

In the first paragraph, replace “large container” by “container” and “container packing certificate” by “container/vehicle packing certificate”.

In the second paragraph and Note, replace “container” by “container/vehicle” wherever it appears (three times).

5.4.3.4 In the third page of the model of instructions in writing, in the line for danger label model No. 9, insert the new danger label model No. 9A.”.

5.4.3 Amend the text of Note 2 in the third page of the model of instructions in writing as follows: replace “above” by “in column (3) of the table”.

5.4.3.4 In the fourth page of the model of Instructions in writing, in the heading after the Table, replace “vehicle” by “transport unit”.

5.4.3.4 In the fourth page of the model of instructions in writing, first indent after “Additional equipment required for certain classes:”, replace “on board the vehicle” by “on board the transport unit”.

Chapter 5.5

5.5.2.1.1 Delete the Note.

5.5.2.3.2 In the paragraph after figure 5.5.2.3.2, replace “marking” by “mark” (twice).

5.5.3.1.1 Amend to read as follows:

“5.5.3.1.1 This section is not applicable to substances which may be used for cooling or conditioning purposes when carried as a consignment of dangerous goods, except for the carriage of dry ice (UN No. 1845). When they are carried as a consignment, these substances shall be carried under the relevant entry of Table A of Chapter 3.2 in accordance with the associated conditions of carriage.

For UN No. 1845, the conditions of carriage specified in this section, except 5.5.3.3.1, apply for all kinds of carriage, as a coolant, conditioner, or as a consignment. For the carriage of UN No. 1845, no other provisions of ADR apply.”.

5.5.3.1.5 Amend the end to read as follows:

“...duration of the journey, the types of containment to be used and the gas concentration limits given in the note to 5.5.3.3.3.”.

5.5.3.3.3 Amend to read as follows:

“5.5.3.3.3 Packages containing a coolant or conditioner shall be carried in well ventilated vehicles and containers. Marking according to 5.5.3.6 is not required in this case.

Ventilation is not required, and marking according to 5.5.3.6 is required, if:

- gas exchange between the load compartment and the driver’s cabin is prevented; or
- the load compartment is insulated, refrigerated or mechanically refrigerated equipment, for example as defined in the Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP) where this requirement is fulfilled.

NOTE: *In this context “well ventilated” means there is an atmosphere where the carbon dioxide concentration is below 0.5% by volume and the oxygen concentration is above 19.5% by volume.”.*

5.5.3.4.2 Replace “markings” by “marks”.

5.5.3.6.1 Amend to read as follows:

“5.5.3.6.1 Vehicles and containers containing dangerous goods used for cooling or conditioning purposes that are not well ventilated shall be marked with a warning mark, as specified in 5.5.3.6.2, affixed at each access point in a location where it will be easily seen

by persons opening or entering the vehicle or container. This mark shall remain on the vehicle or container until the following provisions are met:

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

As long as the vehicle or container is marked, the necessary precautions have to be taken before entering it. The necessity of ventilating through the cargo doors or other means (e.g. forced ventilation) has to be evaluated and included in training of the involved persons.”.

5.5.3.6.2 In the paragraph following the caption of figure 5.5.3.6.2, replace “marking” by “mark”.

Chapter 6.1

6.1.1.3 Amend the introductory sentence to read as follows: “Every packaging intended to contain liquids shall successfully undergo a suitable leakproofness test. This test is part of a quality assurance programme as stipulated in 6.1.1.4 which shows the capability of meeting the appropriate test level indicated in 6.1.5.4.3.”.

6.1.3, Note 1 Amend the beginning to read as follows: “*The marks indicate that the packaging which bears them correspond to...*”. In the second sentence, replace “mark does” by “marks do”.

6.1.3, Note 2 Replace “marking is” by “marks are” (twice).

6.1.3, Note 3 Replace “marking does” by “marks do”. In the second sentence, replace “marking” by “mark”.

6.1.3.1 In the first paragraph, replace “markings” by “marks” (twice).

6.1.3.1 In the second paragraph, in the introductory sentence of the subparagraphs, replace “marking” by “marks”.

6.1.3.1 (a) (i) Amend the second sentence to read as follows: “This symbol shall not be used for any purpose other than certifying that a packaging, a flexible bulk container, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6, 6.7 or 6.11.”.

6.1.3.1 (e) Replace “marking” by “marks”. In note * related to the figure in (e), replace “marking” by “mark”.

6.1.3.2 In the first sentence replace “markings” by “marks”.

6.1.3.3 In the last sentence replace “markings” by “marks”.

6.1.3.4 Replace “markings” by “marks” (twice).

6.1.3.5 Replace “markings” by “marks”.

6.1.3.6 Replace “marking” by “marks” and replace “is valid” by “are valid”.

6.1.3.7 At the beginning, replace “Marking” by “Marks” and “elements of the marking” by “mark”. In the second paragraph, amend the end to read as follows: “...still enable the other marks required in 6.1.3.1 to be correctly identified.”.

Amend the beginning of the second paragraph to read as follows: “Any additional marks...”.

6.1.3.8 In the introductory sentence, amend the end to read as follows: "...in sequence, durable marks showing:".

6.1.3.9 Replace "markings" by "marks" (twice).

6.1.3.10 Replace "mark" (second occurrence) by "marks".

6.1.3.11 In the heading, replace "of markings for" by "for marking".

6.1.3.12 In the heading, replace "of markings for" by "for marking".

6.1.3.13 In the heading, replace "of markings for" by "for marking" and in the Note "markings" by "marking".

6.1.3.14 Replace "marking" by "marks".

6.1.5.1.6, Note Replace "assembling" by "using". Add a new last sentence to read as follows: "These conditions do not limit the use of inner packagings when applying 6.1.5.1.7.".

6.1.5.5.4 In the third sentence, replace "marking" by "mark".

Chapter 6.2

6.2.1.1.9 In the introductory sentence, after "and testing specified by" insert "a standard or technical code recognised by".

6.2.1.5.1 (g) Amend the text before the Note to read as follows:

"(g) A hydraulic pressure test. Pressure receptacles shall meet the acceptance criteria specified in the design and construction technical standard or technical code;".

6.2.1.5.1 (i) Replace "markings" by "marks".

6.2.1.6.1 (a) Replace "markings" by "marks".

6.2.2.1.1 After the entry for ISO 9809-3:2010 insert a new entry to read as follows:

ISO 9809-4:2014	Gas cylinders – Refillable seamless steel gas cylinders – Design, construction and testing – Part 4: Stainless steel cylinders with an Rm value of less than 1 100 MPa	Until further notice
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6.2.2.1.1 In the entry for ISO 7866:2012, in the first column, insert "+ Cor 1:2014" after "ISO 7866:2012".

6.2.2.1.1 At the end of the table, replace the three last entries (corresponding to standards "ISO 11119-1:2002", "ISO 11119-2:2002" and "ISO 11119-3:2002") with the following entries:

ISO 11119-1:2002	Gas cylinders of composite construction – Specification and test methods – Part 1: Hoop wrapped composite gas cylinders	Until 31 December 2020
ISO 11119-1:2012	Gas cylinders – Refillable composite gas cylinders and tubes – Design, construction and testing – Part 1: Hoop wrapped fibre reinforced composite gas cylinders and tubes up to 450 l	Until further notice
ISO 11119-2:2002	Gas cylinders of composite construction – Specification and test methods – Part 2: Fully wrapped fibre reinforced composite gas cylinders with load-sharing metal liners	Until 31 December 2020
ISO 11119-2:2012 + Amd 1:2014	Gas cylinders – Refillable composite gas cylinders and tubes – Design, construction and testing – Part 2: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with load-sharing metal liners	Until further notice

ISO 11119-3:2002	Gas cylinders of composite construction – Specification and test methods – Part 3: Fully wrapped fibre reinforced composite gas cylinders with non-load-sharing metallic or non-metallic liners	Until 31 December 2020
ISO 11119-3:2013	Gas cylinders – Refillable composite gas cylinders and tubes – Design, construction and testing – Part 3: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with non-load-sharing metallic or non-metallic liners	Until further notice

6.2.2.1.1, Note 1 Replace “unlimited service life” with “a design life of not less than 15 years.”.

6.2.2.1.1 Amend Note 2 to read as follows:

“NOTE 2: Composite cylinders with a design life longer than 15 years shall not be filled after 15 years from the date of manufacture, unless the design has successfully passed a service life test programme. The programme shall be part of the initial design type approval and shall specify inspections and tests to demonstrate that cylinders manufactured accordingly remain safe to the end of their design life. The service life test programme and the results shall be approved by the competent authority of the country of approval that is responsible for the initial approval of the cylinder design. The service life of a composite cylinder shall not be extended beyond its initial approved design life.”.

6.2.2.1.2 After the entry for standard “ISO 11120:1999”, add the following new entries:

ISO 11119-1:2012	Gas cylinders – Refillable composite gas cylinders and tubes – Design, construction and testing – Part 1: Hoop wrapped fibre reinforced composite gas cylinders and tubes up to 450 l	Until further notice
ISO 11119-2:2012 + Amd 1:2014	Gas cylinders – Refillable composite gas cylinders and tubes – Design, construction and testing – Part 2: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with load-sharing metal liners	Until further notice
ISO 11119-3:2013	Gas cylinders – Refillable composite gas cylinders and tubes – Design, construction and testing – Part 3: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with non-load-sharing metallic or non-metallic liners	Until further notice
ISO 11515: 2013	Gas cylinders – Refillable composite reinforced tubes of water capacity between 450 l and 3 000 l – Design, construction and testing	Until further notice

6.2.2.1.2 Add the following NOTES after the table:

“NOTE 1: In the above referenced standards composite tubes shall be designed for a design life of not less than 15 years.

NOTE 2: Composite tubes with a design life longer than 15 years shall not be filled after 15 years from the date of manufacture, unless the design has successfully passed a service life test programme. The programme shall be part of the initial design type approval and shall specify inspections and tests to demonstrate that tubes manufactured accordingly remain safe to the end of their design life. The service life test programme and the results shall be approved by the competent authority of the country of approval that is responsible for the initial approval of the tube design. The service life of a composite tube shall not be extended beyond its initial approved design life.”.

6.2.2.1.3 In the second table, for standards “ISO 3807-1:2000” and “ISO 3807-2:2000”, amend the text in column “Applicable for manufacture” to read “Until 31 December 2020”. After these standards, add the following new row:

ISO 3807:2013	Gas cylinders – Acetylene cylinders – Basic requirements and type testing	Until further notice
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6.2.2.2 In the table, replace the entry for “ISO 11114-2:2000” with the following entry:

ISO 11114-2:2013	Gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 2: Non-metallic materials
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6.2.2.3 In the table, for ISO 10297:2006, in the column “Applicable for manufacture”, replace “Until further notice” with “Until 31 December 2020”.

After the entry for ISO 10297:2006, insert a new entry to read as follows:

ISO 10297:2014	Gas cylinders – Cylinder valves – Specification and type testing <i>NOTE: The EN version of this ISO standard fulfils the requirements and may also be used.</i>	Until further notice
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6.2.2.4 In the table, for ISO 10462:2005, replace “Until further notice” by “Until 31 December 2018”.

6.2.2.4 In the table, after ISO 10462:2005, insert a new row to read as follows:

ISO 10462:2013	Gas cylinders – Acetylene cylinders – Periodic inspection and maintenance.	Until further notice
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6.2.2.5.2.1 Replace “marking” by “marks”.

6.2.2.5.5 In the fourth paragraph, replace “certification marking” by “certification marks” (twice).

6.2.2.6.2.1 In the last sentence of the first paragraph, replace “marking” by “marks”.

6.2.2.6.5 In the first paragraph, replace “marking” by “marks” (twice).

6.2.2.7.2 (a) Amend the second sentence to read as follows: “This symbol shall not be used for any purpose other than certifying that a packaging, a flexible bulk container, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6, 6.7 or 6.11.”.

6.2.2.7.4 Insert the following new sub-paragraphs and note at the end:

- “(q) For composite cylinders and tubes having a limited design life, the letters “FINAL” followed by the design life shown as the year (four digits) followed by the month (two digits) separated by a slash (i.e. “/”);
- (r) For composite cylinders and tubes having a limited design life greater than 15 years and for composite cylinders and tubes having non-limited design life, the letters “SERVICE” followed by the date 15 years from the date of manufacture (initial inspection) shown as the year (four digits) followed by the month (two digits) separated by a slash (i.e. “/”).

NOTE: *Once the initial design type has passed the service life test programme requirements in accordance with 6.2.2.1.1 NOTE 2 or 6.2.2.1.2 NOTE 2, future production no longer requires this initial service life mark. The initial service life mark shall be made unreadable on cylinders and tubes of a design type that has met the service life test programme requirements.”.*

6.2.2.7.5 Add the following text at the end of the first indent: “...except for the marks described in 6.2.2.7.4 (q) and (r) which shall be adjacent to the periodic inspection and test marks of 6.2.2.7.7”.

6.2.2.7.5 In the sentence after the subparagraphs, amend the end to read as follows: “...example of marking a cylinder.”.

- 6.2.2.7.7 (a) In the second sentence, replace “marking” by “mark”.
- 6.2.2.8.3 In the Note, amend the end to read as follows: “...substitute a label for these permanent marks.”.
- 6.2.2.9.2 (a) Amend the second sentence to read as follows: “This symbol shall not be used for any purpose other than certifying that a packaging, a flexible bulk container, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6, 6.7 or 6.11.”.
- 6.2.2.9.4 (a) In the second sentence, replace “marking” by “mark”.
- 6.2.3.5.2 (a) Replace “markings” by “marks”.
- 6.2.3.9.1 Replace “Markings” by “Marking”.
- 6.2.3.9.2 Amend to read as follows:
 “6.2.3.9.2 The United Nations packaging symbol specified in 6.2.2.7.2 (a) and the provisions of 6.2.2.7.4 (q) and (r) shall not be applied.”.
- 6.2.3.9.7.3 (a) Replace “This marking” by “This mark”.
- 6.2.3.10.1 Replace “Markings” by “Marking”.
- 6.2.3.11.4 In the last sentence, replace “marking” by “marks”.
- 6.2.4.1 Insert the following first sentence: “Type approval certificates shall be issued in accordance with 1.8.7.”.
- 6.2.4.1 Amend the sentence “The requirements of Chapter 6.2 referred to in column (3) shall prevail in all cases.” to read as follows: “The standards shall be applied in accordance with 1.1.5.”.
- 6.2.4.1 In the table, for EN 1251-2:2000, in column (2), add a note to read as follows:
“NOTE: Standard EN 1252-1:1998 referenced in this standard is also applicable to closed cryogenic receptacles for the carriage of UN No. 1972 (METHANE, REFRIGERATED LIQUID or NATURAL GAS, REFRIGERATED LIQUID).”.
- 6.2.4.1 Amend the Table, under “for design and construction”, as follows:
 For standard “EN 14140:2003 + A1:2006”, in column (4), replace “Until further notice” by “Between 1 January 2009 and 31 December 2018”.
- After standard “EN 14140:2003 + A1:2006”, insert the following new row:

EN 14140:2014 +AC:2015	LPG Equipment and accessories – Transportable refillable welded steel cylinders for LPG – Alternative design and construction	6.2.3.1 and 6.2.3.4	Until further notice	
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- 6.2.4.1 Amend the Table, under “for closures”, as follows:

At the end, add the following standards:

EN 13175: 2014	LPG Equipment and accessories – Specification and testing for Liquefied Petroleum Gas (LPG) pressure vessel valves and fittings	6.2.3.1 and 6.2.3.3	Until further notice	
EN ISO 17871:2015	Gas cylinders – Quick-release cylinder valves - Specification and type testing (ISO 17871:2015)	6.2.3.1, 6.2.3.3 and 6.2.3.4	Until further notice	

EN 13953:2015	LPG equipment and accessories – Pressure relief valves for transportable refillable cylinders for Liquefied Petroleum Gas (LPG) <i>NOTE: The final sentence of the scope shall not apply.</i>	6.2.3.1, 6.2.3.3 and 6.2.3.4	Until further notice	
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6.2.4.2 At the end of the first sub-paragraph, delete “which shall prevail in all cases”. At the end of the first sub-paragraph, add the following sentence “The standards shall be applied in accordance with 1.1.5.”.

6.2.4.2 Amend the Table as follows:

For standard “EN 14912:2005”, in the last column, replace “Until further notice” by “Until 31 December 2018”.

After standard “EN 14912:2005”, insert the following new row:

EN 14912:2015	LPG equipment and accessories – Inspection and maintenance of LPG cylinder valves at time of periodic inspection of cylinders		Mandatorily from 1 January 2019	
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6.2.6.1.5 At the end, insert the following new sentence:

“In addition, the product of test pressure and water capacity shall not exceed 30 bar-litres for liquefied gases or 54 bar-litres for compressed gases and the test pressure shall not exceed 250 bar for liquefied gases or 450 bar for compressed gases”.

6.2.6.4 At the end of the second indent, replace “;” by “.”.

Add the following new indent:

“- for UN No. 2037 small receptacles containing gas (gas cartridges) containing non-toxic, non-flammable compressed or liquefied gases: EN 16509:2014 Transportable gas cylinders – Non-refillable, small transportable, steel cylinders of capacities up to and including 120 ml containing compressed or liquefied gases (compact cylinders) – Design, construction, filling and testing (excluding clause 9).”.

Chapter 6.3

6.3.4, Note 1 Amend the beginning to read as follows: “*The marks indicate that the packaging which bears them correspond to...*”.

6.3.4, Note 2 Replace “marking is” by “marks are”.

6.3.4, Note 3 Replace “marking does” by “marks do”.

6.3.4.1 Replace “markings” by “marks” (twice).

6.3.4.2 (a) Amend the second sentence to read as follows: “This symbol shall not be used for any purpose other than certifying that a packaging, a flexible bulk container, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6, 6.7 or 6.11.”.

6.3.4.2 (g) Replace “marking” by “mark”.

6.3.4.3 At the beginning, replace “Marking” by “Marks” and “element of the marking” by “mark”. In the second paragraph, amend the end to read as follows: “...still enable the marks required in 6.3.4.1 to be correctly identified.”. Amend the beginning of the second paragraph to read as follows: “Any additional marks shall...”.

6.3.5.1.6 (g) Replace “markings” by “marks”.

Chapter 6.4

6.4.22.8 In the first sentence, insert “design” after “package”.

6.4.22.8 (a) Amend the end to read as follows: “...and that this certificate is validated by a competent authority of an ADR Contracting Party.”.

6.4.22.8 (b) Amend the end to read as follows: “...is approved by the competent authority of an ADR Contracting Party.”.

6.4.23.12 (a) In the first sentence, replace “identification marking” by “identification marks”.

6.4.23.16 (b) The amendment does not apply to the English text.

Chapter 6.5

6.5.2.1 The amendment does not apply to the English text.

6.5.2.1.1 In the first paragraph, replace “markings” by “marks”.

6.5.2.1.1 (a) Amend the second sentence to read as follows: “This symbol shall not be used for any purpose other than certifying that a packaging, a flexible bulk container, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6, 6.7 or 6.11.”. In the third sentence, replace “marking is stamped” by “marks are stamped”.

6.5.2.1.1 Amend the text after sub-paragraph (h) to read:

“The primary marks required above shall be applied in the sequence of the subparagraphs above. The marks required by 6.5.2.2 and any further mark authorized by a competent authority shall still enable the primary marks to be correctly identified.

Each mark applied in accordance with (a) to (h) and with 6.5.2.2 shall be clearly separated, e.g. by a slash or space, so as to be easily identifiable.”.

6.5.2.1.2 In the heading, replace “markings” by “marking”.

6.5.2.2.1 Replace “markings” by “marks”. In the table, in the heading of the first column, replace “marking” by “marks” and in table note b, replace “marking” by “mark”.

6.5.2.2.3 Replace “markings” by “marks”.

6.5.2.2.4, first paragraph Amend as follows:

Amend the beginning of the first sentence to read as follows: “Inner receptacles that are of composite IBC design type shall be identified by the application of the marks...”, remainder unchanged.

In the third sentence, replace “marking” by “marks”.

6.5.2.2.4, second paragraph Amend as follows:

Replace “marking” by “marks” and “marking” by “mark”.

6.5.2.2.4 Renumber the existing Note as Note 1. Add a new Note 2 to read as follows:

NOTE 2: *The date of manufacture of the inner receptacle may be different from the marked date of manufacture (see 6.5.2.1), repair (see 6.5.4.5.3) or remanufacture (see 6.5.2.4) of the composite IBC.*”.

- 6.5.2.3 Replace “marking indicates” by “marks indicate”.
- 6.5.2.4 Replace “marking” by “marks” and “markings” by “marks”
- 6.5.4.4.1(a) (i) Replace “marking” by “marks”.
- 6.5.4.4.2 Amend the introductory sentence to read as follows:
 “6.5.4.4.2 Every metal, rigid plastics and composite IBC for liquids, or for solids which are filled or discharged under pressure, shall undergo a suitable leakproofness test. This test is part of a quality assurance programme as stipulated in 6.5.4.1 which shows the capability of meeting the appropriate test level indicated in 6.5.6.7.3:”.
- 6.5.4.5.3 Replace “marking” by “marks”.

Chapter 6.6

- 6.6.3.1 In the first paragraph, replace “markings” by “marks”.
- 6.6.3.1 (a) Amend the second sentence to read as follows: “This symbol shall not be used for any purpose other than certifying that a packaging, a flexible bulk container, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6, 6.7 or 6.11.”. In the third sentence replace “marking is” by “marks are”.
- 6.6.3.1 In the sentences after subparagraph (h), replace “marking” by “mark”, “element of the marking” by “mark”.
- 6.6.3.2 In the heading, replace “the marking” by “marking”.

Chapter 6.7

- 6.7.2.19.8 (a) Add a new last sentence to read as follows:
 “The wall thickness shall be verified by appropriate measurement if this inspection indicates a reduction of wall thickness;”.
- 6.7.2.19.8 (g) Replace “markings” by “marks”.
- Figure 6.7.2.20.1 Amend the heading to read “Example of a plate for marking”.
- 6.7.2.20.1 (c) (i) Amend the second sentence to read as follows: “This symbol shall not be used for any purpose other than certifying that a packaging, a flexible bulk container, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6, 6.7 or 6.11.”.
- 6.7.3.15.8 (a) Add a new last sentence to read as follows:
 “The wall thickness shall be verified by appropriate measurement if this inspection indicates a reduction of wall thickness;”.
- 6.7.3.15.8 (f) Replace “markings” by “marks”.
- Figure 6.7.3.16.1 Amend the heading to read “Example of a plate for marking”.
- 6.7.3.16.1 (c) (i) Amend the second sentence to read as follows: “This symbol shall not be used for any purpose other than certifying that a packaging, a flexible bulk container, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6, 6.7 or 6.11.”.
- 6.7.4.14.9 (e) Replace “markings” by “marks”.
- Figure 6.7.4.15.1 Amend the heading to read “Example of a plate for marking”.

6.7.4.15.1 (c) (i) Amend the second sentence to read as follows: “This symbol shall not be used for any purpose other than certifying that a packaging, a flexible bulk container, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6, 6.7 or 6.11.”.

6.7.5.2.4 (a) Replace “ISO 11114-2:2000” with “ISO 11114-2:2013”.

6.7.5.12.6 (e) Replace “markings” by “marks”.

Figure 6.7.5.13.1 Amend the heading to read “Example of a plate for marking”.

6.7.5.13.1 (c) (i) Amend the second sentence to read as follows: “This symbol shall not be used for any purpose other than certifying that a packaging, a flexible bulk container, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6, 6.7 or 6.11.”.

Chapter 6.8

6.8.2.1.21 The first amendment does not apply to the English text. In the second Table, after the row for “Austenitic stainless steels”, insert the following new row:

Austenitic-ferritic stainless steels	3 mm	3 mm	3.5 mm
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6.8.2.6.1 Insert the following first sentence “Type approval certificates shall be issued in accordance with 1.8.7 or 6.8.2.3.”.

Amend the sentence “The requirements of Chapter 6.8 referred to in column (3) shall prevail in all cases.” to read as follows “The standards shall be applied in accordance with 1.1.5.”.

6.8.2.6.1 Restructure the Table as follows:

Delete the headings:

“For all tanks”;

“For tanks with a maximum working pressure not exceeding 50 kPa and...”;

“For tanks for gases of Class 2”; and

“For tanks intended for carriage of liquid petroleum products and...”.

Add the following headings:

“For design and construction of tanks”; and

“For equipment”.

Under “For design and construction of tanks”, add the lines corresponding to EN 14025:2003 + AC:2005, EN 14025:2008, EN 14025:2013, EN 13094:2004, EN 13094:2008 + AC:2008, EN 12493:2001 (except Annex C), EN 12493:2008 (except Annex C), EN 12493:2008 + A1:2012 (except Annex C), EN 12493:2013 (except Annex C), EN 13530-2:2002, EN 13530-2:2002 + A1:2004, EN 14398-2:2003 (except Table 1) and EN 14398-2:2003 + A2:2008.

Under “For equipment”, add the lines corresponding to EN 14432:2006, EN 14433:2006, EN 12252:2000, EN 12252:2005 + A1:2008, EN 14129:2014, EN 1626:2008 (except valve category B), EN 13082:2001, EN 13082:2008 , + A1:2012, EN 13308:2002 , EN 13314:2002 , EN 13316:2002 , EN 13317:2002 ((except for the figure and Table B.2 in Annex B)), EN 13317:2002 + A1:2006, EN 14595:2005 and EN 16257:2012.

6.8.2.6.1 Amend the Table under “*For design and construction of tanks*” as follows:

For standard “EN 13094:2008 + AC:2008”, in column (4), replace “Until further notice” by “Between 1 January 2010 and 31 December 2018”.

After the standard “EN 13094:2008 + AC:2008”, insert the following new standard:

EN 13094:2015	Tanks for the transport of dangerous goods – Metallic tanks with a working pressure not exceeding 0.5 bar – Design and construction	6.8.2.1	Until further notice	
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For standard “EN 12493:2013”, in column (4), replace “Until further notice” by “Between 1 January 2015 and 31 December 2017”.

For standard “EN 12493:2013”, in column (5), insert “31 December 2018”.

After the standard “EN 12493:2013”, insert the following new standard:

EN 12493:2013 + A1:2014 (except Annex C)	LPG equipment and accessories – Welded steel tanks for liquefied petroleum gas (LPG) – Road tankers – Design and manufacture <i>NOTE: Road tankers is to be understood in the meaning of “fixed tanks” and “demountable tanks” as per ADR.</i>	6.8.2.1, 6.8.2.5, 6.8.3.1, 6.8.3.5, 6.8.5.1 to 6.8.5.3	Until further notice	
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6.8.2.6.1 In the table, for EN 13530-2:2002 +A1:2004, in column (2), add a note to read as follows: “*NOTE: Standard EN 1252-1:1998 referenced in this standard is also applicable to tanks for the carriage of UN No. 1972 (METHANE, REFRIGERATED LIQUID or NATURAL GAS, REFRIGERATED LIQUID).*”.

6.8.2.6.1 Amend the Table under “*For equipment*” as follows:

For standard “EN 14432:2006”, in column (4), replace “Until further notice” by “Between 1 January 2009 and 31 December 2018”.

After the standard “EN 14432:2006”, insert the following new standard:

EN 14432:2014	Tanks for the transport of dangerous goods – Tank equipment for the transport of liquid chemicals and liquefied gases – Product discharge and air inlet valves <i>NOTE: This standard may also be used for tanks with a maximum working pressure not exceeding 0.5 bar.</i>	6.8.2.2.1, 6.8.2.2.2 and 6.8.2.3.1	Until further notice	
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For standard “EN 14433:2006”, in column (4), replace “Until further notice” by “Between 1 January 2009 and 31 December 2018”.

After the standard “EN 14433:2006”, insert the following new standard:

EN 14433:2014	Tanks for the transport of dangerous goods – Tank equipment for the transport of liquid chemicals and liquefied gases – Foot valves <i>NOTE: This standard may also be used for tanks with a maximum working pressure not exceeding 0.5 bar.</i>	6.8.2.2.1, 6.8.2.2.2 and 6.8.2.3.1	Until further notice	
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For standard “EN 12252:2005 + A1:2008”, in column (4), replace “Until further notice” by “Between 1 January 2011 and 31 December 2018”.

After the standard “EN 12252:2005 + A1:2008”, insert the following new standard:

EN 12252:2014	LPG Equipment and accessories – Equipping of LPG road tankers <i>NOTE: Road tanker is to be understood in the meaning of “fixed tanks” and “demountable tanks” as per ADR.</i>	6.8.3.2 and 6.8.3.4.9	Until further notice	
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At the end, add the following row:

EN 13175:2014	LPG Equipment and accessories – Specification and testing for Liquefied Petroleum Gas (LPG) pressure vessel valves and fittings	6.8.2.1.1, 6.8.2.2, 6.8.2.4.1 and 6.8.3.2.3	Until further notice	
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After the row for “EN 1626:2008”, add the following row:

EN 13648-1:2008	Cryogenic vessels – Safety devices for protection against excessive pressure – Part 1: Safety valves for cryogenic service	6.8.2.4, 6.8.3.2.12 and 6.8.3.4	Until further notice	
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6.8.2.6.2 At the end of the first sub-paragraph, delete “which shall prevail in all cases”.

At the end of the first sub-paragraph, add the following sentence “The standards shall be applied in accordance with 1.1.5.”.

6.8.2.6.2 At the end, add the following row:

EN 14334:2014	LPG equipment and accessories – Inspection and testing of LPG road tankers	6.8.2.4 (except 6.8.2.4.1), 6.8.3.4.2 and 6.8.3.4.9	Until further notice	
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6.8.3.2 15 Insert a new last sentence to read as follows: “For type testing of the effectiveness of the insulation system, see 6.8.3.4.11.”.

6.8.3.4 Insert two new paragraphs 6.8.3.4.10 and 6.8.3.4.11 on the right hand side of the page to read as follows:

“Holding times for tank-containers carrying refrigerated liquefied gases

6.8.3.4.10

The reference holding time for tank-containers carrying refrigerated liquefied gases shall be determined on the basis of the following:

- (a) The effectiveness of the insulation system, determined in accordance with 6.8.3.4.11;
- (b) The lowest set pressure of the pressure limiting device(s);
- (c) The initial filling conditions;
- (d) An assumed ambient temperature of 30 °C;
- (e) The physical properties of the individual refrigerated liquefied gas intended to be carried.

6.8.3.4.11

The effectiveness of the insulation system (heat influx in Watts) shall be determined by type testing the tank-containers. This test shall consist of either:

(a) A constant pressure test (for example at atmospheric pressure) during which the loss of refrigerated liquefied gas is measured over a period of time; or

(b) A closed system test during which the rise in pressure in the shell is measured over a period of time.

When performing the constant pressure test, variations in atmospheric pressure shall be taken into account. When performing either tests corrections shall be made for any variation of the ambient temperature from the assumed ambient temperature reference value of 30 °C.

NOTE: *ISO 21014:2006 'Cryogenic vessels — Cryogenic insulation performance' details methods of determining the insulation performance of cryogenic vessels and provides a method of calculating the holding time."*

Renumber existing paragraphs 6.8.3.4.10 to 6.8.3.4.16 as 6.8.3.4.12 to 6.8.3.4.18 respectively.

6.8.3.4.12 (former 6.8.3.4.10) Replace "6.8.3.4.14" by "6.8.3.4.16".

6.8.3.4.16 (former 6.8.3.4.14) Replace "6.8.3.4.15" by "6.8.3.4.17".

6.8.3.4.18 (former 6.8.3.4.16) Replace "6.8.3.4.10 to 6.8.3.4.15" by "6.8.3.4.12 to 6.8.3.4.17".

6.8.3.4.17 (e) (former 6.8.3.4.15 (e)) Replace "markings" by "marks".

6.8.3.5.4 On the right hand side of the page, after the first indent, add two new indents to read as follows:

“- reference holding time (in days or hours) *for each gas*¹³;
- *the associated* initial pressures (in bar gauge or kPa gauge)¹³.”

6.8.3.5.10 In the last but one indent, replace "6.8.3.4.10 to 6.8.3.4.13" by "6.8.3.4.12 and 6.8.3.4.15".

6.8.3.6 Insert the following first sentence "Type approval certificates shall be issued in accordance with 1.8.7."

Amend the sentence "The requirements of Chapter 6.8 referred to in column (3) shall prevail in all cases." to read as follows: "The standards shall be applied in accordance with 1.1.5."

6.8.3.6 In the table, for EN 13807:2003, in column (2), add a note to read as follows: "**NOTE:** *Where appropriate this standard may also be applied to MEGCs which consist of pressure receptacles."*

6.8.3.6 For standard "EN 13807:2003", in column (3), replace "6.8.3.4.10 to 6.8.3.4.12" by "6.8.3.4.12 to 6.8.3.4.14".

6.8.4, special provision TC8 At the end insert the following sentence: “The shells may be designed for an external design pressure of not less than 5 kPa (0.05 bar).”

6.8.4, special provision TT8 In the third paragraph, replace “marking” by “mark”.

6.8.4, special provision TT11 In the sub-paragraph after the Table, replace “EN 12493:2013” by “EN 12493:2013 + A1:2014”.

Chapter 6.11

6.11.2.3 In the table add the following new row:

Flexible bulk container	BK3
-------------------------	-----

Add a new section 6.11.5 to read as follows:

6.11.5 Requirements for the design, construction, inspection and testing of BK3 flexible bulk containers

6.11.5.1 Design and construction requirements

6.11.5.1.1 Flexible bulk containers shall be sift-proof.

6.11.5.1.2 Flexible bulk containers shall be completely closed to prevent the release of contents.

6.11.5.1.3 Flexible bulk containers shall be waterproof.

6.11.5.1.4 Parts of the flexible bulk container which are in direct contact with dangerous goods:

- (a) shall not be affected or significantly weakened by those dangerous goods;
- (b) shall not cause a dangerous effect, e.g. catalysing a reaction or reacting with the dangerous goods; and
- (c) shall not allow permeation of the dangerous goods that could constitute a danger under normal conditions of carriage.

6.11.5.2 Service equipment and handling devices

6.11.5.2.1 Filling and discharge devices shall be so constructed as to be protected against damage during carriage and handling. The filling and discharge devices shall be secured against unintended opening.

6.11.5.2.2 Slings of the flexible bulk container, if fitted, shall withstand pressure and dynamic forces, which can appear in normal conditions of handling and carriage.

6.11.5.2.3 The handling devices shall be strong enough to withstand repeated use.

6.11.5.3 Inspection and testing

6.11.5.3.1 The design type of each flexible bulk container shall be tested as provided for in 6.11.5 in accordance with procedures established by the competent authority allowing the allocation of the mark and shall be approved by this competent authority.

6.11.5.3.2 Tests shall also be repeated after each modification of the design type, which alters the design, material or manner of construction of a flexible bulk container.

6.11.5.3.3 Tests shall be carried out on flexible bulk containers prepared as for carriage. Flexible bulk containers shall be filled to the maximum mass at which they may be used and the contents shall be evenly distributed. The substances to be carried in the flexible

bulk container may be replaced by other substances except where this would invalidate the results of the test. When another substance is used it shall have the same physical characteristics (mass, grain size, etc.) as the substance to be carried. It is permissible to use additives, such as bags of lead shot, to achieve the requisite total mass of the flexible bulk container so long as they are placed so that the test results are not affected.

6.11.5.3.4 Flexible bulk containers shall be manufactured and tested under a quality assurance programme which satisfies the competent authority, in order to ensure that each manufactured flexible bulk container meets the requirements of this Chapter.

6.11.5.3.5 *Drop test*

6.11.5.3.5.1 Applicability

For all types of flexible bulk containers, as a design type test.

6.11.5.3.5.2 Preparation for testing

The flexible bulk container shall be filled to its maximum permissible gross mass.

6.11.5.3.5.3 Method of testing

The flexible bulk container shall be dropped onto a target surface that is non-resilient and horizontal. The target surface shall be:

- (a) Integral and massive enough to be immovable;
- (b) Flat with a surface kept free from local defects capable of influencing the test results;
- (c) Rigid enough to be non-deformable under test conditions and not liable to become damaged by the tests; and
- (d) Sufficiently large to ensure that the test flexible bulk container falls entirely upon the surface.

Following the drop, the flexible bulk container shall be restored to the upright position for observation.

6.11.5.3.5.4 Drop height shall be:

Packing group III: 0.8 m

6.11.5.3.5.5 Criteria for passing the test

- (a) There shall be no loss of contents. A slight discharge, e.g. from closures or stitch holes, upon impact shall not be considered to be a failure of the flexible bulk container provided that no further leakage occurs after the container has been restored to the upright position;
- (b) There shall be no damage, which renders the flexible bulk container unsafe to be carried for salvage or for disposal.

6.11.5.3.6 *Top lift test*

6.11.5.3.6.1 Applicability

For all types of flexible bulk containers as a design type test.

6.11.5.3.6.2 Preparation for testing

Flexible bulk containers shall be filled to six times the maximum net mass, the load being evenly distributed.

6.11.5.3.6.3 Method of testing

A flexible bulk container shall be lifted in the manner for which it is designed until clear of the floor and maintained in that position for a period of five minutes.

6.11.5.3.6.4 Criteria for passing the test

There shall be no damage to the flexible bulk container or its lifting devices which renders the flexible bulk container unsafe for carriage or handling, and no loss of contents.

6.11.5.3.7 *Topple test*

6.11.5.3.7.1 Applicability

For all types of flexible bulk containers as a design type test.

6.11.5.3.7.2 Preparation for testing

The flexible bulk container shall be filled to its maximum permissible gross mass.

6.11.5.3.7.3 Method of testing

Flexible bulk container shall be toppled onto any part of its top by lifting the side furthest from the drop edge upon a target surface that is non-resilient and horizontal. The target surface shall be:

- (a) Integral and massive enough to be immovable;
- (b) Flat with a surface kept free from local defects capable of influencing the test results;
- (c) Rigid enough to be non-deformable under test conditions and not liable to become damaged by the tests; and
- (d) Sufficiently large to ensure that the tested flexible bulk container falls entirely upon the surface.

6.11.5.3.7.4 For all flexible bulk containers, the topple height is specified as follows:

Packing group III: 0.8 m

6.11.5.3.7.5 Criterion for passing the test

There shall be no loss of contents. A slight discharge, e.g. from closures or stitch holes, upon impact shall not be considered to be a failure of the flexible bulk container provided that no further leakage occurs.

6.11.5.3.8 *Righting test*

6.11.5.3.8.1 Applicability

For all types of flexible bulk containers designed to be lifted by the top or side part, as a design type test.

6.11.5.3.8.2 Preparation for testing

The flexible bulk container shall be filled to not less than 95% of its capacity and to its maximum permissible gross mass.

6.11.5.3.8.3 Method of testing

The flexible bulk container, lying on its side, shall be lifted at a speed of at least 0.1 m/s to an upright position, clear of the floor, by no more than half of the lifting devices.

6.11.5.3.8.4 Criterion for passing the test

There shall be no damage to the flexible bulk container or its lifting devices which renders the flexible bulk container unsafe for carriage or handling.

6.11.5.3.9 *Tear test*

6.11.5.3.9.1 Applicability

For all types of flexible bulk containers as a design type test.

6.11.5.3.9.2 Preparation for testing

The flexible bulk container shall be filled to its maximum permissible gross mass.

6.11.5.3.9.3 Method of testing

With the flexible bulk container placed on the ground, a 300 mm cut shall be made, completely penetrating all layers of the flexible bulk container on a wall of a wide face. The cut shall be made at a 45° angle to the principal axis of the flexible bulk container, halfway between the bottom surface and the top level of the contents. The flexible bulk container shall then be subjected to a uniformly distributed superimposed load equivalent to twice the maximum gross mass. The load must be applied for at least fifteen minutes. A flexible bulk container which is designed to be lifted from the top or the side shall, after removal of the superimposed load, be lifted clear of the floor and maintained in that position for a period of fifteen minutes.

6.11.5.3.9.4 Criterion for passing the test

The cut shall not propagate more than 25% of its original length.

6.11.5.3.10 *Stacking test*

6.11.5.3.10.1 Applicability

For all types of flexible bulk containers as a design type test.

6.11.5.3.10.2 Preparation for testing

The flexible bulk container shall be filled to its maximum permissible gross mass.

6.11.5.3.10.3 Method of testing

The flexible bulk container shall be subjected to a force applied to its top surface that is four times the design load-carrying capacity for 24 hours.

6.11.5.3.10.4 Criterion for passing the test

There shall be no loss of contents during the test or after removal of the load.

6.11.5.4 *Test report*

6.11.5.4.1 A test report containing at least the following particulars shall be drawn up and shall be available to the users of the flexible bulk container:


1. Name and address of the test facility;
2. Name and address of applicant (where appropriate);
3. Unique test report identification;
4. Date of the test report;
5. Manufacturer of the flexible bulk container;
6. Description of the flexible bulk container design type (e.g. dimensions, materials, closures, thickness, etc) and/or photograph(s);
7. Maximum capacity/maximum permissible gross mass;
8. Characteristics of test contents, e.g. particle size for solids;

9. Test descriptions and results;
10. The test report shall be signed with the name and status of the signatory.

6.11.5.4.2 The test report shall contain statements that the flexible bulk container prepared as for carriage was tested in accordance with the appropriate provisions of this Chapter and that the use of other containment methods or components may render it invalid. A copy of the test report shall be available to the competent authority.

6.11.5.5 Marking

6.11.5.5.1 Each flexible bulk container manufactured and intended for use according to the provisions of ADR shall bear marks that are durable, legible and placed in a location so as to be readily visible. Letters, numerals and symbols shall be at least 24 mm high and shall show:

- (a) The United Nations packaging symbol ;

This symbol shall not be used for any purpose other than certifying that a packaging, a flexible bulk container, a portable tank or a MEGC complies with the relevant requirements in Chapters 6.1, 6.2, 6.3, 6.5, 6.6, 6.7 or 6.11;

- (b) The code BK3;
- (c) A capital letter designating the packing group(s) for which the design type has been approved:
 - Z for packing group III only;
- (d) The month and year (last two digits) of manufacture;
- (e) The character(s) identifying the country authorizing the allocation of the mark; as indicated by the distinguishing sign for motor vehicles in international traffic¹;
- (f) The name or symbol of the manufacturer and other identification of the flexible bulk container as specified by the competent authority;
- (g) The stacking test load in kg;
- (h) The maximum permissible gross mass in kg.

Marks shall be applied in the sequence shown in (a) to (h); each mark, required in these subparagraphs, shall be clearly separated, e.g. by a slash or space and presented in a way that ensures that all of the parts of the mark are easily identified.

6.11.5.5.2 *Example of marking*



BK3/Z/11 09
RUS/NTT/MK-14-10
56000/14000”.

Chapter 6.12

6.12.3.1.3 In the Table, replace “Stainless austenitic steels” by “Austenitic stainless steels”.

¹ *Distinguishing sign for motor vehicles in international traffic prescribed in the Vienna Convention on Road Traffic (1968).*

6.12.3.2.3 In the Table, replace “Stainless austenitic steels” by “Austenitic stainless steels”.

Chapter 7.2

7.2.4, V2 (1) In the first paragraph, insert a new last sentence to read as follows: “Where a transport unit consists of an EX/II vehicle and an EX/III vehicle, both carrying explosive substances or articles, the quantity limit of 7.5.5.2.1 applicable for an EX/II transport unit applies for the entire transport unit.”.

7.2.4, V8 (4) In the first paragraph (methods R4 and R5), replace “and self-reactive substances” by “, self-reactive substances and polymerizing substances”. In the second paragraph (method R3), after “Type B” insert “and polymerizing substances”. In the third paragraph (method R2), after “Types C, D, E and F” insert “and polymerizing substances”. In the fourth paragraph (method R1), after “Types C, D, E and F” insert “and polymerizing substances”.

Chapter 7.3

7.3.1.1 (b) Replace “with the code(s)” by “by the code”.

7.3.2.1 In the second sentence, replace “codes BK1 and BK2” by “codes BK1, BK2 and BK3”. After the description of the meaning of BK1 and BK2, insert:

“BK3: Carriage in flexible bulk containers is permitted”.

Insert the following new sub-section:

“7.3.2.10 Use of flexible bulk containers

7.3.2.10.1 Before a flexible bulk container is filled it shall be visually examined to ensure it is structurally serviceable, its textile slings, load-bearing structure straps, body fabric, lock device parts including metal and textile parts are free from protrusions or damage and that inner liners are free from rips, tears or any damage.

7.3.2.10.2 For flexible bulk containers, the period of use permitted for the carriage of dangerous goods shall be two years from the date of manufacture of the flexible bulk container.

7.3.2.10.3 A venting device shall be fitted if a dangerous accumulation of gases may develop within the flexible bulk container. The vent shall be so designed that the penetration of foreign substances or ingress of water is prevented under normal conditions of carriage.

7.3.2.10.4 Flexible bulk containers shall be filled in such a way that when loaded the ratio of height to width does not exceed 1.1. The maximum gross mass of the flexible bulk containers shall not exceed 14 tonnes.”.

7.3.3.2.3, AP4 Replace “loading and unloading” by “filling and discharging”.

Chapter 7.4

7.4.1 In the third sentence, replace “section 9.7.2” by “9.7”.

7.4.2 In the introductory text, delete “, OX”. Delete the third indent. Amend the fourth indent to read as follows:

“- Where an AT vehicle is prescribed, AT and FL vehicles may be used.”.

Chapter 7.5

7.5.1 Delete the Note after the heading.

7.5.1.1 Replace “large container(s)” by “container(s)”. Add “MEGC(s),” after “bulk container(s)”.

7.5.1.2 (a) and (b) become indents.

7.5.1.2 In the second indent, replace “large container(s)” by “container(s)”. Add “MEGC(s),” after “bulk container(s)”. In the last paragraph, replace “large container” by “container” and add “a MEGC,” after “bulk container”.

7.5.1.5 Replace “markings” by “marks”.

7.5.2.1 Current Note becomes Note 1. Add a new Note 2 to read as follows:

NOTE 2: *For packages containing substances or articles only of Class 1 and bearing a label conforming to models Nos. 1, 1.4, 1.5 or 1.6, irrespective of any other danger labels required for these packages, mixed loading shall be permitted in accordance with 7.5.2.2. The Table in 7.5.2.1 shall only apply when such packages are loaded together with packages containing substances or articles of other classes.”.*

7.5.2.1 In table note d, insert the phrase “, ammonium nitrate emulsion or suspension or gel (UN No. 3375)” after “(UN Nos. 1942 and 2067)”.

7.5.5.3 After “or F” insert “and of polymerizing substances of Class 4.1”.

7.5.7.4 Replace “unloading” by “removal”.

Insert a new sub-section 7.5.7.6 to read as follows:

7.5.7.6 Loading of flexible bulk containers

7.5.7.6.1 Flexible bulk containers shall be carried within a vehicle or container with rigid sides and ends that extend at least two-thirds of the height of the flexible bulk container. The vehicles used for carriage shall be equipped with a vehicle stability function approved in accordance with ECE Regulation No. 13¹.

NOTE: *When loading flexible bulk containers in a vehicle or container particular attention shall be paid to the guidance on the handling and stowage of dangerous goods referred to in 7.5.7.1 and to the IMO/ILO/UNECE Guidelines for Packing Cargo Transport Units (CTUs).*

7.5.7.6.2 Flexible bulk containers shall be secured by suitable means capable of restraining them in the vehicle or container in a manner that will prevent any movement during carriage which would change the position of the flexible bulk container or cause it to be damaged. Movement of the flexible bulk containers may also be prevented by filling any voids by the use of dunnage or by blocking and bracing. Where restraints such as banding or straps are used, these shall not be over-tightened to cause damage or deformation to the flexible bulk containers.

7.5.7.6.3 Flexible bulk containers shall not be stacked.”.

Footnote 1 reads as follows: “¹ ECE Regulation No. 13 (Uniform provisions concerning the approval of vehicles of categories M, N and O with regards to braking).”.

7.5.11, CV22 After “of flammable solids” insert “, of polymerizing substances”.

7.5.11, CV36 At the end, add the following sentence: “For UN Nos. 2211 and 3314 this mark is not required when the vehicle or container is already marked according to special provision 965 of the IMDG Code².”.

Footnote 2 reads as follows: ² *Warning mark including the words “CAUTION – MAY CONTAIN FLAMMABLE VAPOUR” with lettering not less than 25 mm high, affixed at each access point in a location where it will be easily seen by persons prior to opening or entering the vehicle or container.”.*

7.5.11, CV37 Replace the two first sentences by: “Before loading, these by-products shall be cooled to ambient temperature, unless they have been calcined to remove moisture. Vehicles and containers containing bulk loads shall be adequately ventilated and protected against ingress of water throughout the journey. ”.

Chapter 8.1

8.1.4.4 Replace “and a marking” by “and a mark”.

8.1.5.3 In the first indent, replace “on board the vehicle” by “on board the transport unit”.

Chapter 8.3

8.3.8 Replace “paragraph 9.2.2.6.3” by “sub-section 9.2.2.6”.

Chapter 8.6

8.6.3.3 and 8.6.4 Delete footnote 1.

Chapter 9.1

9.1.1.2 In the definition of “FL vehicle”, replace “EN 590:2009 + A1:2010” by “EN 590:2013 + AC:2014” (twice).

9.1.1.2 In the definition of “FL vehicle”, at the end of subparagraph (c), after “;” insert “or”. Insert a new subparagraph (d) to read as follows:

“(d) A vehicle intended for the carriage of hydrogen peroxide, stabilized or hydrogen peroxide, aqueous solution stabilized with more than 60% hydrogen peroxide (Class 5.1, UN No. 2015) in fixed tanks or demountable tanks with a capacity exceeding 1 m³ or in tank-containers or portable tanks with an individual capacity exceeding 3 m³.”.

9.1.1.2 Delete the definition of “OX vehicle”.

9.1.1.2 In the definition of “AT vehicle”, amend the beginning of (a) to read as follows: “A vehicle, other than EX/III or FL vehicle or than a MEMU, intended...”. Remainder unchanged.

9.1.1.2 In the definition of “ADR approval”, delete “OX,”.

9.1.2 In the heading and Note, replace “EX/II, EX/III, FL, OX and AT vehicles and MEMUs” by “EX/II, EX/III, FL and AT vehicles and MEMUs”.

9.1.2.1, 9.1.2.3 and 9.1.3.1 In the first sentence, replace “EX/II, EX/III, FL, OX and AT vehicles and MEMUs” by “EX/II, EX/III, FL and AT vehicles and MEMUs”.

9.1.2.2 Not applicable to the English text.

9.1.3.1 After “(certificate of ADR approval)”, add a reference to footnote 4. Footnote 4 reads as follows: ⁴ *Guidelines for completing the certificate of approval may be*

consulted on the website of the secretariat of the United Nations Economic Commission for Europe (<http://www.unece.org/trans/danger/danger.htm>).”.

9.1.3.5 In the model for the certificate of approval, under item 7, delete “OX”.

Chapter 9.2

9.2.1.1 In the first and second paragraph, delete “, OX”.

9.2.1.1 Replace the existing table by the following:

TECHNICAL SPECIFICATIONS		VEHICLES				COMMENTS
		EX/ II	EX/ III	AT	FL	
9.2.2	ELECTRICAL EQUIPMENT					
9.2.2.1	General provisions	X	X	X	X	
9.2.2.2.1	Cables	X	X	X	X	
9.2.2.2.2	Additional protection	X ^a	X	X ^b	X	^a Applicable to vehicles with a maximum mass exceeding 3.5 tonnes first registered (or which entered into service if registration is not mandatory) after 31 March 2018. ^b Applicable for vehicles first registered (or which entered into service if registration is not mandatory) after 31 March 2018..
9.2.2.3	Fuses and circuit breakers	X ^b	X	X	X	^b Applicable to vehicles first registered (or which entered into service if registration is not mandatory) after 31 March 2018.
9.2.2.4	Batteries	X	X	X	X	
9.2.2.5	Lighting	X	X	X	X	
9.2.2.6	Electrical connections	X ^c	X	X ^b	X	^b Applicable to vehicles first registered (or which entered into service if registration is not mandatory) after 31 March 2018. ^c Applicable to motor vehicles intended to draw trailers with a maximum mass exceeding 3.5 tonnes and trailers with a maximum mass of exceeding 3.5 tonnes first registered (or which entered into service if registration is not mandatory) after 31 March 2018.
9.2.2.7	Voltage	X	X			
9.2.2.8	Battery master switch		X		X	
9.2.2.9	Permanently energized circuits					
9.2.2.9.1					X	
9.2.2.9.2			X			
9.2.3	BRAKING EQUIPMENT					
9.2.3.1	General provisions	X	X	X	X	
	Anti-lock braking system	X ^e	X ^{d,e}	X ^{d,e}	X ^{d,e}	^d Applicable to motor vehicles (tractors and rigid vehicles) with a maximum mass exceeding 16 tonnes and motor vehicles authorized to tow trailers (i.e. full-trailers, semi-trailers and centre axle-trailers) with a maximum mass exceeding 10

						tonnes. Motor vehicles shall be equipped with a category 1 anti-lock braking system. Applicable to trailers (i.e. full-trailers, semi-trailers and centre axle-trailers) with a maximum mass exceeding 10 tonnes. Trailers shall be equipped with a category A anti-lock braking system. ^e Applicable to all motor vehicles and applicable to trailers with a maximum mass exceeding 3.5 tonnes, first registered (or which entered into service if registration is not mandatory) after 31 March 2018.
	Endurance braking system	X ^f	X ^g	X ^g	X ^g	^f Applicable to motor vehicles with a maximum mass exceeding 16 tonnes or authorized to tow a trailer with a maximum mass exceeding 10 tonnes first registered after 31 March 2018. The endurance braking system shall be of type IIA. ^g Applicable to motor vehicles with a maximum mass exceeding 16 tonnes or authorized to tow a trailer with a maximum mass exceeding 10 tonnes. The endurance braking system shall be of type IIA.
9.2.4	PREVENTION OF FIRE RISKS					
9.2.4.3	Fuel tanks	X	X		X	
9.2.4.4	Engine	X	X		X	
9.2.4.5	Exhaust system	X	X		X	
9.2.4.6	Vehicle endurance braking	X ^f	X	X	X	^f Applicable to motor vehicles with a maximum mass exceeding 16 tonnes or authorized to tow a trailer with a maximum mass exceeding 10 tonnes first registered after 31 March 2018. The endurance braking system shall be of type IIA.
9.2.4.7	Combustion heaters					
9.2.4.7.1 9.2.4.7.2 9.2.4.7.5		X ^h	X ^h	X ^h	X ^h	^h Applicable to motor vehicles equipped after 30 June 1999. Mandatory compliance by 1 January 2010 for vehicles equipped before 1 July 1999. If the date of equipping is not available the date of first registration of the vehicle shall be used instead.
9.2.4.7.3 9.2.4.7.4					X ^h	^h Applicable to motor vehicles equipped after 30 June 1999. Mandatory compliance by 1 January 2010 for vehicles equipped before 1 July 1999. If the date of equipping is not available the date of first registration of the vehicle shall be used instead.
9.2.4.7.6		X	X			
9.2.5	SPEED LIMITING DEVICES	X ⁱ	X ⁱ	X ⁱ	X ⁱ	ⁱ Applicable to motor vehicles with a maximum mass exceeding 12 tonnes first registered after 31 December 1987, and all motor vehicles with a maximum mass exceeding 3.5 tonnes but not more than 12 tonnes registered after 31 December 2007.
9.2.6	COUPLING DEVICES	X	X	X ^j	X ^j	^j Applicable to coupling devices of motor vehicles

	OF MOTOR VEHICLES AND TRAILERS					and trailers and motor vehicles first registered (or which entered into service if registration is not mandatory) after 31 March 2018.
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Amend 9.2.2 to read:

“9.2.2 Electrical equipment

9.2.2.1 General provisions

The installation shall be so designed, constructed and protected that it cannot provoke any unintended ignition or short-circuit under normal conditions of use of vehicles.

The electrical installation as a whole shall meet the provisions of 9.2.2.2 to 9.2.2.9 in accordance with the table of 9.2.1.

9.2.2.2 Wiring

9.2.2.2.1 *Cables*

No cable in an electrical circuit shall carry a current in excess of that for which the cable is designed. Conductors shall be adequately insulated.

The cables shall be suitable for the conditions in the area of the vehicle, such as temperature range and fluid compatibility conditions as given in ISO 16750-4:2010 and ISO 16750-5:2010, they are intended to be used.

The cables shall be in conformity with standard ISO 6722-1:2011 + Cor 01:2012 or ISO 6722-2:2013.

Cables shall be securely fastened and positioned to be protected against mechanical and thermal stresses.

9.2.2.2.2 *Additional protection*

Cables located to the rear of the driver's cab and on trailers shall be additionally protected to minimize any unintended ignition or short-circuit in the event of an impact or deformation.

The additional protection shall be suitable for the conditions during normal use of the vehicle.

The additional protection is complied with if multicore cables in conformity with ISO 14572:2011 are used or one of the examples in figures 9.2.2.2.2.1 to 9.2.2.2.2.4 below or another configuration that offers equally effective protection.

[Insert at this location existing Figures in 9.2.2.6 renumbered respectively 9.2.2.2.2.1 to 9.2.2.2.2.4.]

Cables of wheel speed sensors do not need additional protection.

EX/II vehicles being one stage built panel vans where the wiring behind the driver's cab is protected by the body are deemed to comply with this requirement.

9.2.2.3 Fuses and circuit breakers

All circuits shall be protected by fuses or automatic circuit breakers, except for the following:

- from the starter battery to the cold start system;
- from the starter battery to the alternator;
- from the alternator to the fuse or circuit breaker box;
- from the starter battery to the starter motor;

- from the starter battery to the power control housing of the endurance braking system (see 9.2.3.1.2), if this system is electrical or electromagnetic;
- from the starter battery to the electrical lifting mechanism for lifting the bogie axle.

The above unprotected circuits shall be as short as possible.

9.2.2.4 Batteries

Battery terminals shall be electrically insulated or the battery shall be covered by an insulating cover.

Batteries which may develop ignitable gas and are not located under the engine bonnet, shall be fitted in a vented box.

9.2.2.5 Lighting

Light sources with a screw cap shall not be used.

9.2.2.6 Electrical connections between motor vehicles and trailers

9.2.2.6.1 Electrical connections shall be designed to prevent:

- ingress of moisture and dirt; the connected parts shall have a protection degree of at least IP 54 in accordance with IEC 60529,
- accidental disconnection; connectors shall fulfil the requirements given in clause 5.6 of ISO 4091:2003.

9.2.2.6.2 Requirements of 9.2.2.6.1 are deemed to be met:

- for connectors standardized for specific purposes according to ISO 12098:2004², ISO 7638:2003¹, EN 15207:2014¹ or ISO 25981:2008¹
- where the electrical connections are part of an automatic coupling system (see ECE Regulation No.55³).

9.2.2.6.3 Electrical connections for other purposes concerning the proper functioning of the vehicles or their equipment may be used provided they comply with the requirements of 9.2.2.6.1.

9.2.2.7 Voltage

The nominal voltage of the electrical system shall not exceed 25V A.C. or 60V D.C.

Higher voltages are allowed in galvanically isolated parts of the electrical system provided those parts are not located within a perimeter of at least 0.5 metres from the outside of the load compartment or tank.

Additionally systems working on a voltage higher than 1000V A.C. or 1500V D.C. shall be integrated in an enclosed housing.

If Xenon lights are used only those having integrated starters are allowed.

9.2.2.8 Battery master switch

9.2.2.8.1 A switch for breaking the electrical circuits shall be placed as close to the battery as practicable. If a single pole switch is used it shall be placed in the supply lead and not in the earth lead.

² ISO 4009, referred to in this standard, need not be applied.

³ ECE Regulation No. 55 (Uniform provisions concerning the approval of mechanical coupling components of combinations of vehicles).

9.2.2.8.2 A control device to facilitate the disconnecting and reconnecting functions of the switch shall be installed in the driver's cab. It shall be readily accessible to the driver and be distinctively marked. It shall be protected against inadvertent operation by either adding a protective cover, by using a dual movement control device or by other suitable means. Additional control devices may be installed provided they are distinctively marked and protected against inadvertent operation. If the control device(s) are electrically operated, the circuits of the control device(s) are subject to the requirements of 9.2.2.9.

9.2.2.8.3 The switch shall break the circuits within 10 seconds after activation of the control device.

9.2.2.8.4 The switch shall have a casing with protection degree IP 65 in accordance with IEC Standard 60529.

9.2.2.8.5 The cable connections on the switch shall have protection degree IP 54 in accordance with IEC 60529. However, this does not apply if these connections are contained in a housing which may be the battery box. In this case it is sufficient to insulate the connections against short circuits, for example with a rubber cap.

9.2.2.9 Permanently energized circuits

9.2.2.9.1 (a) Those parts of the electrical installation including the leads which shall remain energized when the battery master switch is open, shall be suitable for use in hazardous areas. Such equipment shall meet the general requirements of IEC 60079, parts 0 and 14⁴ and the additional requirements applicable from IEC 60079, parts 1, 2, 5, 6, 7, 11, 15 or 18;

(b) For the application of IEC 60079 part 14¹, the following classification shall be used:

Permanently energized electrical equipment including the leads which is not subject to 9.2.2.4 and 9.2.2.8 shall meet the requirements for Zone 1 for electrical equipment in general or meet the requirements for Zone 2 for electrical equipment situated in the driver's cab. The requirements for explosion group IIC, temperature class T6 shall be met.

However, for permanently energized electrical equipment installed in an environment where the temperature caused by non-electrical equipment situated in that environment exceeds the T6 temperature limit, the temperature classification of the permanently energized electrical equipment shall be at least that of the T4 temperature class.

(c) The supply leads for permanently energised equipment shall either comply with the provisions of IEC 60079, part 7 ("Increased safety") and be protected by a fuse or automatic circuit breaker placed as close to the source of power as practicable or, in the case of "intrinsically safe equipment", they shall be protected by a safety barrier placed as close to the source of power as practicable.

9.2.2.9.2 Bypass connections to the battery master switch for electrical equipment which must remain energized when the battery master switch is open shall be protected against overheating by suitable means, such as a fuse, a circuit breaker or a safety barrier (current limiter)."

9.2.3.1.1 and 9.2.3.1.2 Renumber footnote 3 as 4.

⁴ The requirements of IEC 60079 part 14 do not take precedence over the requirement of this Part.

9.2.3.1.2 Insert “EX/II,” before “EX/III”. Delete “, OX”.

9.2.4.2 Delete and insert “(Deleted)”.

9.2.4.3 Amend to read as follows:

“9.2.4.3 Fuel tanks and cylinders

The fuel tanks and cylinders supplying the engine of the vehicle shall meet the following requirements:

(a) In the event of any leakage under normal conditions of carriage, the liquid fuel or the liquid phase of a gaseous fuel shall drain to the ground and not come into contact with the load or hot parts of the vehicle;

(b) Fuel tanks for liquid fuels shall meet the requirements of ECE Regulation No. 34⁵; fuel tanks containing petrol shall be equipped with an effective flame trap at the filler opening or with a closure enabling the opening to be kept hermetically sealed. Fuel tanks and cylinders for LNG and for CNG respectively shall meet the relevant requirements of ECE Regulation No. 110⁶. Fuel tanks for LPG shall meet the relevant requirements of ECE Regulation No. 67⁷.

(c) The discharge opening(s) of pressure relief devices and/or pressure relief valves of fuel tanks containing gaseous fuels shall be directed away from air intakes, fuel tanks, the load or hot parts of the vehicle and shall not impinge on enclosed areas, other vehicles, exterior-mounted systems with air intake (i.e. air-conditioning systems), engine intakes, or engine exhaust. Pipes of the fuel system shall not be fixed on the shell containing the load.”.

9.2.4.4 Amend to read as follows:

“9.2.4.4 The engine propelling the vehicle shall be so equipped and situated to avoid any danger to the load through heating or ignition. The use of CNG or LNG as fuel shall be permitted only if the specific components for CNG and LNG are approved according to ECE Regulation No. 110⁶ and meet the provisions of 9.2.2. The installation on the vehicle shall meet the technical requirements of 9.2.2 and ECE Regulation No. 110⁶. The use of LPG as fuel shall be permitted only if the specific components for LPG are approved according to ECE Regulation No. 67⁷ and meet the provisions of 9.2.2. The installation on the vehicle shall meet the technical requirements of 9.2.2 and ECE Regulation No. 67⁷. In the case of EX/II and EX/III vehicles the engine shall be of compression-ignition construction using only liquid fuels with a flashpoint above 55 °C. Gases shall not be used.”.

Footnotes 5, 6 and 7 should read as follows:

⁵ ECE Regulation No. 34 (Uniform provisions concerning the approval of vehicles with regard to the prevention of fire risks)

⁶ ECE Regulation No. 110 (Uniform provisions concerning the approval of:

I. Specific components of motor vehicles using compressed natural gas (CNG) and/or liquefied natural gas (LNG) in their propulsion systems;

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).

⁷ ECE Regulation No. 67 (Uniform provisions concerning the approval of:

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)".

9.2.4.7.1 Renumber footnote 4 as 8.

9.2.5 Renumber footnote 5 as 9.

9.2.6 Amend to read as follows:

“9.2.6 Coupling devices of motor vehicles and trailers

Coupling devices of motor vehicles and trailers shall comply with the technical requirements of ECE Regulation No. 55² as amended, in accordance with the dates of application specified therein.”.

Insert the following new section 9.2.7:

“9.2.7 Prevention of other risks caused by fuels

9.2.7.1 Fuel systems for engines fuelled by LNG shall be so equipped and situated to avoid any danger to the load due to the gas being refrigerated.”.

Chapter 9.3

9.3.7 Amend to read as follows:

“9.3.7 Electrical equipment

9.3.7.1 The electrical installation shall meet the relevant requirements of 9.2.2.1, 9.2.2.2 9.2.2.3, 9.2.2.4, 9.2.2.5, 9.2.2.6, 9.2.2.7, 9.2.2.8 and 9.2.2.9.2.

9.3.7.2 The electrical installation in the load compartment shall be dust-protected at least IP 54 according to IEC 60529 or equivalent. In the case of carriage of items and articles of compatibility group J, protection to at least IP 65 according to IEC 60529 or equivalent shall be provided.

9.3.7.3 No wiring shall be positioned inside the load compartment. Electrical equipment accessible from the inside of the load compartment shall be sufficiently protected from mechanical impact from the inside.”.

Chapter 9.7

9.7 In the title of the chapter, delete “, OX”.

9.7.3 Before “6.8.2.1.15” insert “6.8.2.1.13”.

9.7.8.1 Amend the first sentence to read as follows: “The electrical installation on FL vehicles shall meet the relevant requirements of 9.2.2.1, 9.2.2.2, 9.2.2.4, 9.2.2.5, 9.2.2.6, 9.2.2.8 and 9.2.2.9.1.”.
