



**Economic and Social
Council**

Distr.
GENERAL

TRANS/WP.15/168
4 March 2002

ENGLISH
Original: ENGLISH AND FRENCH

ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

Working Party on the Transport of Dangerous Goods

DRAFT AMENDMENTS TO ANNEXES A AND B OF ADR

Note by the secretariat

This document contains the list of draft amendments to annexes A and B of ADR adopted by the Working Party at its seventieth and seventy-first sessions.
(Expected date of entry into force: 1st January 2003) (See TRANS/WP.15/167, para. 92)

PART 1

Chapter 1.1

- 1.1.3.1 (a) Amend to read as follows:
"(a) the carriage of dangerous goods by private individuals where the goods in question are packaged for retail sale and are intended for their personal or domestic use or for their leisure or sporting activities provided that measures have been taken to prevent any leakage of contents in normal conditions of carriage. Dangerous goods in IBCs, large packagings or tanks are not considered to be packaged for retail sale;"
- 1.1.3.1 (b) Amend to read as follows:
"(b) the carriage of machinery or equipment not specified in this Annex and which happen to contain dangerous goods in their internal or operational equipment, provided that measures have been taken to prevent any leakage of contents in normal conditions of carriage;"
- 1.1.3.1 (c) Insert the following second and third sentences:
"Measures shall be taken to prevent any leakage of contents in normal conditions of carriage. These exemptions do not apply to Class 7."
- 1.1.3.6.3 In the table:
For transport category 1, under Class 2, add: "aerosols: groups C, CO, FC, T, TF, TC, TO, TFC and TOC".
For transport category 2, under Class 2, add "aerosols: group F".
For transport category 3, under Class 2, add: "aerosols: groups A and O".

In the explanations at the end of the table, replace "gases dissolved under pressure" with "dissolved gases".
- 1.1.4.2 The existing text under 1.1.4.2 (except the Note) becomes new 1.1.4.2.1.
- 1.1.4.2.2 Add a new paragraph before the Note, as follows:
"1.1.4.2.2 For carriage in a transport chain including maritime or air carriage, the information required under 5.4.1 and 5.4.2 and under any special provision of Chapter 3.3 may be substituted by the transport document and information required by the IMDG Code or the ICAO Technical Instructions respectively."

Chapter 1.2

- 1.2.1 "*Aerosol*" and "*Aerosol dispenser*": Replace these definitions with the following one:
"*Aerosol or aerosol dispenser*" means any non-refillable receptacle meeting the requirements of 6.2.2, made of metal, glass or plastics and containing a gas, compressed, liquefied or dissolved, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state;"
- "*Biological/technical name*", delete the definition.
- "*Bundle of cylinders*": Amend to read:
"*Bundle of cylinders*" means an assembly of cylinders that are fastened together and which are interconnected by a manifold and carried as a unit. The total water capacity shall not exceed 3000 litres except that bundles intended for the carriage of toxic gases of Class 2 (groups starting with letter T according to 2.2.2.1.3) shall be limited to 1000 litres water capacity;"

"*Cryogenic receptacle*": Add "pressure" before "receptacle " and "water" before "capacity".

"*Cylinder*": Add "water" before "capacity".

"*Manuel of Tests and Criteria*": Insert after " ST/SG/AC.10/11/Rev.3" "as amended by document ST/SG/AC.10/11/Rev.3/Amend.1".

"*Maximum permissible gross mass*": Amend (a) to read:

"(a) (for all categories of IBCs other than flexible IBCs) means the mass of the IBC and any service or structural equipment together with the maximum net mass;"

"*Multiple-element gas containers (MEGCs)*": Add a NOTE to read:

"**NOTE:** For UN certified MEGCs, see Chapter 6.7.".

"*Pressure drum*": Amend to read:

"*Pressure drum*" means a welded transportable pressure receptacle of a water capacity exceeding 150 litres and of not more than 1000 litres, (e.g. cylindrical receptacles equipped with rolling hoops, spheres on skids);".

"*Pressurized gas cartridge*": Amend to read:

"*Pressurized gas cartridge*", see "*Aerosol or aerosol dispenser*";

"*Receptacle*": Amend the end to read: "... This definition does not apply to shells. See also "*Cryogenic receptacle*", "*Inner receptacle*", "*Pressure receptacle*", "*Rigid inner receptacle*" and "*Gas cartridge*";". Delete the Note.

"*Salvage packaging*": Delete "conforming to the applicable requirements of Chapter 6.1";

"*Technical/biological name*" replace the definition with:

"*Technical name*" means a recognized chemical name, if relevant a biological name, or other name currently used in scientific and technical handbooks, journals and texts (see 3.1.2.8.1.1);"

"*Test pressure*": Amend the beginning of the definition to read:

"*Test pressure*" means the required pressure applied during a pressure test for initial or periodic inspection". The existing text in brackets and the note remain unchanged.

"*Tube*": Add "water" before "capacity" and replace "5 000 litres" with "3 000 litres".

"*UN Model Regulations*", replace "eleventh" with "twelfth" and "ST/SG/AC.10/1/Rev.11" with "ST/SG/AC.10/1/Rev.12".

Insert the following definitions:

"*Critical temperature*" means the temperature above which the substance cannot exist in the liquid state;

"*Filling ratio*" means the ratio of the mass of gas to the mass of water at 15 °C that would fill completely a pressure receptacle fitted ready for use;

"*Inspection body*" means an independent inspection and testing body approved by the competent authority;

"*Pressure receptacle*" means a collective term that includes cylinders, tubes, pressure drums, closed cryogenic receptacles and bundles of cylinders;

"Settled pressure" means the pressure of the contents of a pressure receptacle in thermal and diffusive equilibrium;

"Working pressure" means the settled pressure of a compressed gas at a reference temperature of 15 °C in a full pressure receptacle;

NOTE: For tanks, see *"Maximum working pressure"*.

Insert the following definitions immediately under the definition for Intermediate Bulk Container:

"Remanufactured IBC" means a metal, rigid plastics or composite IBC that:

- (a) is produced as a UN type from a non-UN type; or
- (b) is converted from one UN design type to another UN design type.

Remanufactured IBCs are subject to the same requirements of ADR that apply to new IBCs of the same type (see also design type definition in 6.5.4.1.1);

"Repaired IBC" means a metal, rigid plastics or composite IBC that, as a result of impact or for any other cause (e.g. corrosion, embrittlement or other evidence of reduced strength as compared to the design type) is restored so as to conform to the design type and to be able to withstand the design type tests. For the purposes of ADR, the replacement of the rigid inner receptacle of a composite IBC with a receptacle conforming to the original manufacturer's specification is considered repair. However, routine maintenance of IBCs is not considered repair. The bodies of rigid plastics IBCs and the inner receptacles of composite IBCs are not repairable;

"Routine maintenance of IBCs" means the routine performance on metal, rigid plastics or composite IBCs of operations such as:

- (a) Cleaning;
- (b) Removal and reinstallation or replacement of body closures (including associated gaskets), or of service equipment, conforming to the original manufacturer's specifications, provided that the leaktightness of the IBC is verified; or
- (c) Restoration of structural equipment not directly performing a dangerous goods containment or discharge pressure retention function so as to conform to the design type (e.g. the straightening of legs or lifting attachments) provided that the containment function of the IBC is not affected;".

Insert entries for *"Remanufactured IBC"*, *"Repaired IBC"* and *"Routine maintenance of IBC"* in alphabetical order with the following reference: ", see *"Intermediate Bulk Container (IBC)"*;".

1.2.2.2 (c) Replace "Gases dissolved under pressure" by "dissolved gases".

Chapter 1.6

1.6.1.1 Replace "31 December 2002" with "30 June 2003" and "30 June 2001" with "31 December 2002".

- 1.6.2.3 Add a new paragraph to read as follows:
"Receptacles intended for the carriage of Class 2 substances constructed before 1 January 2003, may continue to bear, after 1 January 2003, the markings conforming to the requirements applicable until 31 December 2002."
- 1.6.3.8 and
1.6.4.5 At the end of the second paragraph, replace "the date following the next periodic test" with "the next periodic test following the adaptation."
- 1.6.3.19 Renumber current paragraph on FRP tanks as 1.6.3.20 and insert new 1.6.3.19 as follows:
"1.6.3.19 Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2003 in accordance with the requirements in force up to 31 December 2002 but which do not, however, conform to the requirements of 6.8.2.1.7 and special provision TE15 of 6.8.4 (b) applicable as from 1 January 2003 may still be used."
- 1.6.4.11 Becomes "(Reserved)".
- 1.6.4.13 Add the following new paragraph:
"1.6.4.13 Tank-containers constructed before 1 July 2003 in accordance with the requirements in force up to 31 December 2002 but which do not, however, conform to the requirements of 6.8.2.1.7 and special provision TE15 of 6.8.4 (b) applicable as from 1 January 2003 may still be used."
- 1.6.5.4 Replace "30 June 2001" with "31 December 2002" and "31 December 2002" with "30 June 2003".
- 1.6.5.5 Add a new paragraph to read as follows:
"Vehicles registered or entering into service before 1 January 2003 the electric equipment of which does not comply with the requirements of 9.2.2, 9.3.7 or 9.7.8 but complies with the requirements applicable until 30 June 2001 may still be used."
- 1.6.6.4 Delete.

Chapter 1.8

- 1.8.3 Delete the Note under the title.
- 1.8.5.1 Amend to read as follows
"..., the carrier shall ascertain that a report conforming to the model prescribed in 1.8.5.4 is made to the competent authority of the Contracting Party concerned."
- 1.8.5.3 Add the following new paragraph:
"An occurrence subject to report in accordance with 1.8.5.1 has occurred if dangerous goods were released or if there was an imminent risk of loss of product, if personal injury, material or environmental damage occurred, or if the authorities were involved and one or more of the following criteria has/have been met:
- Personal injury means an occurrence in which death or injury directly relating to the dangerous goods carried has occurred, and where the injury
- (a) requires intensive medical treatment,
 - (b) requires a stay in hospital of at least one day, or
 - (c) results in the inability to work for at least three consecutive days.

Loss of product means the release of dangerous goods

- (a) of transport category 0 or 1 in quantities of 50 kg / 50 l or more,
- (b) of transport category 2 in quantities of 333 kg / 333 l or more, or
- (c) of transport category 3 or 4 in quantities of 1000 kg / 1000 l or more.

The loss of product criterion also applies if there was an imminent risk of loss of product in the above-mentioned quantities. As a rule, this has to be assumed if, owing to structural damage, the means of containment is no longer suitable for further carriage or if, for any other reason, a sufficient level of safety is no longer ensured (e.g. owing to distortion of tanks or containers, overturning of a tank or fire in the immediate vicinity).

If dangerous goods of Class 6.2 are involved, the obligation to report applies without quantity limitation.

In occurrences involving Class 7 material, the criteria for loss of product are:

- (a) Any release of radioactive material from the packages;
- (b) Exposure leading to a breach of the limits set out in the regulations for protection of workers and members of the public against ionizing radiation (Schedule II of IAEA Safety Series No. 115 – "International Basic Safety Standards for Protection Against Ionizing Radiation and for Safety of Radiation Sources"); or
- (c) Where there is reason to believe that there has been a significant degradation in any package safety function (containment, shielding, thermal protection or criticality) that may have rendered the package unsuitable for continued carriage without additional safety measures.

NOTE: See the requirements of 7.5.11 CV33 (6) for undeliverable consignments.

Material damage or environmental damage means the release of dangerous goods, irrespective of the quantity, where the estimated amount of damage exceeds 50,000 Euros. Damage to any directly involved means of carriage containing dangerous goods and to the modal infrastructure shall not be taken into account for this purpose.

Involvement of authorities means the direct involvement of the authorities or emergency services during the occurrence involving dangerous goods and the evacuation of persons or closure of public traffic routes (roads/railways) for at least three hours owing to the danger posed by the dangerous goods.

If necessary, the competent authority may request further relevant information."

1.8.5.4

Add the following new paragraph:

"1.8.5.4 Model for report on occurrences during the carriage of dangerous goods

**Report on occurrences during the carriage of dangerous goods
in accordance with RID/ADR section 1.8.5**

Carrier/Railway infrastructure operator:
Address:
Contact name: Telephone:..... Fax:.....

(The competent authority shall remove this cover sheet before forwarding the report)

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6. Dangerous goods involved						
UN Number ⁽¹⁾	Class	Packing Group	Estimated quantity of loss of products (kg or l) ⁽²⁾	Means of containment ⁽³⁾	Means of containment material	Type of failure of means of containment ⁽⁴⁾
⁽¹⁾ For dangerous goods assigned to collective entries to which special provision 274 applies, also the technical name shall be indicated.				⁽²⁾ For Class 7, indicate values according to the criteria in 1.8.5.3.		
⁽³⁾ Indicate the appropriate number 1 Packaging 2 IBC 3 Large packaging 4 Small container 5 Wagon 6 Vehicle 7 Tank-wagon 8 Tank-vehicle 9 Battery-wagon 10 Battery-vehicle 11 Wagon with demountable tanks 12 Demountable tank 13 Large container 14 Tank-container 15 MEGC 16 Portable tank				⁽⁴⁾ Indicate the appropriate number 1 Loss 2 Fire 3 Explosion 4 Structural failure		
7. Cause of occurrence (if clearly known)						
? Technical fault ? Load security ? Operational cause (rail operation) ? Other:						
8. Consequences of occurrence						
<u>Personal injury in connection with the dangerous goods involved:</u> ? Deaths (number:) ? Injured (number:) <u>Loss of product:</u> ? Yes ? No ? Imminent risk of loss of product <u>Material/Environmental damage</u> ? Estimated level of damage ? 50,000 Euros ? Estimated level of damage > 50,000 Euros <u>Involvement of authorities:</u> ? Yes ? Evacuation of persons for a duration of at least three hours caused by the dangerous goods involved ? Closure of public traffic routes for a duration of at least three hours caused by the dangerous goods involved ? No						

If necessary, the competent authority may request further relevant information.

Chapter 1.10 (RESERVED)**PART 2****Chapter 2.1**

2.1.1.3 Amend to read as follows:

"2.1.1.3 For packing purposes, substances other than those of Classes 1, 2, 5.2, 6.2 and 7, and other than self-reactive substances of Class 4.1 are assigned to packing groups in accordance with the degree of danger they present:

Packing group I: Substances presenting high danger;

Packing group II: Substances presenting medium danger; and

Packing group III: Substances presenting low danger.

The packing group(s) to which a substance is assigned is (are) indicated in Table A of Chapter 3.2".

2.1.4.1 In the first sentence of the third paragraph and in the first example the word "sample" shall be in upper case to read as follows:

"... shall be supplemented with the word "SAMPLE" (e.g., FLAMMABLE LIQUID, N.O.S., SAMPLE)".

Chapter 2.2

2.2.1.1.7 Glossary of names :

AIR BAG INFLATORS, PYROTECHNIC or AIR BAG MODULES, PYROTECHNIC or SEAT-BELT PRETENSIONERS, PYROTECHNIC: UN No. 0503, delete "PYROTECHNIC" three times;

FUSE, INSTANTANEOUS, NON-DETONATING: UN No. 0101.

At the end of the first sentence, insert "(quickmatch)".

Delete the last sentence.

2.2.2.1.1 Add a new NOTE to read:

"NOTE 4: *Carbonated beverages are not subject to the provisions of ADR.*"

2.2.2.1.2 Amend to read as follows:

"The substances and articles of Class 2 are subdivided as follows:

1. *Compressed gas:* a gas which when packaged under pressure for carriage is entirely gaseous at -50 °C; this category includes all gases with a critical temperature less than or equal to -50 °C;

2. *Liquefied gas:* a gas which when packaged under pressure for carriage is partially liquid at temperatures above -50 °C. A distinction is made between:

High pressure liquefied gas: a gas with a critical temperature above -50 °C and equal to or below +65 °C; and

Low pressure liquefied gas: a gas with a critical temperature above +65 °C;

3. *Refrigerated liquefied gas:* a gas which when packaged for carriage is made partially liquid because of its low temperature;

4. *Dissolved gas*: a gas which when packaged under pressure for carriage is dissolved in a liquid phase solvent;
5. Aerosol dispensers and receptacles, small, containing gas (gas cartridges);
6. Other articles containing gas under pressure;
7. Non-pressurized gases subject to special requirements (gas samples)."

2.2.2.1.3 In the first line, insert "(except aerosols)" after "articles".

Amend NOTE 2 to read as follows:

NOTE 2: *Receptacles, small containing gas (UN No. 2037) shall be assigned to the groups A to TOC according to the hazard of the contents. For aerosols (UN No. 1950), see 2.2.2.1.6.*"

2.2.2.1.5 In the first line, insert "(except aerosols)" after "articles".

In the paragraphs for "Toxic gases" and "Corrosive gases", under the definitions of "T_i" and "Tc_i" replace "ISO 10298:1995" with "P200 of 4.1.4.1" (four times).

2.2.2.1.6 Add the following new paragraph 2.2.2.1.6.
"2.2.2.1.6 *Aerosols*

Aerosols (UN No. 1950) are assigned to one of the following groups according to their hazardous properties, as follows:

A	asphyxiant;
O	oxidizing;
F	flammable;
T	toxic;
C	corrosive;
CO	corrosive, oxidizing;
FC	flammable, corrosive;
TF	toxic, flammable;
TC	toxic, corrosive;
TO	toxic, oxidizing;
TFC	toxic, flammable, corrosive
TOC	toxic, oxidizing, corrosive.

The classification depends on the nature of the contents of the aerosol dispenser.

NOTE: *Gases, which meet the definition of toxic gases according to 2.2.2.1.5 or of pyrophoric gases according to packing instruction P200 in 4.1.4.1, shall not be used as a propellant in an aerosol dispenser. Aerosols with contents meeting the criteria for packing group I for toxicity or corrosivity shall not be accepted for carriage (see also 2.2.2.2.2).*

The following criteria shall apply:

- (a) Assignment to group A shall apply when the contents do not meet the criteria for any other group according to sub-paragraphs (b) to (f) below;
- (b) Assignment to group O shall apply when the aerosol contains an oxidizing gas according to 2.2.2.1.5;

- (c) Assignment to group F shall apply if the contents include more than 45% by mass, or more than 250 g of flammable components. Flammable components are gases which are flammable in air at normal pressure or substances or preparations in liquid form which have a flash point less than or equal to 100 °C;
- (d) Assignment to group T shall apply when the contents, other than the propellant of aerosol dispensers to be ejected, are classified as class 6.1, packing groups II or III;
- (e) Assignment to group C shall apply when the contents, other than the propellant of aerosol dispensers to be ejected, meet the criteria for Class 8, packing groups II or III;
- (f) When the criteria for more than one group amongst groups O, F, T, and C are met, assignment to groups CO, FC, TF, TC TO, TFC or TOC shall apply, as relevant."

2.2.2.2.2 In the last indent: replace "Gases dissolved under pressure" by "Dissolved gases".

Add:

- "- Aerosols where gases which are toxic according to 2.2.2.1.5 or pyrophoric according to packing instruction P200 in 4.1.4.1 are used as propellants;
- Aerosols with contents meeting the criteria for packing group I for toxicity or corrosivity (see 2.2.61 and 2.2.8);
- Receptacles, small, containing gases which are very toxic (LC₅₀ lower than 200 ppm) or pyrophoric according to packing instruction P200 in 4.1.4.1."

2.2.2.3 In the heading of the fourth table, replace "Gases, dissolved under pressure" with "Dissolved gases".

2.2.41.1.18 Amend the end of the second sentence to read "... 3319, 3344, 3364, 3365, 3366, 3367, 3368, 3369, 3370 and 3376."

2.2.41.4 Add a new Note 1 to read:

"NOTE 1: The classification given in this table is based on the technically pure substance (except where a concentration of less than 100 % is specified). For other concentrations, the substance may be classified differently following the procedures given in Part II of the Manual of Tests and Criteria and in 2.2.41.1.17.

Amend the existing Note to read as follows:

"NOTE 2: The codes "OP1" to "OP8" shown in the "Packing method" column refer to packing methods in packing instruction P520; (see also 4.1.7.1)."

Add the following entries:

SELF-REACTIVE SUBSTANCE	Concentration (%)	Packing method	Control temperature (°C)	Emergency temperature (°C)	UN generic entry	Remarks
2-DIAZO-1-NAPHTHOL SULPHONIC ACID ESTER MIXTURE, TYPE D	< 100	OP7			3226	(9)
2,5-DIETHOXY-4-(4-MORPHOLINYL)-BENZENEDIAZONIUM SULPHATE	100	OP7			3226	
4-(DIMETHYLAMINO)-BENZENEDIAZONIUM TRICHLOROZINCATE (-1)	100	OP8			3228	
2,5-DIBUTOXY-4-(4-MORPHOLINYL)-BENZENEDIAZONIUM, TETRACHLOROZINCATE (2:1)	100	OP8			3228	

In the list of self-reactive substances, under "Self-reactive substance" amend the following entries:

- For "BENZENE-1,3-DISULPHOHYDRAZIDE, as a paste" read "BENZENE-1,3-DISULPHONYL HYDRAZIDE, as a paste";
- For "BENZENE SULPHOHYDRAZIDE" read "BENZENESULPHONYL HYDRAZIDE";
- For "2-DIAZO-1-NAPHTHOL-4-SULPHOCHLORIDE" read "2-DIAZO-1-NAPHTHOL-4-SULPHONYL CHLORIDE";
- For "2-DIAZO-1-NAPHTHOL-5-SULPHOCHLORIDE" read "2-DIAZO-1-NAPHTHOL-5-SULPHONYL CHLORIDE";
- For "DIPHENYLOXIDE-4,4'-DISULPHOHYDRAZIDE" read "DIPHENYLOXIDE-4,4'-DISULPHONYL HYDRAZIDE";

Add the following new remark:

"(9) This entry applies to mixtures of esters of 2-diazo-1-naphthol-4-sulphonic acid and 2-diazo-1-naphthol-5-sulphonic acid which fulfil the criteria of paragraph 20.4.2 (d) of the *Manual of Test and Criteria*."

2.2.43.3

In the list of collective entries, under WF2, add:

"3372 ORGANOMETALLIC COMPOUND, SOLID, WATER-REACTIVE, FLAMMABLE, N.O.S."

2.2.51.2.2

Amend the 13th indent to read:

- "- fertilizers having an ammonium nitrate content (in determining the ammonium nitrate content, all nitrate ions for which a molecular equivalent of ammonium ions is present in the mixture shall be calculated as ammonium nitrate) or a content in combustible substances exceeding the values specified in special provision 307 except under the conditions applicable to Class 1;"

Delete the 14th indent.

2.2.51.3 Under classification code O2, delete UN No. 2072 and the relevant note.

2.2.52.4 In the note under the title, under (c), replace "4.2.4.2" with "4.2.5.2".

In the list of organic peroxides, for each organic peroxide which has, in the column "Number (Generic entry)", the word "exempt", add in the last column "29)" as a reference to a new remark to be added at the end of the table which will read as follows:

"29) *Not subject to the requirements of ADR for Class 5.2.*".

Add the following entries:

ORGANIC PEROXIDE	Conc. (%)	Diluent type A (%)	Diluent type B (%) 1)	Inert Solid (%)	Water (%)	Packing Method	Control. Temp. (°C)	Emerg. Temp. (°C)	Number (Generic entry)	Subsidiary risks and Remarks
DIISOPROPYL PEROXYDI-CARBONATE	= 28	= 72				OP7	- 15	- 5	3115	
PEROXY-ACETIC ACID, DISTILLED, TYPE F, stabilized	= 41					M	+ 30	+ 35	3119	13) 30)

Add a new remark at the end of the table to read as follows:

"30) *Formulation derived from distillation of peroxyacetic acid originating from peroxyacetic acid in concentration of not more than 41% with water, total active oxygen (Peroxyacetic acid+H₂O₂) ? 9.5%, which fulfils the criteria of the Manual of Tests and Criteria, paragraph 20.4.3 (f).*".

2.2.61.1.7 In Note a to the table replace "Tear gases" with "Tear gas substances".

2.2.61.1.8 In the table, packing group column, add superscript "a" after "III" with a corresponding note to the table to read as follows:

"^a Tear gas substances shall be included in packing group II even if data concerning their toxicity correspond to packing group III criteria."

2.2.61.3 In the list of collective entries for "Toxic substances with subsidiary risk(s)",

Under TC1, add: "3361 CHLOROSILANES, TOXIC, CORROSIVE, N.O.S."

Under TFC, add: "3362 CHLOROSILANES, TOXIC, CORROSIVE, FLAMMABLE, N.O.S."

2.2.62.1.2 Add at the end: "I4 Diagnostic specimens".

2.2.62.1.6 Replace the existing 2.2.62.1.6 with the following text:

"*Diagnostic specimens* are any human or animal material, including, but not limited to, excreta, secret, blood and its components, tissue and tissue fluids being carried for diagnostic or investigation purposes, but excluding live infected animals.

Diagnostic specimens shall be assigned to UN No. 3373 unless the source patient or animal has or may have a serious human or animal disease which can be readily transmitted from one individual to another, directly or indirectly, and for which effective treatment and

preventive measures are not usually available, in which case they shall be assigned to UN No. 2814 or UN No. 2900.

NOTE 1: *Blood which has been collected for the purpose of blood transfusion or for the preparation of blood products, and blood products and any tissues or organs intended for use in transplants are not subject to the provisions of ADR.*

NOTE 2: *Assignment to UN No. 2814 or UN No. 2900 shall be based on known medical history of the patient or animal, endemic local conditions, symptoms of the patient or animal, or professional judgement concerning individual circumstances of the patient or animal."*

- 2.2.62.1.8 Delete and renumber following paragraphs accordingly.
- 2.2.62.3 In the list of collective entries, add a new collective entry:
"I4 3373 DIAGNOSTIC SPECIMENS"
- 2.2.8.1.1 At the end the first sentence, delete: ", and may also cause other hazards."
- 2.2.8.1.4 Replace the reference to footnote "6" with "(see 2.2.8.1.5)". Insert the text of footnote 6 as a new 2.2.8.1.5 and renumber the following paragraphs and footnotes accordingly.
- 2.2.8.1.8 (Former 2.2.8.1.7) Replace "paragraph 2.2.8.1.5" with "2.2.8.1.6".
- 2.2.9.1.14 Amend the note to read "...UN No. 3166 engine, internal combustion or vehicle, flammable gas powered or vehicle, flammable liquid powered, UN No. 3171...".
- 2.2.9.3 In the list of collective entries, under M11, add:
"3359 FUMIGATED UNIT" and
"3363 DANGEROUS GOODS IN MACHINERY or
3363 DANGEROUS GOODS IN APPARATUS".

PART 3

Chapter 3.1

- 3.1.2 Add the following note under the heading "Proper shipping name":
"NOTE: For proper shipping names used for the carriage of samples, see 2.1.4.1".
- 3.1.2.2 In the last sentence replace "(see 3.1.2.6.1)" with "(see 3.1.2.8.1)".
- 3.1.2.6 and
3.1.2.7 Insert new paragraphs 3.1.2.6 and 3.1.2.7 to read as follows:
"3.1.2.6 Except for self-reactive substances and organic peroxides and unless it is already included in capital letters in the name indicated in Column (2) of Table A of Chapter 3.2, the word "STABILIZED" shall be added as part of the proper shipping name of a substance which without stabilization would be forbidden from carriage in accordance with paragraphs 2.2.X.2 due to it being liable to dangerously react under conditions normally encountered in carriage (e.g.: "TOXIC LIQUID, ORGANIC, N.O.S., STABILIZED").

When temperature control is used to stabilize such substances to prevent the development of any dangerous excess pressure, then:

- (a) For liquids: where the SADT is less than 50 °C, the provisions of 2.2.41.1.17, the special provision V8 of Chapter 7.2, the special provision S4 of Chapter 8.5 and the requirements of Chapter 9.6 shall apply; for carriage in IBCs and tanks, all the provisions applicable to UN No. 3239 apply (see in particular 4.1.7.2, packing instruction IBC520 et 4.2.1.13);
- (b) For gases: the conditions of carriage shall be approved by the competent authority.

3.1.2.7 Hydrates may be carried under the proper shipping name for the anhydrous substance."

Renumber following paragraphs accordingly.

3.1.2.8.1 (Former 3.1.2.6.1) Amend to read as follows:

"3.1.2.8.1 Generic and "not otherwise specified" proper shipping names that are assigned to special provision 274 in Column (6) of Table A in Chapter 3.2 shall be supplemented with the technical or chemical group name of the goods unless a national law or international convention prohibits its disclosure if it is a controlled substance. For explosives of Class 1, the dangerous goods description may be supplemented by additional descriptive text to indicate commercial or military names. Technical and chemical group names shall be entered in brackets immediately following the proper shipping name. An appropriate modifier, such as "contains" or "containing" or other qualifying words such as "mixture", "solution", etc. and the percentage of the technical constituent may also be used. For example: "UN 1993 Flammable liquid, n.o.s. (contains xylene and benzene), 3, II"."

3.1.2.8.1.1 (Former 3.1.2.6.1.1) Amend to read as follows:

"3.1.2.8.1.1 The technical name shall be a recognized chemical name, if relevant a biological name, or other name currently used in scientific and technical handbooks, journals and texts. Trade names shall not be used for this purpose. In the case of pesticides, only ISO common name(s), other name(s) in the World Health Organization (WHO) Recommended Classification of Pesticides by Hazard and Guidelines to Classification, or the name(s) of the active substance(s) may be used."

Chapter 3.2

3.2.1 In the text for Column (9a), under the second bulleted point, insert "or the letters "BB"", after "the letter "B"" (twice).

Table A of Chapter 3.2

In Table A, when the same UN number applies to both the liquid and solid form of a substance, the liquid entry is always to be listed first.

Wherever they appear in Column (6) of Table A, delete special provisions "15", "18", "36", "107", "222", "268", "287", "628", "629", "630" and "631".

Whenever special provision 640 appears in Column (6), replace it by one of the following special provisions "640A" to "640O", as relevant, depending on the properties of the entry, as described below:

640A: For substances of PG I, with a vapour pressure at 50 °C more than 175 kPa;

- 640B: For substances of PG I, with a vapour pressure at 50 °C more than 110 kPa but not more than 175 kPa;
- 640C: For substances of PG II, with a vapour pressure at 50 °C more than 110 kPa but not more than 175 kPa;
- 640D: For substances of PG II, with a vapour pressure at 50 °C not more than 110 kPa;
- 640E: For substances of PG III other than those mentioned under 640F, 640G and 640H;
- 640F: For substances of PG III, viscous, having a flash-point below 23 °C, with a vapour pressure at 50 °C more than 175 kPa;
- 640G: For substances of PG III, viscous, having a flash-point below 23 °C, with a vapour pressure at 50 °C more than 110 kPa but not more than 175 kPa;
- 640H: For substances of PG III, viscous, having a flash-point below 23 °C, with a vapour pressure at 50 °C not more than 110 kPa;
- 640I: For UN No. 1790, entry with more than 85% hydrofluoric acid;
- 640J: For UN No. 1790, entry with more than 60% but not more than 85% hydrofluoric acid;

In column (9a), replace "B11" with "BB2" whenever "IBC02" is assigned in column (8).

In column (13), delete "TE2" whenever it appears.

In column (13), insert "TE15" whenever "L4BH" or "SGAH" are assigned in column (12).

In column (13), insert "TE21" whenever TU14 assigned in the same column.

In column (16), insert "V10" whenever "B1" is assigned in column (9a), except when "V1" is already assigned.

In column (16), insert "V11" whenever "B2" is assigned in column (9a), except when "V1" is already assigned.

In column (9a), delete "B1" and "B2" whenever they appear.

In column (16), insert "V12" whenever "IBC06" or "IBC07" are assigned in column (8).

Add the following three new entries for UN No. 1950:

(1)	(2)	(3a)	(3b)	(5)	(6)	(7)	(8)	(9b)	(15)	(18)	(19)
1950	AEROSOLS, corrosive	2	5C	2.2+ 8	190 625	LQ2	P204	MP9	1	CV9 CV12	
1950	AEROSOLS, corrosive, oxidizing	2	5CO	2.2+ 5.1+ 8	190 625	LQ2	P204	MP9	1	CV9 CV12	
1950	AEROSOLS, flammable, corrosive	2	5FC	2.1+ 8	190 625	LQ2	P204	MP9	1	CV9 CV12	S2

Replace the entry for UN 2030 by the following three entries:

UN No.	Name and description	Class	Classif. Code	Pack. group	Labels	Special prov.	Limited quant.	Packaging			UN Portable tank	
								Packing instructions	Special packing prov.	Mixed packing prov.	Instruc-tions	Special Prov.
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9a)	(9b)	(10)	(11)
2030	HYDRAZINE AQUEOUS SOLUTION, with more than 37% hydrazine by mass	8	CT1	I	8 +6.1	298 530	LQ20	P001		MP8 MP17	T20	TP2 TP13
2030	HYDRAZINE AQUEOUS SOLUTION, with more than 37% hydrazine by mass	8	CT1	II	8 +6.1	530	LQ22	P001 IBC02		MP15	T15	TP2 TP13
2030	HYDRAZINE AQUEOUS SOLUTION, with more than 37% hydrazine by mass	8	CT1	III	8 +6.1	530	LQ19	P001 IBC03 LP01 R001		MP15	T4	TP2

ADR tank		Vehicle for tank carriage	Transport category	Special provisions for carriage				Hazard identification No.	UN No.	Name and description
Tank code	Special Prov.			Packages	Bulk	Loading, unloading and handling	Operation			
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(1)	(2)
4.3	4.3.5, 6.8.4	9.1.1.2	1.1.3.6	7.2.4	7.3.3	7.5.11	8.5	5.3.2.3		3.1.2
L10BH	TE1	AT	1			CV13 CV28		886	2030	HYDRAZINE AQUEOUS SOLUTION, with more than 37% hydrazine by mass
L4BN		AT	2			CV13 CV28		86	2030	HYDRAZINE AQUEOUS SOLUTION, with more than 37% hydrazine by mass
L4BN		AT	3			CV13 CV28		86	2030	HYDRAZINE AQUEOUS SOLUTION, with more than 37% hydrazine by mass

Add the following new entries:

UN No.	Name and description	Class	Classif Code	Pack. group	Labels	Special prov.	Limited quant.	Packaging			UN Portable tank	
								Packing instructions	Special packing prov.	Mixed packing prov.	Instruc-tions	Special prov.
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9a)	(9b)	(10)	(11)
	3.1.2	2.2	2.2	2.1.1.3	5.2.2	3.3	3.4.6	4.1.4	4.1.4	4.1.10	4.2.4.2	4.2.4.3
1153	ETHYLENE GLYCOL DIETHYL ETHER	3	F1	II	3		LQ4	P001 IBC02 R001		MP19	T4	TP1
1372	Fibres, animal or fibres, vegetable burnt, wet or damp	4.2	S2	NOT SUBJECT TO ADR								
1387	Wool waste, wet	4.2	S2	NOT SUBJECT TO ADR								
1856	Rags, oily	4.2	S2	NOT SUBJECT TO ADR								
1857	Textile waste, wet	4.2	S2	NOT SUBJECT TO ADR								
3359	FUMIGATED UNIT	9	M11			302						
3360	Fibres, vegetable, dry	4.1	F1	NOT SUBJECT TO ADR								
3361	CHLOROSILANES, TOXIC, CORROSIVE, N.O.S.	6.1	TC1	II	6.1 +8	274	LQ0	P001 IBC01		MP15	T11	TP2 TP13 TP27
3362	CHLOROSILANES, TOXIC, CORROSIVE, FLAMMABLE, N.O.S.	6.1	TFC	II	6.1 +3 +8	274	LQ0	P001 IBC01		MP15	T11	TP2 TP13 TP27
3363	Dangerous goods in machinery or dangerous goods in apparatus	9	M11	NOT SUBJECT TO ADR [see also 1.1.3.1 (b)]								
3371	2-METHYLBUTANAL	3	F1	II	3		LQ4	P001 IBC02 R001		MP19	T4	TP1
3372	ORGANOMETALLIC COMPOUND, SOLID, WATER-REACTIVE, FLAMMABLE, N.O.S.	4.3	WF2	I	4.3 +4.1	274	LQ0	P403 IBC04		MP2		
3372	ORGANOMETALLIC COMPOUND, SOLID, WATER-REACTIVE, FLAMMABLE, N.O.S.	4.3	WF2	II	4.3 +4.1	274	LQ11	P410 IBC04		MP14		
3372	ORGANOMETALLIC COMPOUND, SOLID, WATER-REACTIVE, FLAMMABLE, N.O.S.	4.3	WF2	III	4.3 +4.1	223 274	LQ12	P410 IBC06		MP14		
3373	DIAGNOSTIC SPECIMENS	6.2	I4				LQ0	P650				

ADR tank		Vehicle for tank carriage	Transport category	Special provisions for carriage				Hazard identification No.	UN No.	Name and description
Tank code	Special prov.			Packages	Bulk	Loading, unloading and handling	Operation			
4.3	4.3.5, 6.8.4	9.1.1.2	1.1.3.6	7.2.4	7.3.3	7.5.11	8.5	5.3.2.3	3.1.2	
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(1)	(2)
LGBF		FL	2				S2 S20	33	1153	ETHYLENE GLYCOL DIETHYL ETHER
NOT SUBJECT TO ADR									1372	Fibres, animal or fibres, vegetable burnt, wet or damp
NOT SUBJECT TO ADR									1387	Wool waste, wet
NOT SUBJECT TO ADR									1856	Rags, oily
NOT SUBJECT TO ADR									1857	Textile waste, wet
			4						3359	FUMIGATED UNIT
NOT SUBJECT TO ADR									3360	Fibres, vegetable, dry
L4BH	TU15 TE1 TE15	AT	2			CV13 CV28	S9 S19	68	3361	CHLOROSILANES, TOXIC, CORROSIVE, N.O.S.
L4BH	TU15 TE1 TE15	FL	2			CV13 CV28	S2 S9 S19	638	3362	CHLOROSILANES, TOXIC, CORROSIVE, FLAMMABLE, N.O.S.
NOT SUBJECT TO ADR [see also 1.1.3.1 (b)]									3363	Dangerous goods in machinery or dangerous goods in apparatus
LGBF		FL	2				S2 S20	33	3371	2-METHYLBUTANAL
			0	V1		CV23			3372	ORGANOMETALLIC COMPOUND, SOLID, WATER-REACTIVE, FLAMMABLE, N.O.S.
			0	V1		CV23			3372	ORGANOMETALLIC COMPOUND, SOLID, WATER-REACTIVE, FLAMMABLE, N.O.S.
			0	V1		CV23			3372	ORGANOMETALLIC COMPOUND, SOLID, WATER-REACTIVE, FLAMMABLE, N.O.S.
									3373	DIAGNOSTIC SPECIMENS

UN No.	Name and description	Class	Classif Code	Pack. group	Labels	Special prov.	Limited quant.	Packaging			UN Portable tank	
								Packing instructions	Special packing prov.	Mixed packing prov.	Instruc-tions	Special prov.
	3.1.2	2.2	2.2	2.1.1.3	5.2.2	3.3	3.4.6	4.1.4	4.1.4	4.1.10	4.2.4.2	4.2.4.3
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9a)	(9b)	(10)	(11)
3374	ACETYLENE, SOLVENT FREE	2	2F		2.1		LQ0	P200		MP9		
3375	AMMONIUM NITRATE EMULSION or SUSPENSION or GEL, intermediate for blasting explosives	5.1	O1	II	5.1	306 309	LQ10	P099 IBC99		MP2		
3376	4-NITROPHENYL HYDRAZINE, with not less than 30% water, by mas	4.1	D	II	4.1	28	LQ0	P406	PP26	MP2		

ADR tank		Vehicle for tank carriage	Transport category	Special provisions for carriage				Hazard identification No.	UN No.	Name and description
Tank code	Special prov.			Packages	Bulk	Loading, unloading and handling	Operation			
4.3	4.3.5, 6.8.4	9.1.1.2	1.1.3.6	7.2.4	7.3.3	7.5.11	8.5	5.3.2.3	3.1.2	
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(1)	(2)
			2	V7		CV9 CV10	S2		3374	ACETYLENE, SOLVENT FREE
			2			CV24	S9 S14		3375	AMMONIUM NITRATE EMULSION or SUSPENSION or GEL, intermediate for blasting explosives
			1	V1			S17		3376	4 - NITROPHENYLHYDRAZINE, with not less than 30% water, by mass

Amend the following entries as follows:

UN 0015 Delete "8" in column (5);

UN 0016 Delete "8" in column (5);

UN 0154 (Class 4.1) Renumber this entry as UN 3364 and move it accordingly to the appropriate place in the table. Add "PP24" in column (9a);

UN 0155 (Class 4.1) Renumber this entry as UN 3365 and move it accordingly to the appropriate place in the table. Add "PP24" in column (9a);

UN 0209 (Class 4.1) Renumber this entry as UN 3366 and move it accordingly to the appropriate place in the table. Add "PP24" in column (9a);

UN 0214 (Class 4.1) Renumber this entry as UN 3367 and move it accordingly to the appropriate place in the table. Add "PP24" in column (9a);

UN 0215 (Class 4.1) Renumber this entry as UN 3368 and move it accordingly to the appropriate place in the table. Add "PP24" in column (9a);

UN 0220 (Class 4.1) Renumber this entry as UN 3370 and move it accordingly to the appropriate place in the table. Add "PP78" in column (9a);

- UN 0223 Delete this entry;
- UN 0234 (Class 4.1) Renumber this entry as UN 3369 and move it accordingly to the appropriate place in the table. Add "PP24" in column (9a);
- UN 0303 Delete "8" in column (5);
- UN 0331 Add "(AGENT, BLASTING, TYPE B)" in column (2);
- UN 0332 Add "(AGENT, BLASTING, TYPE E)" in column (2);
- UN 0333, 0334, 0335, 0336 and 0337 Insert "645" in column (6);
- UN 0503 Delete "PYROTECHNIC" in the name in column (2) (three times) and add "235" in column (6);
- UN 1003 Delete "(M)" in column (12);
- UN 1008 Delete "COMPRESSED" in column (2), replace "1TC" with "2TC" in column (3b) and replace "CxBH(M)" with PxBH(M) in column (12);
- UN 1038 Delete "(M)" in column (12);
- UN 1062 Amend the name in column (2) to read: "METHYL BROMIDE with not more than 2% chloropicrin";
- UN 1073 Delete "(M)" in column (12);
- UN 1177 Amend the name in column (2) to read: "2-ETHYLBUTYL ACETATE";
- UN 1202 (entry with a flash-point not more than 61 °C): Add "640K" in column (6);
(entry complying with standard EN 590:1993 or with a flash-point as specified in EN 590:1993) : Add "640L" in column (6);
(entry with a flash-point more than 61 °C and not more than 100 °C): Add "640M" in column (6);
- UN 1278 Amend the name in column (2) to read: "1-CHLOROPROPANE";
- UN 1350 Replace "641" by "242" in column (6);
- UN 1361 Insert "V13" in column (16);
- UN 1364 Add "B3" in column (9a);
- UN 1365 Add "B3" in column (9a);
- UN 1374 Insert "300" in column (6) and add "B4" in column (9a);
- UN 1381 Insert "TP31" in column (11);
- UN 1422 Insert "TP31" in column (11);
- UN 1428 Insert "TP31" in column (11);

- UN 1556 For packing group I: insert "T14" in column (10) and "TP2", "TP9", "TP13" and "TP27" in column (11);
- For packing group II: insert "T11" in column (10) and insert "TP2", "TP13" and "TP27" in column (11);
- For packing group III: insert "T7" in column (10) and insert "TP2" and "TP28" in column (11);
- UN 1579 Add "T4" and "TP1" in column (10) and (11) respectively;
- UN 1581 Amend the name in column (2) to read: "CHLOROPICRIN AND METHYL BROMIDE MIXTURE with more than 2% chloropicrin";
- UN 1614 Add "PR7" and replace "P200" with "P601" in column (8) and add "RR3" in column (9a);
- UN 1702 Amend the name in column (2) to read: "1,1,2,2-TETRACHLOROETHANE";
- UN 1790 For packing group I, entry with more than 60% but not more than 85% hydrofluoric acid: add "PP81" in column (9a);
For packing groups I and II: delete "RR1" in column (9a);
- UN 1841 Add "B3" in column (9a);
- UN 1859 Delete "COMPRESSED" in column (2), replace "1TC" with "2TC" in column (3b) and replace "CxBH(M)" with PxBH(M) in column (12);
- UN 1863 For the two entries of packing group I: Add "TP28" in column (11);
- UN 1866 For the two entries of packing group I: Add "TP28" in column (11);
- UN 1906 Add "TP28" in column (11);
- UN 1911 Delete "COMPRESSED" in column (2), and replace "1TF" with "2TF" in column (3b);
- UN 1913 Delete "(M)" in column (12);
- UN 1931 Add "B3" in column (9a);
- UN 1942 Add "total" before "combustible" and replace "substances" with "material" in the name in column (2) and add "306" in column (6);
- UN 1950 (Classification code 5A): Add ", asphyxiant" in column (2);
(Classification code 5F): Add ", flammable" in column (2);
(Classification code 5O): Add ", oxidizing" in column (2);
(Classification code 5T): Add ", toxic" in column (2) and replace "2.3" by "2.2+6.1" in column (5);
(Classification code 5TC): Add ", toxic, corrosive" in column (2) and replace "2.3 + 8" by "2.2+6.1+8" in column (5);
(Classification code 5TF): Add ", toxic, flammable" in column (2) and replace "2.3 + 2.1" by "2.1+6.1" in column (5);

- (Classification code 5TFC): Add ", toxic, flammable, corrosive" in column (2) and replace "2.3+2.1+8" by "2.1+6.1+8" in column (5);
- (Classification code 5TO): Add ", toxic, oxidizing" in column (2) and replace "2.3+5.1" by "2.1+5.1+6.1" in column (5);
- (Classification code 5TOC): Add ", toxic, oxidizing, corrosive" in column (2) and replace "2.3+5.1+8" by "2.2+5.1+6.1+8" in column (5);
- UN 1951 Delete "(M)" in column (12);
- UN 1961 Delete "(M)" in column (12);
- UN 1962 Delete "COMPRESSED" in column (2) and replace "1F" with "2F" in column (3b) and replace "CxBN(M)" with PxBN(M) in column (12);
- UN 1963 Delete "(M)" in column (12);
- UN 1966 Delete "(M)" in column (12);
- UN 1970 Delete "(M)" in column (12);
- UN 1972 Delete "(M)" in column (12);
- UN 1977 Delete "(M)" in column (12);
- UN 1982 Delete "COMPRESSED" in column (2) (twice) and replace "1A" with "2A" in column (3b) and replace "CxBN(M)" with PxBN(M) in column (12);
- UN 1993 For packing group I: Add "TP27" in column (11);
- UN 2015 Entry with more than 70% hydrogen peroxide, add "640N" in column (6);
Entry with more than 60% hydrogen peroxide and not more than 70% hydrogen peroxide, add "640O" in column (6);
- UN 2031 For packing groups I and II: replace "P802" with "P001" in column (8) and add "PP81" in column (9a); delete "RR1" in column (9a);
- UN 2036 Delete "COMPRESSED" in column (2) and replace "1A" with "2A" in column (3b) and replace "CxBN(M)" with PxBN(M) in column (12);
- UN 2037 Add "303" in column (6);
- UN 2067 Amend column (2) to read "AMMONIUM NITRATE BASED FERTILIZER", delete "624" and add "306 307" in column (6);
- UN 2068 Delete this entry;
- UN 2069 Delete this entry;
- UN 2070 Delete this entry;

- UN 2072 Delete this entry;
- UN 2187 Delete "(M)" in column (12);
- UN 2193 Delete "COMPRESSED" in column (2) (twice), replace "1A" with "2A" in column (3b) and replace "CxBN(M)" with PxBN(M) in column (12);
- UN 2198 Delete "COMPRESSED" in column (2) and replace "1TC" with "2TC" in column (3b);
- UN 2201 Delete "(M)" in column (12);
- UN 2203 Delete "COMPRESSED" in column (2), replace "1F" with "2F" in column (3b) and replace "CxBN(M)" with PxBN(M) in column (12);
- UN 2211 Add "B3" in column (9a);
- UN 2213 Insert "V13" in column (16);
- UN 2257 Insert "TP31" in column (11);
- UN 2264 Amend the name in column (2) to read: "N, N-DIMETHYLCYCLOHEXYLAMINE";
- UN 2277 Amend the name in column (2) to read: "ETHYL METHACRYLATE, STABILIZED";
- UN 2315 Add "305" and delete "595" in column (6);
- UN 2417 Delete "COMPRESSED" in column (2), replace "1TC" with "2TC" in column (3b) and replace "CxBH(M)" with PxBH(M) in column (12);
- UN 2451 Delete "COMPRESSED" in column (2), replace "1O" with "2O" in column (3b) and replace "CxBN(M)" with PxBN(M) in column (12);
- UN 2469 Delete "B4" in column (9a);
- UN 2478 For packing group III, delete "539" in Column (6);
- UN 2531 Insert "TP30" in column (11);
- UN 2571 Add "TP28" in column (11);
- UN 2579 Insert "TP30" in column (11);
- UN 2591 Delete "(M)" in column (12);
- UN 2680 Amend the name in column (2) to read: "LITHIUM HYDROXIDE";
- UN 2684 Amend the name in column (2) to read: "3-DIETHYLAMINOPROPYLAMINE";
- UN 2740 Insert "T20" in column (10) and insert "TP2" and "TP13" in column (11);
- UN 2790 For packing group III, add "647" in column (6);
- UN 2793 Delete "107" in column (6);
- UN 2797 Add "TP28" in column (11);

- UN 2880 Amend the name in column (2) to read:
"CALCIUM HYPOCHLORITE, HYDRATED, or CALCIUM HYPOCHLORITE,
HYDRATED MIXTURE, with not less than 5.5% but not more than 16% water";
- UN 2907 Add "B12" and "PP80" in column (9a);
- UN 2983 Replace "P200" with "P001" in column (8);
- UN 3027 For the three entries, delete the portable tank instructions in columns (10) and (11);
- UN 3028 Add "304" in column (6);
- UN 3052 For the solid entry, delete the portable tank instructions in columns (10) and (11);
- UN 3077 Add "B3" in column (9a) and insert "V13" in column (16);
- UN 3090 Add "310" in column (6);
- UN 3130 For packing groups I and II, replace "PP78" with "RR4" in column (9a);
For packing group II, replace "B12" with "BB1" in column (9a);
- UN 3136 Delete "(M)" in column (12);
- UN 3138 Delete "(M)" in column (12);
- UN 3151 Add "305" and delete "595" in column (6);
- UN 3152 Add "305" and delete "595" in column (6);
- UN 3158 Delete "(M)" in column (12);
- UN 3166 Amend the name in column (2) to read as follows:
"Engine, internal combustion or vehicle, flammable gas powered or vehicle, flammable
liquid powered";
- UN 3221 Replace "LQ0" with "LQ14" in column (7);
- UN 3222 Replace " LQ0" with "LQ15" in column (7);
- UN 3223 Replace " LQ0" with " LQ14" in column (7);
- UN 3224 Replace " LQ0" with " LQ15" in column (7);
- UN 3225 Replace " LQ0" with " LQ16" in column (7);
- UN 3227 Replace " LQ0" with " LQ16" in column (7);
- UN 3229 Replace " LQ0" with " LQ16" in column (7);
- UN 3250 Add "TP28" in column (11);
- UN 3268 Delete "pyrotechnic" three times in the name in column (2) replace "235" with "280" in
column (6) and add "LP902" in column (8);
- UN 3279 For packing group I, add "TP 27" in column (11);

- UN 3295 For the two entries in packing group I, add "TP28" in column (11);
- UN 3311 Delete "(M)" in column (12);
- UN 3312 Delete "(M)" in column (12);
- UN 3313 Add "B4" in column (9a);
- UN 3314 Add "B3" in column (9a);
- UN 3344 Add "PP80" in column (9a);
- UN 3353 Delete this entry;

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- SP 15 Delete.
- SP 18 Delete.
- SP 36 Delete.
- SP 61 Replace "(see also 3.1.2.6.1.1)" with "(see also 3.1.2.8.1 and 3.1.2.8.1.1)".
- SP 107 Delete.
- SP 119 Amend last sentence to read: "Refrigerating machines and refrigerating machine components are not subject to the provisions of ADR if they contain less than 12 kg of gas in Class 2, group A or O according to 2.2.2.1.3, or if they contain less than 12 litres ammonia solution (UN No. 2672).".
- SP 188 Amend to read as follows:
"Lithium cells and batteries offered for carriage are not subject to other provisions of ADR if they meet the following:
- (a) For a lithium metal or lithium alloy cell, the lithium content is not more than 1 g, and for a lithium-ion cell, the lithium-equivalent content is not more than 1.5 g;
 - (b) For a lithium metal or lithium alloy battery the aggregate lithium content is not more than 2 g, and for a lithium-ion battery, the aggregate lithium-equivalent content is not more than 8 g;
 - (c) Each cell or battery is of the type proved to meet the requirements of each test in the *Manual of Tests and Criteria*, Part III, sub-section 38.3;
 - (d) Cells and batteries are separated so as to prevent short circuits and are packed in strong packagings, except when installed in equipment; and
 - (e) Except when installed in equipment, each package containing more than 24 lithium cells or 12 lithium batteries shall in addition meet the following requirements:
 - (i) Each package shall be marked indicating that it contains lithium batteries and that special procedures should be followed in the event that the package is damaged;

- (ii) Each shipment shall be accompanied with a document indicating that packages contain lithium batteries and that special procedures should be followed in the event a package is damaged;
- (iii) Each package is capable of withstanding a 1.2 m drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell to cell) contact and without release of contents; and
- (iv) Except in the case of lithium batteries packed with equipment, packages may not exceed 30 kg gross mass.

As used above and elsewhere in ADR, "lithium content" means the mass of lithium in the anode of a lithium metal or lithium alloy cell, except in the case of a lithium-ion cell the "lithium-equivalent content" in grams is calculated to be 0.3 times the rated capacity in ampere-hours."

- SP 196 Amend to read as follows:
"Formulations which in laboratory testing neither detonate in the cavitated state nor deflagrate, which show no effect when heated under confinement and which exhibit no explosive power may be carried under this entry. The formulation must also be thermally stable (i.e. the SADT is 60 °C or higher for a 50 kg package). Formulations not meeting these criteria shall be carried under the provisions of Class 5.2, (see 2.2.52.4)."
- SP 216 Add at the end of the paragraph the following text:
"Sealed packets containing less than 10 ml of a packing group II or III flammable liquid absorbed into a solid material are not subject to ADR provided there is no free liquid in the packet."
- SP 222 Delete.
- SP 227 Delete the first sentence.
- SP 230 Amend (a) to read: "(a) Each cell or battery is of the type proved to meet the requirements of each test of the *Manual of Tests and Criteria*, Part III, sub-section 38.3;"
- SP 235 Amend to read as follows:
"This entry applies to articles which contain Class 1 explosive substances and which may also contain dangerous goods of other classes. These articles are used as life-saving vehicle air bag inflators or air bag modules or seat-belt pretensioners."
- SP 251 Add the following text:
"Chemical kits and first aid kits containing dangerous goods in inner packagings which do not exceed the quantity limits applicable to individual substances as specified in Column (7) of Table A of Chapter 3.2 in accordance with the LQ code defined in 3.4.6 may be carried in accordance with Chapter 3.4."
- SP 268 Delete.
- SP 274 Replace "3.1.2.6.1" with "3.1.2.8".
- SP 280 Amend to read as follows:
"This entry applies to articles which are used as life-saving vehicle air bag inflators, or air bag modules or seat-belt pretensioners and which contain dangerous goods of Class 1 or

dangerous goods of other classes and when carried as component parts and when these articles as presented for carriage have been tested in accordance with Test series 6 (c) of Part I of the *Manual of Tests and Criteria*, with no explosion of the device, no fragmentation of device casing or pressure vessel, and no projection hazard nor thermal effect which would significantly hinder fire-fighting or other emergency response efforts in the immediate vicinity."

SP 287 Delete.

SP 291 Amend last sentence to read:
"Refrigerating machines and refrigerating-machine components are not subject to the requirements of ADR if they contain less than 12 kg of gas."

SP 566 Amend to read:
"UN No. 2030 hydrazine aqueous solution, with more than 37% hydrazine, by mass, is a substance of Class 8."

SP 595 Delete.

SP 624 Delete.

SP 628 Delete.

SP 629 Delete.

SP 630 Delete.

SP 631 Delete.

SP 636 Under (d), delete ", 287"

SP640 Amend to read as follows:
"The physical and technical characteristics mentioned in column (2) of Table A of Chapter 3.2 determine different conditions of carriage for the same packing group.

In order to identify these conditions of carriage, the following shall be added to the particulars required in the transport document:

"Special provision 640X" where "X" is the capital letter appearing after the reference to special provision 640 in column (6) of Table A of Chapter 3.2.

Provided that the above mentioned characteristics do not entail different hazard identification numbers in column (20), these particulars may, however, be dispensed with in the following cases:

- goods packed in accordance with packing instruction P001;
- carriage in portable tanks;
- carriage in the type of tank which for a specific packing group of a specific UN number meets at least the most stringent requirements."

SP 641 Delete.

Add the following new special provisions:

- "242 Sulphur is not subject to the requirements of ADR when it has been formed to a specific shape (e.g. prills, granules, pellets, pastilles or flakes).
- 298 Solutions with a flash point of 61 °C or less shall bear a label conforming to model No.3.
- 300 Fish meal or fish scrap shall not be loaded if the temperature at the time of loading exceeds 35 °C or 5 °C above the ambient temperature whichever is higher.
- 302 In the proper shipping name, the word "UNIT" means:
- a vehicle;
 - a container; or
 - a tank.
- Fumigated vehicles, containers and tanks are only subject to the provisions of 5.5.2.
- 303 The classification of these receptacles (UN No. 2037) shall be based on the gases contained therein and in accordance with the provisions of 2.2.2.
- 304 Batteries, dry, containing corrosive electrolyte which will not flow out of the battery if the battery case is cracked are not subject to the requirements of ADR provided the batteries are securely packed and protected against short-circuits. Examples of such batteries are: alkali-manganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries.
- 305 These substances are not subject to the requirements of ADR when in concentrations of not more than 50 mg/kg.
- 306 This entry may only be used for substances that do not exhibit explosive properties of Class 1 when tested in accordance to Test Series 1 and 2 of Class 1 (see *Manual of Tests and Criteria*, Part I).
- 307 This entry may only be used for uniform mixtures containing ammonium nitrate as the main ingredient within the following composition limits:
- (a) Not less than 90% ammonium nitrate with not more than 0.2% total combustible/organic material calculated as carbon and with added matter, if any, which is inorganic and inert towards ammonium nitrate; or
 - (b) Less than 90% but more than 70% ammonium nitrate with other inorganic materials or more than 80% but less than 90% ammonium nitrate mixed with calcium carbonate and/or dolomite and not more than 0.4% total combustible/organic material calculated as carbon; or
 - (c) Nitrogen type ammonium nitrate based fertilizers containing mixtures of ammonium nitrate and ammonium sulphate with more than 45% but less than 70% ammonium nitrate and not more than 0.4% total combustible/organic material calculated as carbon such that the sum of the percentage compositions of ammonium nitrate and ammonium sulphate exceeds 70%.
- 309 This entry applies to non sensitised emulsions, suspensions and gels consisting primarily of a mixture of ammonium nitrate and a fuel phase, intended to produce a Type E blasting explosive only after further processing prior to use. The mixture typically has the following composition: 60 - 85% ammonium nitrate; 5 - 30% water; 2 - 8% fuel; 0.5 - 4% emulsifier or thickening agent; 0 - 10% soluble flame suppressants and trace additives. Other inorganic

nitrate salts may replace part of the ammonium nitrate. These substances shall not be classified and carried unless authorized by the competent authority.

- 310 The testing requirements in sub-section 38.3 of the *Manual of Tests and Criteria* do not apply to production runs consisting of not more than 100 lithium cells and batteries, or to pre-production prototypes of lithium cells and batteries when these prototypes are carried for testing, if:
- (a) the cells and batteries are carried in an outer packaging that is a metal, plastics or plywood drum or a metal, plastics or wooden box and that meets the criteria for packing group I; and
 - (b) each cell and battery is individually packed in an inner packaging inside an outer packaging and is surrounded by cushioning material that is non-combustible, and non-conductive.
- 645 The classification code as mentioned in Column (3b) of Table A of Chapter 3.2 shall be used only with the approval of the competent authority of a Contracting Party to ADR prior to carriage.
- 647 The carriage of vinegar and acetic acid with not more than 25 % pure acid by mass is subject only to the following requirements:
- (a) Packagings, including IBCs and large packagings, and tanks shall be manufactured from stainless steel or plastic material which is permanently resistant to corrosion of vinegar/acetic acid food grade;
 - (b) Packagings, including IBCs and large packagings, and tanks shall be subjected to a visual inspection by the owner at least once a year. The results of the inspections shall be recorded and the records kept for at least one year. Damaged packagings, including IBCs and large packagings, and tanks shall not be filled;
 - (c) Packagings, including IBCs and large packagings, and tanks shall be filled in a way that no product is spilled or adheres to the outer surface;
 - (d) Seals and closures shall be resistant to vinegar/acetic acid food grade. Packagings, including IBCs and large packagings, and tanks shall be hermetically sealed by the person in charge of packaging and/or filling so that under normal conditions of carriage there will be no leakage;
 - (e) Combination packagings with inner packaging made of glass or plastic (see packing instruction P001 in 4.1.4.1) which fulfil the general packing requirements of 4.1.1.1, 4.1.1.2, 4.1.1.4, 4.1.1.5, 4.1.1.6, 4.1.1.7 and 4.1.1.8 may be used;

The other provisions of ADR do not apply."

Chapter 3.4

- 3.4.4 (c) Amend last paragraph to read as follows:
"These markings shall be displayed within a diamond-shaped area surrounded by a line that measures at least 100 x 100 mm. The width of line forming the diamond shall be at least 2 mm; the number shall be at least 6 mm high. Where more than one substance assigned to different UN numbers are included in the package, the diamond shall be large enough to include each relevant UN number. If the size of the package so requires, the dimension may be reduced, provided the markings remain clearly visible."

- 3.4.7 Add the following section 3.4.7:
 "3.4.7 Overpacks containing packages conforming to 3.4.3, 3.4.4 or 3.4.5 shall be marked, as required by 3.4.4 (c) for each item of dangerous goods contained in the overpack, unless markings representative of all dangerous goods contained in the overpack are visible."

PART 4

Chapter 4.1

Delete the introductory notes (Notes 1 and 2).

- 4.1.1 Amend the title to read: "**General provisions for the packing of dangerous goods in packagings, including IBCs and large packagings**"

Amend the note under the title to read:

"NOTE: The general provisions of this section only apply to the packing of goods of Class 2, 6.2 and 7 as indicated in 4.1.8.2 (Class 6.2), 4.1.9.1.5 (Class 7) and in the applicable packing instructions of 4.1.4 (packing instructions P201 and P202 for Class 2 and P621, IBC620 and LP621 for Class 6.2)."

- 4.1.1.1 Replace "and/or" with "and between transport units and".

Insert the following sentence after "(resulting from altitude, for example)": "Packagings, including IBCs and large packagings, shall be closed in accordance with the information provided by the manufacturer."

Amend the end of the last sentence to read: "...and to new, reused, repaired or remanufactured IBCs, and to new or reused large packagings."

4.1.1.3 and

- 4.1.1.9 Add "6.3.2" after "6.1.5" and replace "respectively" with "as applicable".

- 4.1.1.12 (c) Amend to read:

"(c) after the repair or remanufacture of any IBC, before it is reused for carriage."

- 4.1.1.17 Add the following new paragraph:

"4.1.1.17 *Explosives, self-reactive substances and organic peroxides*

Unless specific provision to the contrary is made in ADR, the packagings, including IBCs and large packagings, used for goods of Class 1, self-reactive substances of Class 4.1 and organic peroxides of Class 5.2 shall comply with the provisions for the medium danger group (packing group II)."

Renumber following paragraphs accordingly.

- 4.1.1.18.1 (Former 4.1.1.17.1) Amend to read as follows:

"4.1.1.18.1 Damaged, defective, leaking or non-conforming packages, or dangerous goods that have spilled or leaked may be carried in salvage packagings mentioned in 6.1.5.1.11. This does not prevent the use of a bigger size packaging of appropriate type and performance level under the conditions of 4.1.1.18.2."

- 4.1.2.3 Delete "and always be carried in closed vehicles or containers".

4.1.2.4 Add a new 4.1.2.4 to read as follows:

"4.1.2.4 Except for routine maintenance of metal, rigid plastics and composite IBCs performed by the owner of the IBC, whose State and name or authorized symbol is durably marked on the IBC, the party performing routine maintenance shall durably mark the IBC near the manufacturer's UN design type marking to show:

- (a) The State in which the routine maintenance was carried out; and
- (b) The name or authorized symbol of the party performing the routine maintenance."

4.1.3.4 Amend composite IBCs as follows: "Composite: 11HZ2 and 21HZ2"

4.1.3.6 Amend to read as follows:

"4.1.3.6 All cylinders, tubes, pressure drums, and bundles of cylinders conforming to packing instruction P200 and to the construction requirements of Chapter 6.2 are authorized for the carriage of any liquid or solid substance assigned to packing instructions P001 or P002 unless otherwise indicated in the packing instruction or by a special provision in Column (9a) of Table A of Chapter 3.2. The capacity of tubes and bundles of cylinders shall not exceed 1000 litres."

4.1.3.8 Add a new sub-section 4.1.3.8 as follows:

"4.1.3.8 *Unpackaged articles other than Class 1 articles*

4.1.3.8.1 Where large and robust articles cannot be packaged in accordance with the requirements of Chapters 6.1 or 6.6 and they have to be carried empty, uncleaned and unpackaged, the competent authority of the country of origin² may approve such carriage. In doing so the competent authority shall take into account that:

- (a) Large and robust articles shall be strong enough to withstand the shocks and loadings normally encountered during carriage including trans-shipment between transport units and between transport units and warehouses, as well as any removal from a pallet for subsequent manual or mechanical handling;
- (b) All closures and openings shall be sealed so that there can be no loss of contents which might be caused under normal conditions of carriage, by vibration, or by changes in temperature, humidity or pressure (resulting from altitude, for example). No dangerous residue shall adhere to the outside of the large and robust articles;
- (c) Parts of large and robust articles, which are in direct contact with dangerous goods:
 - (i) shall not be affected or significantly weakened by those dangerous goods; and
 - (ii) shall not cause a dangerous effect e.g. catalysing a reaction or reacting with the dangerous goods;

² *If the country of origin is not a contracting party to ADR, the competent authority of the first country contracting party to the ADR reached by the consignment.*

- (d) Large and robust articles containing liquids shall be stowed and secured to ensure that neither leakage nor permanent distortion of the article occurs during carriage;
- (e) They shall be fixed in cradles or crates or other handling devices or to the transport unit or container in such a way that they will not become loose during normal conditions of carriage.

4.1.3.8.2 Unpackaged articles approved by the competent authority in accordance with the provisions of 4.1.3.8.1 shall be subject to the consignment procedures of Part 5. In addition the consignor of such articles shall ensure that a copy of any such approval is attached to the transport document.

NOTE: A large and robust article may include flexible fuel containment systems, military equipment, machinery or equipment containing dangerous goods above the limited quantities according to 3.4.6. "

Renumber the following footnote accordingly.

4.1.4.1 For packing instructions P112 (a), P112 (b), P112 (c), P113, P116, P130, P131, P134, P135, P136, P138, P140, P141 and P142, add "plywood (1D)" in the column "Outer packagings and arrangements" under "Drums"

For packing instructions P112(c), P113, P115, P134, P138 and P140, add "plastics, removable head (1H2)" in the column "Outer packagings and arrangements" under "Drums".

For packing instructions P134 and P138, add "fibreboard (1G)" in the column "Outer packagings and arrangements" under "Drums".

For packing instruction P144, add "plastics, solid (4H2)" in the column "Outer packagings and arrangements" under "Boxes" and under a new title "Drums", add "steel, removable head (1A2)", "aluminium, removable head (1B2)" and "plastics, removable head (1H2)".

For packing instructions P112 (c) and P113, add "aluminium (4B)" in the column "Outer packagings and arrangements" under "Boxes".

P001: Add a new special packing provision to read as follows:

"PP81 For UN No. 1790 with more than 60% but not more than 85% hydrofluoric acid and UN No. 2031 with more than 55% nitric acid, the permitted use of plastics drums and jerricans as single packagings shall be two years from their date of manufacture."

Under PP5, replace "Gas cylinders and gas receptacles" with "Cylinders, tubes and pressure drums".

Under "Special packing provisions specific to RID and ADR" delete RR1.

P002: In PP11 under the heading "Special packing provisions", replace "or" with "and" after "plastics bags".

Under PP8, replace "Gas cylinders and gas receptacles" with "Cylinders, tubes and pressure drums".

P112(b): Under PP47, replace "UN Nos. 0222 and 0223" with "UN No. 0222".

P200 Replace the existing P200 with the following:

P200	PACKING INSTRUCTION	P200
	<p>Type of packagings: Cylinders, tubes, pressure drums and bundles of cylinders</p> <p>Cylinders, tubes, pressure drums and bundles of cylinders are authorised provided the special packing provisions of 4.1.6 and the provisions listed below under (1) to (9) are met.</p> <p>General</p> <p>(1) Pressure receptacles shall be so closed and leakproof as to prevent escape of the gases;</p> <p>(2) Pressure receptacles containing toxic substances with an LC₅₀ less than or equal to 200 ml/m³ (ppm) as specified in the table shall not be equipped with any pressure relief device;</p> <p>(3) The following three tables cover compressed gases (Table 1), liquefied and dissolved gases (Table 2) and substances not in Class 2 (Table 3). They provide:</p> <p>(a) the UN number, name and description, and the classification code of the substance;</p> <p>(b) the LC₅₀ for toxic substances;</p> <p>(c) the types of pressure receptacles authorised for the substance, shown by the letter "X";</p> <p>(d) the maximum test period for periodic inspection of the pressure receptacles;</p> <p>(e) the minimum test pressure of the pressure receptacles;</p> <p>(f) the maximum working pressure of the pressure receptacles for compressed gases or the maximum filling ratio(s) for liquefied and dissolved gases;</p> <p>(g) special packing provisions that are specific to a substance.</p> <p>Test pressure and filling ratios</p> <p>(4) The minimum test pressure required for is 1 MPa (10 bar);</p> <p>(5) In no case shall pressure receptacles be filled in excess of the limit permitted in the following requirements:</p> <p>(a) For compressed gases, the working pressure shall be not more than two thirds of the test pressure of the pressure receptacles. Restrictions to this upper limit on working pressure are imposed by special packing provision "o". In no case shall the internal pressure at 65 °C exceed the test pressure.</p> <p>(b) For high pressure liquefied gases, the filling ratio shall be such that the settled pressure at 65 °C does not exceed the test pressure of the pressure receptacles.</p> <p>The use of test pressures and filling ratios other than those in the table is permitted provided that the above criterion is met, except where special packing provision "o" applies.</p> <p>For high pressure liquefied gases for which data is not provided in the table, the maximum filling ratio (FR) shall be determined as follows:</p> $FR = 8.5 \cdot 10^{-4} \cdot d_g \cdot P_h$ <p>where</p> <p>FR = maximum filling ratio</p> <p>d_g = gas density (at 15 °C, 1 bar)(in kg/m³)</p> <p>P_h = minimum test pressure (in bar).</p>	

P200

PACKING INSTRUCTION (cont'd)

P200

If the density of the gas is unknown, the maximum filling ratio shall be determined as follows:

$$FR = \frac{P_h \cdot MM \cdot 10^{-3}}{R \cdot 338}$$

- where
- FR = maximum filling ratio
 - P_h = minimum test pressure (in bar)
 - MM = molecular mass (in g/mol)
 - R = 8.31451×10^{-2} bar.l.mol⁻¹.K⁻¹ (gas constant).

For gas mixtures, the average molecular mass is to be taken, taking into account the volumetric concentrations of the various components.

- (c) For low pressure liquefied gases, the maximum mass of contents per litre of water capacity shall equal 0.95 times the density of the liquid phase at 50 °C; in addition, the liquid phase shall not fill the pressure receptacle at any temperature up to 60 °C. The test pressure of the pressure receptacle shall be at least equal to the vapour pressure (absolute) of the liquid at 65 °C, minus 100 kPa (1 bar).

For low pressure liquefied gases for which filling data is not provided in the table, the maximum filling ratio shall be determined as follows:

$$FR = (0.0032 \cdot BP - 0.24) \cdot d_l$$

- where
- FR = maximum filling ratio
 - BP = boiling point (in Kelvin)
 - d_l = density of the liquid at boiling point (in kg/l).

- (d) For UN No. 1001 acetylene, dissolved, and UN No. 3374 acetylene, solvent free, see (9), special packing provision "p".
- (6) Other test pressure and filling ratio may be used provided they satisfy the general requirements outlined in paragraphs (4) and (5) above;

Periodic inspections

- (7) Refillable pressure receptacles shall be subjected to periodic inspections in accordance with the requirements of 6.2.1.6.
- (8) If special provisions for certain substances do not appear in the tables below, periodic inspections shall be carried out:
- (a) Every 5 years in the case of pressure receptacles intended for the carriage of gases of classification codes 1T, 1TF, 1TO, 1TC, 1TFC, 1TOC, 2T, 2TO, 2TF, 2TC, 2TFC, 2TOC, 4A, 4F and 4C;
 - (b) Every 5 years in the case of pressure receptacles intended for the carriage of substances from other classes;
 - (c) Every 10 years in the case of pressure receptacles intended for the carriage of gases of classification codes 1A, 1O, 1F, 2A, 2O and 2F.

By derogation from this paragraph, the periodic inspection of pressure receptacles which make use of composite materials (composite pressure receptacles) shall be carried out at intervals determined by the competent authority of the Contracting Party to ADR which has approved the technical code for the design and construction.

P200	PACKING INSTRUCTION (cont'd)	P200
Special packing provisions		
(9) Keys for the column "Special packing provisions":		
<i>Material compatibility</i> (for gases see ISO 11114-1:1997 and ISO 11114-2:2000)		
a:	Aluminium alloy pressure receptacles are not authorized.	
b:	Copper valves shall not be used.	
c:	Metal parts in contact with the contents shall not contain more than 65% copper.	
d:	When steel pressure receptacles are used, only those resistant to hydrogen embrittlement shall be authorized.	
<i>Requirements for toxic substances with an LC₅₀ less than or equal to 200 ml/m³ (ppm)</i>		
k:	Valve outlets shall be fitted with gas tight plugs or caps which shall be made of material not liable to attack by the contents of the pressure receptacle.	
	Each cylinder within a bundle shall be fitted with an individual valve that shall be closed during carriage. After filling, the manifold shall be evacuated, purged and plugged.	
	Pressure receptacles shall not be fitted with a pressure relief device.	
	Cylinders and individual cylinders in a bundle shall be limited to a maximum water capacity of 85 litres.	
	Each valve shall have a taper threaded connection directly to the pressure receptacle and be capable of withstanding the test pressure of the pressure receptacle.	
	Each valve shall either be of the packless type with non-perforated diaphragm, or be of a type which prevents leakage through or past the packing.	
	Carriage in capsules is not allowed.	
	Each pressure receptacle shall be tested for leakage after filling.	
<i>Gas specific provisions</i>		
l:	UN No. 1040 ethylene oxide may also be packed in hermetically sealed glass or metal inner packagings suitably cushioned in fibreboard, wooden or metal boxes meeting the packing group I performance level. The maximum quantity permitted in any glass inner packaging is 30 g, and the maximum quantity permitted in any metal inner packaging is 200 g. After filling, each inner packaging shall be determined to be leak-tight by placing the inner packaging in a hot water bath at a temperature, and for a period of time, sufficient to ensure that an internal pressure equal to the vapour pressure of ethylene oxide at 55 °C is achieved. The total quantity in any outer packaging shall not exceed 2.5 kg.	
m:	Pressure receptacles shall be filled to a working pressure not exceeding 5 bar.	
n:	A pressure receptacle shall contain not more than 5 kg of the gas.	
o:	In no case shall the working pressure or filling ratio shown in the tables be exceeded.	
p:	For UN No. 1001 acetylene, dissolved, and UN No. 3374 acetylene, solvent free: cylinders shall be filled with a homogeneous monolithic porous mass; the working pressure and the quantity of acetylene shall not exceed the values prescribed in the approval or in ISO 3807-1:2000 or ISO 3807-2:2000, as applicable.	
	For UN No. 1001 acetylene, dissolved: cylinders shall contain a quantity of acetone or suitable solvent as specified in the approval (see ISO 3807-1:2000 or ISO 3807-2:2000, as applicable); cylinders fitted with pressure relief devices or manifolded together shall be carried vertically.	

P200	PACKING INSTRUCTION (cont'd)	P200
	<p>Alternatively, for UN No. 1001 acetylene, dissolved: cylinders which are not UN certified pressure receptacles may be filled with a non monolithic porous mass; the working pressure, the quantity of acetylene and the quantity of solvent shall not exceed the values prescribed in the approval. The maximum test period for periodic inspection of the cylinders shall not exceed five years.</p>	
	<p>A test pressure of 52 bar shall be applied only to cylinders conforming to ISO 3807-2:2000.</p>	
	<p>q: The valves of pressure receptacles for pyrophoric gases or flammable mixtures of gases containing more than 1% of pyrophoric compounds shall be fitted with gas-tight plugs or caps which shall be made of material not liable to attack by the contents of the pressure receptacle. When these pressure receptacles are manifolded in a bundle, each of the pressure receptacles shall be fitted with an individual valve that shall be closed during carriage, and the manifold outlet valve shall be fitted with a gas-tight plug or cap. Carriage in capsules is not allowed.</p>	
	<p>r: Allowed for carriage in capsules under the following conditions:</p> <ul style="list-style-type: none"> (a) The mass of gas shall not exceed 150 g per capsule; (b) The capsules shall be free from faults liable to impair the strength; (c) The leakproofness of the closure shall be ensured by an additional device (cap, crown, seal, binding, etc.) capable of preventing any leakage of the closure during carriage; (d) The capsules shall be placed in an outer packaging of sufficient strength. A package shall not weigh more than 75 kg. 	
	<p>s: Aluminium alloy pressure receptacles shall be:</p> <ul style="list-style-type: none"> - Equipped only with brass or stainless steel valves; and - Cleaned for hydrocarbons contamination and not contaminated with oil. UN certified pressure receptacles shall be cleaned in accordance with ISO 11621:1997. 	
	<p>t: Other criteria may be used for filling of welded steel cylinders intended for the carriage of substances of UN No. 1965:</p> <ul style="list-style-type: none"> (a) with the agreement of the competent authorities of the countries where the carriage is carried out; and (b) in compliance with the provisions of a national code or standard recognised by the competent authorities or standard EN 1439:1996 "Transportable refillable steel cylinders for liquefied petroleum Gases (LPG) - Procedures for checking before, during and after refilling". 	
	<p>When the criteria for filling are different from those in P200(5), the transport document shall include the statement "Carriage in accordance with packing instruction P200, special packing provision t" and the indication of the reference temperature used for the calculation of the filling ratio.</p>	
	<p><i>Periodic inspection</i></p>	
	<p>u: The interval between periodic tests may be extended to 10 years for aluminium alloy pressure receptacles. This derogation may only be applied to UN certified pressure receptacles when the alloy of the pressure receptacle has been subjected to stress corrosion testing as specified in ISO 7866:1999.</p>	
	<p>v: The interval between inspections for steel cylinders may be extended to 15 years:</p> <ul style="list-style-type: none"> (a) with the agreement of the competent authority (authorities) of the country (countries) where the periodic inspection and the carriage take place; and 	

P200	PACKING INSTRUCTION (cont'd)	P200
	<p>(b) in accordance with the requirements of a technical code or a standard recognised by the competent authority, or standard EN 1440:1996 "Transportable refillable welded cylinders for liquefied petroleum gas (LPG) - Periodic requalification".</p>	
	<p><i>Requirements for N.O.S. entries and for mixtures</i></p>	
	<p>z: The construction materials of the pressure receptacles and their accessories shall be compatible with the contents and shall not react to form harmful or dangerous compounds therewith.</p>	
	<p>The test pressure and filling ratio shall be calculated in accordance with the relevant requirements of (5).</p>	
	<p>Toxic substances with an LC₅₀ less than or equal to 200 ml/m³ shall not be carried in tubes, pressure drums or MEGCs and shall meet the requirements of special packing provision "k".</p>	
	<p>For pressure receptacles containing pyrophoric gases or flammable mixtures of gases containing more than 1% pyrophoric compounds, the requirements of special packing provision "q" shall be met.</p>	
	<p>The necessary steps shall be taken to prevent dangerous reactions (i.e. polymerisation or decomposition) during carriage. If necessary, stabilisation or addition of an inhibitor shall be required.</p>	
	<p>Mixtures containing UN No. 1911 diborane, shall be filled to a pressure such that, if complete decomposition of the diborane occurs, two thirds of the test pressure of the pressure receptacle shall not be exceeded.</p>	
	<p><i>Requirements for substances not in Class 2</i></p>	
	<p>ab: Pressure receptacles shall satisfy the following conditions:</p>	
	<p>(i) The pressure test shall include an inspection of the inside of the pressure receptacles and check of accessories;</p>	
	<p>(ii) In addition resistance to corrosion shall be checked every two years by means of suitable instruments (e.g. ultrasound) and the condition of the accessories verified;</p>	
	<p>(iii) Wall thickness shall not be less than 3 mm.</p>	
	<p>ac: Tests and inspections shall be carried out under the supervision of an expert approved by the competent authority.</p>	
	<p>ad: Pressure receptacles shall satisfy the following conditions:</p>	
	<p>(i) Pressure receptacles shall be designed for a design pressure of not less than 2.1 MPa (21 bar) (gauge pressure);</p>	
	<p>(ii) In addition to the marks for refillable receptacles, the pressure receptacles shall bear the following particulars in clearly legible and durable characters:</p>	
	<p>- The UN number and the proper shipping name of the substance according to 3.1.2;</p>	
	<p>- The maximum permitted mass when filled and the tare of the pressure receptacle, including accessories fitted during filling, or the gross mass.</p>	

P200			PACKING INSTRUCTION (cont'd)			P200		
(10) The applicable requirements of this packing instruction are considered to have been complied with if the following standards, as relevant, are applied:								
Applicable requirements		Reference		Title of document				
(9)(p)		EN1801: 1998		Transportable gas cylinders - Filling conditions for single acetylene cylinders (including list of permissible porous masses)				
(9)(p)		EN 12755: 2000		Transportable gas cylinders - Filling conditions for acetylene bundles				

P200		PACKING INSTRUCTION (cont'd)										P200
Table 1: COMPRESSED GASES												
UN No.	Name and description	Classification code	LC ₅₀ ml/m ³	Cylinders	Tubes	Pressure drums	Bundles of cylinders	Test period, years ^a	Test pressure, bar ^b	Working pressure, bar ^b	Special packing provisions	
1002	AIR, COMPRESSED	1A		X	X	X	X	10				
1006	ARGON, COMPRESSED	1A		X	X	X	X	10				
1014	CARBON DIOXIDE AND OXYGEN MIXTURE, COMPRESSED	1O		X	X	X	X	10				
1016	CARBON MONOXIDE, COMPRESSED	1TF	3760	X	X	X	X	5			u	
1023	COAL GAS, COMPRESSED	1TF		X	X	X	X	5				
1045	FLUORINE, COMPRESSED	1TOC	185	X			X	5	200	30	a, k, n, o	
1046	HELIUM, COMPRESSED	1A		X	X	X	X	10				
1049	HYDROGEN, COMPRESSED	1F		X	X	X	X	10			d	
1056	KRYPTON, COMPRESSED	1A		X	X	X	X	10				
1065	NEON, COMPRESSED	1A		X	X	X	X	10				
1066	NITROGEN, COMPRESSED	1A		X	X	X	X	10				
1071	OIL GAS, COMPRESSED	1TF		X	X	X	X	5				
1072	OXYGEN, COMPRESSED	1O		X	X	X	X	10			s	
1612	HEXAETHYL TETRAPHOSPHATE AND COMPRESSED GAS MIXTURE	1T		X	X	X	X	5			z	
1660	NITRIC OXIDE, COMPRESSED	1TOC	115	X			X	5	200	50	k, o	
1953	COMPRESSED GAS, TOXIC, FLAMMABLE, N.O.S.	1TF		X	X	X	X	5			z	
1954	COMPRESSED GAS, FLAMMABLE, N.O.S.	1F		X	X	X	X	10			z	
1955	COMPRESSED GAS, TOXIC, N.O.S.	1T		X	X	X	X	5			z	
1956	COMPRESSED GAS, N.O.S.	1A		X	X	X	X	10			z	
1957	DEUTERIUM, COMPRESSED	1F		X	X	X	X	10			d	
1964	HYDROCARBON GAS MIXTURE, COMPRESSED, N.O.S.	1F		X	X	X	X	10			z	
1971	METHANE, COMPRESSED or NATURAL GAS, COMPRESSED with high methane content	1F		X	X	X	X	10				
1979	RARE GASES MIXTURE, COMPRESSED	1A		X	X	X	X	10				
1980	RARE GASES AND OXYGEN MIXTURE, COMPRESSED	1A		X	X	X	X	10				

P200		PACKING INSTRUCTION (cont'd)										P200
Table 1: COMPRESSED GASES												
UN No.	Name and description	Classification code	LC ₅₀ ml/m ³	Cylinders	Tubes	Pressure drums	Bundles of cylinders	Test period, years ^a	Test pressure, bar ^b	Working pressure, bar ^b	Special packing provisions	
1981	RARE GASES AND NITROGEN MIXTURE, COMPRESSED	1A		X	X	X	X	10				
2034	HYDROGEN AND METHANE MIXTURE, COMPRESSED	1F		X	X	X	X	10			d	
2190	OXYGEN DIFLUORIDE, COMPRESSED	1TOC	2.6	X			X	5	200	30	a, k, n, o	
2600	CARBON MONOXIDE AND HYDROGEN MIXTURE, COMPRESSED	1TF		X	X	X	X	5			d, u	
3156	COMPRESSED GAS, OXIDIZING, N.O.S.	1O		X	X	X	X	10			z	
3303	COMPRESSED GAS, TOXIC, OXIDIZING, N.O.S.	1TO		X	X	X	X	5			z	
3304	COMPRESSED GAS, TOXIC, CORROSIVE, N.O.S.	1TC		X	X	X	X	5			z	
3305	COMPRESSED GAS, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.	1TFC		X	X	X	X	5			z	
3306	COMPRESSED GAS, TOXIC, OXIDIZING, CORROSIVE, N.O.S.	1TOC		X	X	X	X	5			z	

^a Not applicable for pressure receptacles made of composite materials.

^b Where the entries are blank, the working pressure shall not exceed two thirds of the test pressure.

P200		PACKING INSTRUCTION (cont'd)										P200
Table 2: LIQUEFIED GASES AND DISSOLVED GASES												
UN No.	Name and description	Classification code	L _{C50} ml/m ³	Cylinders	Pressure drums	Bundles of cylinders	Tubes	Test period, years ^a	Test pressure, bar	Filling ratio	Special packing provisions	
1001	ACETYLENE, DISSOLVED	4F		X		X		10	60		c, p	
1005	AMMONIA, ANHYDROUS	2TC	4000	X	X	X	X	5	33	0.53	b, r	
1008	BORON TRIFLUORIDE	2TC	387	X	X	X	X	5	225 300	0.71 5 0.86		
1009	BROMOTRIFLUOROMETHANE (REFRIGERANT GAS R 13B1)	2A		X	X	X	X	10	42 120 250	1.13 1.44 1.60	r r r	
1010	1,2-BUTADIENE, STABILIZED or	2F		X	X	X	X	10	10	0.59	r	
1010	1,3-BUTADIENE, STABILIZED or	2F		X	X	X	X	10	10	0.55	r	
1010	MIXTURES OF 1,3-BUTADIENE AND HYDROCARBONS, STABILIZED, having a vapour pressure at 70 °C not exceeding 1.1 MPa (11 bar) and a density at 50 °C not lower than 0.525 kg/l	2F		X	X	X	X	10	10	0.50	r, z	
1011	BUTANE	2F		X	X	X	X	10	10	0.51	r, v	
1012	BUTYLENES MIXTURES or	2F		X	X	X	X	10	10	0.50	r, z	
1012	1-BUTYLENE or	2F		X	X	X	X	10	10	0.53		
1012	CIS-2-BUTYLENE or	2F		X	X	X	X	10	10	0.55		
1012	TRANS-2 BUTYLENE	2F		X	X	X	X	10	10	0.54		
1013	CARBON DIOXIDE	2A		X	X	X	X	10	190 250	0.66 0.75	r r	
1015	CARBON DIOXIDE AND NITROUS OXIDE MIXTURE	2A		X	X	X	X	10	250	0.75	r	
1017	CHLORINE	2TC	293	X	X	X	X	5	22	1.25	a, r	
1018	CHLORODIFLUOROMETHANE (REFRIGERANT GAS R 22)	2A		X	X	X	X	10	29	1.03	r	
1020	CHLOROPENTAFLUOROETHANE (REFRIGERANT GAS R 115)	2A		X	X	X	X	10	25	1.08	r	
1021	1-CHLORO-1,2,2,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 124)	2A		X	X	X	X	10	12	1.20	r	
1022	CHLOROTRIFLUOROMETHANE (REFRIGERANT GAS R 13)	2A		X	X	X	X	10	100 120 190 250	0.83 0.90 1.04 1.10	r r r r	
1026	CYANOGEN	2TF	350	X	X	X	X	5	100	0.70	r, u	
1027	CYCLOPROPANE	2F		X	X	X	X	10	20	0.53	r	

P200 PACKING INSTRUCTION (cont'd) P200											
Table 2: LIQUEFIED GASES AND DISSOLVED GASES											
UN No.	Name and description	Classification code	L _{C50} ml/m ³	Cylinders	Pressure drums	Bundles of cylinders	Tubes	Test period, years ^a	Test pressure, bar	Filling ratio	Special packing provisions
1028	DICHLORODIFLUORO-METHANE (REFRIGERANT GAS R 12)	2A		X	X	X	X	10	18	1.15	r
1029	DICHLOROFLUORO-METHANE (REFRIGERANT GAS R 21)	2A		X	X	X	X	10	10	1.23	r
1030	1,1-DIFLUOROETHANE (REFRIGERANT GAS R 152a)	2A		X	X	X	X	10	18	0.79	r
1032	DIMETHYLAMINE, ANHYDROUS	2F		X	X	X	X	10	10	0.59	b, r
1033	DIMETHYL ETHER	2F		X	X	X	X	10	18	0.58	r
1035	ETHANE	2F		X	X	X	X	10	95 120 300	0.25 0.29 0.39	r r r
1036	ETHYLAMINE	2F		X	X	X	X	10	10	0.61	b, r
1037	ETHYL CHLORIDE	2F		X	X	X	X	10	10	0.80	a, r
1039	ETHYL METHYL ETHER	2F		X	X	X	X	10	10	0.64	r
1040	ETHYLENE OXIDE, or ETHYLENE OXIDE WITH NITROGEN up to a total pressure of 1MPa (10 bar) at 50 °C	2TF	2900	X	X	X	X	5	15	0.78	l, r
1041	ETHYLENE OXIDE AND CARBON DIOXIDE MIXTURE with more than 9% but not more than 87% ethylene oxide	2F		X	X	X	X	10	190 250	0.66 0.75	r r
1043	FERTILIZER AMMONIATING SOLUTION with free ammonia	2A		X	X	X		5			b, z
1048	HYDROGEN BROMIDE, ANHYDROUS	2TC	2860	X	X	X	X	5	60	1.54	a, d, r
1050	HYDROGEN CHLORIDE, ANHYDROUS	2TC	2810	X	X	X	X	5	100 120 150 200	0.30 0.56 0.67 0.74	a, d, r a, d, r a, d, r a, d, r
1053	HYDROGEN SULPHIDE	2TF	712	X	X	X	X	5	55	0.67	d, r, u
1055	ISOBUTYLENE	2F		X	X	X	X	10	10	0.52	r
1058	LIQUEFIED GASES, non-flammable, charged with nitrogen, carbon dioxide or air	2A		X	X	X	X	10	Test pressure = 1.5 x working pressure		r

P200 PACKING INSTRUCTION (cont'd) P200											
Table 2: LIQUEFIED GASES AND DISSOLVED GASES											
UN No.	Name and description	Classification code	L _{C50} ml/m ³	Cylinders	Pressure drums	Bundles of cylinders	Tubes	Test period, years ^a	Test pressure, bar	Filling ratio	Special packing provisions
1060	METHYLACETYLENE AND PROPADIENE MIXTURE, STABILIZED	2F		X	X	X	X	10			c, r, z
	Propadiene with 1% to 4% methylacetylene			X	X	X	X	10	22	0.52	c, r
	Mixture P1			X	X	X	X	10	30	0.49	c, r
	Mixture P2			X	X	X	X	10	24	0.47	c, r
1061	METHYLAMINE, ANHYDROUS	2F		X	X	X	X	10	13	0.58	b, r
1062	METHYL BROMIDE	2T	850	X	X	X	X	5	10	1.51	a
1063	METHYL CHLORIDE (REFRIGERANT GAS R 40)	2F		X	X	X	X	10	17	0.81	a, r
1064	METHYL MERCAPTAN	2TF	1350	X	X	X	X	5	10	0.78	d, r, u
1067	DINITROGEN TETROXIDE (NITROGEN DIOXIDE)	2TOC	115	X		X		5	10	1.30	k
1069	NITROSYL CHLORIDE	2TC	35	X		X		5	13	1.10	k, r
1070	NITROUS OXIDE	2O		X	X	X	X	10	180	0.68	
									225	0.74	
									250	0.75	
1075	PETROLEUM GASES, LIQUEFIED	2F		X	X	X	X	10			v, z
1076	PHOSGENE	2TC	5	X	X	X		5	20	1.23	k, r
1077	PROPYLENE	2F		X	X	X	X	10	30	0.43	r
1078	REFRIGERANT GAS, N.O.S.	2A		X	X	X	X	10			r, z
	Mixture F1			X	X	X	X	10	12	1.23	
	Mixture F2			X	X	X	X	10	18	1.15	
	Mixture F3			X	X	X	X	10	29	1.03	
1079	SULPHUR DIOXIDE	2TC	2520	X	X	X	X	5	14	1.23	r
1080	SULPHUR HEXAFLUORIDE	2A		X	X	X	X	10	70	1.04	r
									140	1.33	r
									160	1.37	r
1081	TETRAFLUOROETHYLENE, STABILIZED	2F		X	X	X	X	10	200		m, o, r
1082	TRIFLUOROCHLOROETHYLENE, STABILIZED	2TF	2000	X	X	X	X	5	19	1.13	r, u
1083	TRIMETHYLAMINE, ANHYDROUS	2F		X	X	X	X	10	10	0.56	b, r
1085	VINYL BROMIDE, STABILIZED	2F		X	X	X	X	10	10	1.37	a, r
1086	VINYL CHLORIDE, STABILIZED	2F		X	X	X	X	10	12	0.81	a, r
1087	VINYL METHYL ETHER, STABILIZED	2F		X	X	X	X	10	10	0.67	r

P200		PACKING INSTRUCTION (cont'd)										P200
Table 2: LIQUEFIED GASES AND DISSOLVED GASES												
UN No.	Name and description	Classification code	L _{C50} ml/m ³	Cylinders	Pressure drums	Bundles of cylinders	Tubes	Test period, years ^a	Test pressure, bar	Filling ratio	Special packing provisions	
1581	CHLOROPICRIN AND METHYL BROMIDE MIXTURE with more than 2% chloropicrin	2T	850	X	X	X	X	5	10	1.51	a	
1582	CHLOROPICRIN AND METHYL CHLORIDE MIXTURE	2T	^d	X	X	X	X	5	17	0.81	a	
1589	CYANOGEN CHLORIDE, STABILIZED	2TC	80	X		X		5	20	1.03	k	
1741	BORON TRICHLORIDE	2TC	2541	X	X	X	X	5	10	1.19	r	
1749	CHLORINE TRIFLUORIDE	2TOC	299	X	X	X	X	5	30	1.40	a	
1858	HEXAFLUOROPROPYLENE (REFRIGERANT GAS R 1216)	2A		X	X	X	X	10	22	1.11	r	
1859	SILICON TETRAFLUORIDE	2TC	450	X	X	X	X	5	200 300	0.74 1.10		
1860	VINYL FLUORIDE, STABILIZED	2F		X	X	X	X	10	250	0.64	a, r	
1911	DIBORANE	2TF	80	X		X		5	250	0.07	d, k, o	
1912	METHYL CHLORIDE AND METHYLENE CHLORIDE MIXTURE	2F		X	X	X	X	10	17	0.81	a, r	
1952	ETHYLENE OXIDE AND CARBON DIOXIDE MIXTURE with not more than 9% ethylene oxide	2A		X	X	X	X	10	190 250	0.66 0.75	r r	
1958	1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 114)	2A		X	X	X	X	10	10	1.30	r	
1959	1,1-DIFLUOROETHYLENE (REFRIGERANT GAS R 1132a)	2F		X	X	X	X	10	250	0.77	r	
1962	ETHYLENE	2F		X	X	X	X	10	225 300	0.34 0.37		

P200 PACKING INSTRUCTION (cont'd) P200											
Table 2: LIQUEFIED GASES AND DISSOLVED GASES											
UN No.	Name and description	Classification code	L _{C50} ml/m ³	Cylinders	Pressure drums	Bundles of cylinders	Tubes	Test period, years ^a	Test pressure, bar	Filling ratio	Special packing provisions
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. Mixture A Mixture A01 Mixture A02 Mixture A0 Mixture A1 Mixture B1 Mixture B2 Mixture B Mixture C	2F		X	X	X	X	10 10 10 10 10 10 10 10 10	10 15 15 15 20 25 25 25 30	^b 0.50 0.49 0.48 0.47 0.46 0.45 0.44 0.43 0.42	r, t, v, z
1967	INSECTICIDE GAS, TOXIC, N.O.S.	2T		X	X	X	X	5			z
1968	INSECTICIDE GAS, N.O.S.	2A		X	X	X	X	10			r, z
1969	ISOBUTANE	2F		X	X	X	X	10	10	0.49	r, v
1973	CHLORODIFLUOROMETHANE AND CHLOROPENTAFLUOROETHANE MIXTURE with fixed boiling point, with approximately 49% chlorodifluoromethane (REFRIGERANT GAS R 502)	2A		X	X	X	X	10	31	1.05	r
1974	CHLORODIFLUOROBROMOMETHANE (REFRIGERANT GAS R 12B1)	2A		X	X	X	X	10	10	1.61	r
1975	NITRIC OXIDE AND DINITROGEN TETROXIDE MIXTURE (NITRIC OXIDE AND NITROGEN DIOXIDE MIXTURE)	2TOC	115	X	X	X		5			k, z
1976	OCTAFLUOROCYCLOBUTANE (REFRIGERANT GAS RC 318)	2A		X	X	X	X	10	11	1.34	r
1978	PROPANE	2F		X	X	X	X	10	25	0.42	r, v
1982	TETRAFLUOROMETHANE (REFRIGERANT GAS R 14)	2A		X	X	X	X	10	200 300	0.62 0.94	
1983	1-CHLORO-2,2,2-TRIFLUOROETHANE (REFRIGERANT GAS R 133a)	2A		X	X	X	X	10	10	1.18	r
1984	TRIFLUOROMETHANE (REFRIGERANT GAS R 23)	2A		X	X	X	X	10	190 250	0.87 0.95	r r

P200		PACKING INSTRUCTION (cont'd)										P200
Table 2: LIQUEFIED GASES AND DISSOLVED GASES												
UN No.	Name and description	Classification code	L _{C50} ml/m ³	Cylinders	Pressure drums	Bundles of cylinders	Tubes	Test period, years ^a	Test pressure, bar	Filling ratio	Special packing provisions	
2035	1,1,1-TRIFLUOROETHANE (REFRIGERANT GAS R 143a)	2F		X	X	X	X	10	35	0.75	r	
2036	XENON	2A		X	X	X	X	10	130	1.24		
2044	2,2-DIMETHYLPROPANE	2F		X	X	X	X	10	10	0.53	r	
2073	AMMONIA SOLUTION, relative density less than 0.880 at 15 °C in water, with more than 35% but not more than 40% ammonia with more than 40% but not more than 50% ammonia	4A		X	X	X	X	5	10	0.80	b	
				X	X	X	X	5	12	0.77	b	
2188	ARSINE	2TF	20	X		X		5	42	1.10	d, k	
2189	DICHLOROSILANE	2TFC	314	X	X	X	X	5	10	0.90		
2191	SULPHURYL FLUORIDE	2T	3020	X	X	X	X	5	50	1.10	u	
2192	GERMANE ^c	2TF	620	X	X	X	X	5	250	1.02	d, r	
2193	HEXAFLUOROETHANE (REFRIGERANT GAS R 116)	2A		X	X	X	X	10	200	1.10		
2194	SELENIUM HEXAFLUORIDE	2TC	50	X		X		5	36	1.46	k, r	
2195	TELLURIUM HEXAFLUORIDE	2TC	25	X		X		5	20	1.00	k, r	
2196	TUNGSTEN HEXAFLUORIDE	2TC	160	X		X		5	10	2.70	a, k, r	
2197	HYDROGEN IODIDE, ANHYDROUS	2TC	2860	X	X	X	X	5	23	2.25	a, d, r	
2198	PHOSPHORUS PENTAFLUORIDE	2TC	190	X		X		5	200 300	0.90 1.34	k k	
2199	PHOSPHINE ^c	2TF	20	X		X		5	225 250	0.30 0.45	d, k, r d, k, r	
2200	PROPADIENE, STABILIZED	2F		X	X	X	X	10	22	0.50	r	
2202	HYDROGEN SELENIDE, ANHYDROUS	2TF	2	X		X		5	31	1.60	k	
2203	SILANE ^c	2F		X	X	X	X	10	225 250	0.32 0.36	d, q d, q	
2204	CARBONYL SULPHIDE	2TF	1700	X	X	X	X	5	26	0.84	r, u	
2417	CARBONYL FLUORIDE	2TC	360	X	X	X	X	5	200 300	0.47 0.70		
2418	SULPHUR TETRAFLUORIDE	2TC	40	X		X		5	30	0.91	k, r	
2419	BROMOTRIFLUORO- ETHYLENE	2F		X	X	X	X	10	10	1.19	r	
2420	HEXAFLUOROACETONE	2TC	470	X	X	X	X	5	22	1.08	r	
2421	NITROGEN TRIOXIDE	2TOC	CARRIAGE PROHIBITED									
2422	OCTAFLUOROBUT-2-ENE (REFRIGERANT GAS R 1318)	2A		X	X	X	X	10	12	1.34	r	

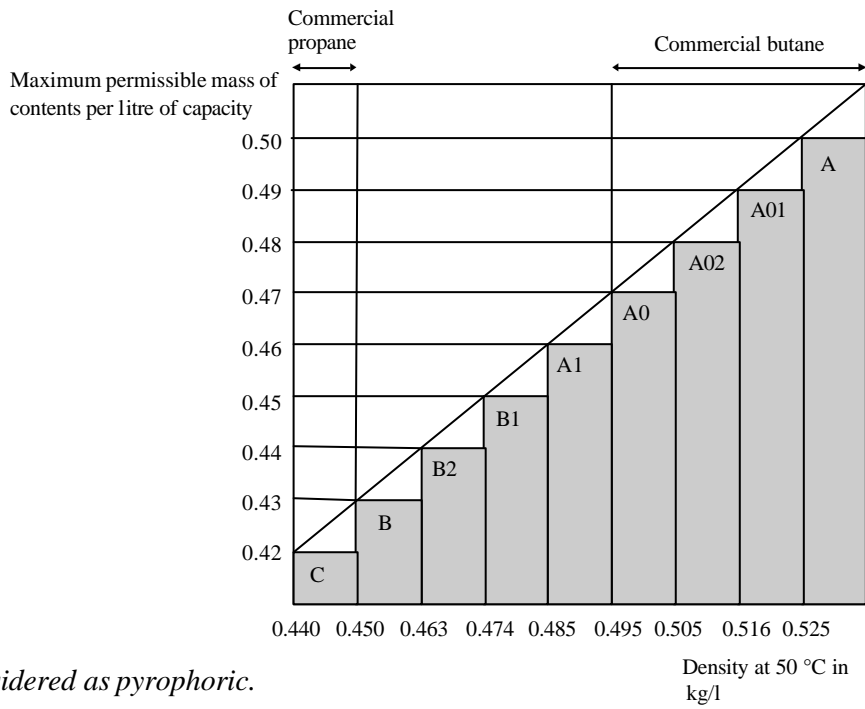
P200		PACKING INSTRUCTION (cont'd)										P200
Table 2: LIQUEFIED GASES AND DISSOLVED GASES												
UN No.	Name and description	Classification code	L _{C50} ml/m ³	Cylinders	Pressure drums	Bundles of cylinders	Tubes	Test period, years ^a	Test pressure, bar	Filling ratio	Special packing provisions	
2424	OCTAFLUOROPROPANE (REFRIGERANT GAS R 218)	2A		X	X	X	X	10	25	1.09	r	
2451	NITROGEN TRIFLUORIDE	2O		X	X	X	X	10	200 300	0.50 0.75		
2452	ETHYLACETYLENE, STABILIZED	2F		X	X	X	X	10	10	0.57	c, r	
2453	ETHYL FLUORIDE (REFRIGERANT GAS R 161)	2F		X	X	X	X	10	30	0.57	r	
2454	METHYL FLUORIDE (REFRIGERANT GAS R 41)	2F		X	X	X	X	10	300	0.36	r	
2455	METHYL NITRITE	2A	CARRIAGE PROHIBITED									
2517	1-CHLORO-1,1- DIFLUOROETHANE (REFRIGERANT GAS R 142b)	2F		X	X	X	X	10	10	0.99	r	
2534	METHYLCHLOROSILANE	2TFC	600	X	X	X	X	5			r, z	
2548	CHLORINE PENTAFLUORIDE	2TOC	122	X		X		5	13	1.49	a, k	
2599	CHLOROTRIFLUORO- METHANE AND TRIFLUOROMETHANE AZEOTROPIC MIXTURE with approximately 60% chlorotrifluoromethane (REFRIGERANT GAS R 503)	2A		X	X	X	X	10	31 42 100	0.11 0.20 0.66	r r r	
2601	CYCLOBUTANE	2F		X	X	X	X	10	10	0.63	r	
2602	DICHLORODIFLUORO- METHANE AND DIFLUOROETHANE AZEOTROPIC MIXTURE with approximately 74% dichlorodifluoromethane (REFRIGERANT GAS R 500)	2A		X	X	X	X	10	22	1.01	r	
2676	STIBINE	2TF	20	X		X		5	20	1.20	k, r	
2901	BROMINE CHLORIDE	2TOC	290	X	X	X	X	5	10	1.50	a	
3057	TRIFLUOROACETYL CHLORIDE	2TC	10	X	X	X		5	17	1.17	k, r	
3070	ETHYLENE OXIDE AND DICHLORODIFLUORO- METHANE MIXTURE with not more than 12,5% ethylene oxide	2A		X	X	X	X	10	18	1.09	r	
3083	PERCHLORYL FLUORIDE	2TO	770	X	X	X	X	5	33	1.21	k, u	
3153	PERFLUORO(METHYL VINYL ETHER)	2F		X	X	X	X	10	20	0.75	r	

P200 PACKING INSTRUCTION (cont'd) P200											
Table 2: LIQUEFIED GASES AND DISSOLVED GASES											
UN No.	Name and description	Classification code	L _{C50} ml/m ³	Cylinders	Pressure drums	Bundles of cylinders	Tubes	Test period, years ^a	Test pressure, bar	Filling ratio	Special packing provisions
3154	PERFLUORO(ETHYL VINYL ETHER)	2F		X	X	X	X	10	10	0.98	r
3157	LIQUEFIED GAS, OXIDIZING, N.O.S.	2O		X	X	X	X	10			z
3159	1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a)	2A		X	X	X	X	10	22	1.04	r
3160	LIQUEFIED GAS, TOXIC, FLAMMABLE, N.O.S.	2TF		X	X	X	X	5			r, z
3161	LIQUEFIED GAS, FLAMMABLE, N.O.S.	2F		X	X	X	X	10			r, z
3162	LIQUEFIED GAS, TOXIC, N.O.S.	2T		X	X	X	X	5			z
3163	LIQUEFIED GAS, N.O.S.	2A		X	X	X	X	10			r, z
3220	PENTAFLUOROETHANE (REFRIGERANT GAS R 125)	2A		X	X	X	X	10	49 36	0.95 0.72	r r
3252	DIFLUOROMETHANE (REFRIGERANT GAS R 32)	2F		X	X	X	X	10	48	0.78	r
3296	HEPTAFLUOROPROPANE (REFRIGERANT GAS R 227)	2A		X	X	X	X	10	15	1.20	r
3297	ETHYLENE OXIDE AND CHLOROTETRAFLUOROETHANE MIXTURE with not more than 8.8% ethylene oxide	2A		X	X	X	X	10	10	1.16	r
3298	ETHYLENE OXIDE AND PENTAFLUOROETHANE MIXTURE with not more than 7.9% ethylene oxide	2A		X	X	X	X	10	26	1.02	r
3299	ETHYLENE OXIDE AND TETRAFLUOROETHANE MIXTURE with not more than 5.6% ethylene oxide	2A		X	X	X	X	10	17	1.03	r
3300	ETHYLENE OXIDE AND CARBON DIOXIDE MIXTURE with more than 87% ethylene oxide	2TF	More than 2900	X	X	X	X	5	28	0.73	r
3307	LIQUEFIED GAS, TOXIC, OXIDIZING, N.O.S.	2TO		X	X	X	X	5			z
3308	LIQUEFIED GAS, TOXIC, CORROSIVE, N.O.S.	2TC		X	X	X	X	5			r, z
3309	LIQUEFIED GAS, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.	2TFC		X	X	X	X	5			r, z
3310	LIQUEFIED GAS, TOXIC, OXIDIZING, CORROSIVE, N.O.S.	2TOC		X	X	X	X	5			z

P200		PACKING INSTRUCTION (cont'd)										P200
Table 2: LIQUEFIED GASES AND DISSOLVED GASES												
UN No.	Name and description	Classification code	LC ₅₀ ml/m ³	Cylinders	Pressure drums	Bundles of cylinders	Tubes	Test period, years ^a	Test pressure, bar	Filling ratio	Special packing provisions	
3318	AMMONIA SOLUTION, relative density less than 0.880 at 15 °C in water, with more than 50% ammonia	4TC		X	X	X	X	5			b	
3337	REFRIGERANT GAS R 404A (Pentafluoroethane, 1,1,1-trifluoroethane, and 1,1,1,2-tetrafluoroethane zeotropic mixture with approximately 44% pentafluoroethane and 52% 1,1,1-trifluoroethane)	2A		X	X	X	X	10	36	0.82	r	
3338	REFRIGERANT GAS R 407A (Difluoromethane, pentafluoroethane, and 1,1,1,2-tetrafluoroethane zeotropic mixture with approximately 20% difluoromethane and 40% pentafluoroethane)	2A		X	X	X	X	10	36	0.94	r	
3339	REFRIGERANT GAS R 407B (Difluoromethane, pentafluoroethane, and 1,1,1,2-tetrafluoroethane zeotropic mixture with approximately 10% difluoromethane and 70% pentafluoroethane)	2A		X	X	X	X	10	38	0.93	r	
3340	REFRIGERANT GAS R 407C (Difluoromethane, pentafluoroethane, and 1,1,1,2-tetrafluoroethane zeotropic mixture with approximately 23% difluoromethane and 25% pentafluoroethane)	2A		X	X	X	X	10	35	0.95	r	
3354	INSECTICIDE GAS, FLAMMABLE, N.O.S	2F		X	X	X	X	10			r, z	
3355	INSECTICIDE GAS, TOXIC, FLAMMABLE, N.O.S.	2TF		X	X	X	X	5			r, z	
3374	ACETYLENE, SOLVENT FREE	2F		X		X		5	60		c, p	

a *Not applicable for pressure receptacles made of composite materials.*

b *For mixtures of UN No. 1965, the maximum permissible filling mass per litre of capacity is as follows:*



c *Considered as pyrophoric.*

d *Considered to be toxic. The LC₅₀ value still to be determined.*

PACKING INSTRUCTION (cont'd)												
Table 3: SUBSTANCES NOT IN CLASS 2												
UN No.	Name and description	Class	Classification Code	LC ₅₀ ml/m ³	Cylinders	Pressure drums	Bundles of cylinders	Tubes	Test period, years ^a	Test pressure, bar	Filling ratio	Special packing provisions
1051	HYDROGEN CYANIDE, STABILIZED containing less than 3% water	6.1	TF1	140	X		X		5	100	0.55	k
1052	HYDROGEN FLUORIDE, ANHYDROUS	8	CT1	966	X	X	X		5	10	0.84	ab, ac
1745	BROMINE PENTAFLUORIDE	5.1	OTC	25	X	X	X		5	10	^b	k, ab, ad
1746	BROMINE TRIFLUORIDE	5.1	OTC	180	X	X	X		5	10	^b	k, ab, ad
2495	IODINE PENTAFLUORIDE	5.1	OTC	120	X	X	X		5	10	^b	k, ab, ad

^a Not applicable for pressure receptacles made of composite materials.

^b A minimum ullage of 8% by volume is required.

P201: Under (1) replace "Compressed gas cylinders and gas receptacles" with "Cylinders tubes and pressure drums"

The following text becomes new (2):

"(2) In addition, the following packagings are authorized provided that the general provisions of **4.1.1** and **4.1.3** are met."

Rename the existing (2) and (3) as (a) and (b) respectively.

P202: "Reserved"

P400(1), P401(1) and

P402(1): In the first sentence, replace "Steel gas cylinders and gas receptacles" with "Steel cylinders, tubes and pressure drums".

In the second sentence, replace "or the gas cylinders or receptacles" with "or the cylinders, tubes or pressure drums".

In the third sentence, replace "Cylinders and gas receptacles" with "Cylinders, tubes and pressure drums" and delete "of the cylinder".

P402: In (1) delete the last sentence: "Filling shall not be greater than 90 % of the capacity of the cylinder."

Add the following new paragraphs:

"(3) Steel drums (1A1) with a maximum capacity of 250 litres.

- (4) Composite packagings consisting of a plastics receptacle with outer steel drum or aluminium (6HA1 or 6HB1) with a maximum capacity of 250 litres."

Replace "Special packing provision" with "Special packing provisions specific to RID and ADR" and amend "PP78" to read "RR4".

P406: Amend the special provision PP24 to read as follows:

"PP24 UN Nos. 2852, 3364, 3365, 3366, 3367, 3368 and 3369 shall not be carried in quantities of more than 500 g per package."

Add the following new special provisions PP78 and PP80 to read as follows:

"PP78 UN No. 3370 shall not be carried in quantities of more than 11.5 kg per package.";

"PP80 For UN Nos. 2907 and 3344, packagings shall meet the packing group II performance level. Packagings meeting the test criteria of packing group I shall not be used."

Delete additional requirement 3.

P601: In the first sentence, after "and 4.1.3 are met", insert: "and the packagings are hermetically sealed..." and delete at the end "(see also the Table of 4.1.4.4)".

Under (3) Combination packagings, amend (f) to read:

"(f) The outer and inner packagings shall be subjected periodically to a leakproofness test according to (b) at intervals of not more than two and a half years;"

Under (4), replace "Gas cylinders and gas receptacles" with "Cylinders, tubes and pressure drums".

Add at the end a new special packing provision specific to RID and ADR to read as follows:
"RR3 Only receptacles which satisfy one of the special requirements (PR) listed in 4.1.4.4 shall be used."

P602: In the first sentence, after "and 4.1.3 are met", insert: "and the packagings are hermetically sealed..."

Amend (4) as follows:

"(4) Cylinders, tubes and pressure drums with a minimum test pressure of 1MPa (10 bar) (gauge pressure) conforming to the provisions of packing instruction P200. No cylinder, tube or pressure drum may be equipped with any pressure relief device. Cylinders, tubes and pressure drums shall have their valves protected."

P621: Amend the first sentence to read: "The following packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 and the special provisions of 4.1.8 are met."

P650: Amend to read as follows:

P650	PACKING INSTRUCTION	P650
This packing instruction applies to UN No. 3373.		
General provisions		
<p>Diagnostic specimens shall be packed in good quality packagings, which shall be strong enough to withstand the shocks and loadings normally encountered during carriage, including trans-shipment between transport units and between transport units and warehouses as well as any removal from a pallet or overpack for subsequent manual or mechanical handling. Packagings shall be constructed and closed so as to prevent any loss of contents when prepared for carriage which might be caused under normal conditions of carriage, by vibration, or by changes in temperature, humidity or pressure.</p> <p>Primary receptacles shall be packed in secondary packagings in such a way that, under normal conditions of carriage, they cannot break, be punctured or leak their contents into the secondary packaging. Secondary packagings shall be secured in outer packagings with suitable cushioning material. Any leakage of the contents shall not substantially impair the protective properties of the cushioning material or of the outer packaging.</p> <p>For carriage each package shall be clearly and durably marked with the words "DIAGNOSTIC SPECIMENS". Packages containing substances carried in refrigerated liquid nitrogen shall, in addition, bear a label conforming to model No. 2.2.</p> <p>The completed package shall be capable of successfully passing the drop test in 6.3.2.5 as specified in 6.3.2.3 and 6.3.2.4 except that the height of the drop shall not be less than 1.2 m.</p> <p>If any substances have leaked and been spilled in a vehicle or container, it may not be reused until after it has been thoroughly cleaned and, if necessary, disinfected or decontaminated. Any other goods and articles carried in the same vehicle or container shall be examined for possible contamination.</p>		
For liquids		
<p>The primary receptacle(s) shall be leakproof and shall not contain more than 500 ml.</p> <p>There shall be absorbent material placed between the primary receptacle and the secondary packaging; if several fragile primary receptacles are placed in a single secondary packaging, they shall be either individually wrapped or separated so as to prevent contact between them. The absorbent material, such as cotton wool, shall be in sufficient quantity to absorb the entire contents of the primary receptacles and there shall be a secondary packaging which shall be leakproof.</p> <p>The primary receptacle or the secondary packaging shall be capable of withstanding without leakage an internal pressure producing a pressure differential of not less than 95 kPa (0.95 bar).</p> <p>The outer packaging shall not contain more than 4 litres.</p>		
For solids		
<p>The primary receptacle(s) shall be siftproof and shall not contain more than 500 g.</p> <p>If several fragile primary receptacles are placed in a single secondary packaging, they shall be either individually wrapped or separated so as to prevent contact between them and there shall be a secondary packaging which shall be leakproof.</p> <p>The outer packaging shall not contain more than 4 kg.</p>		
Provided that diagnostic specimens are packed in accordance with this packing instruction, no other requirements of ADR shall apply.		

P802(5): Replace "conforming to the construction, testing and filling requirements approved by the competent authority" with "conforming to the provisions of packing instruction P200" and "Gas cylinders" with "Cylinders, tubes and pressure drums".

P902: Amend to read as follows:

P902	PACKING INSTRUCTION	P902
This instruction applies to UN No. 3268.		
The following packagings are authorized, provided the general provisions of 4.1.1 and 4.1.3 are met:		
Packagings conforming to the packing group III performance level. The packagings shall be designed and constructed to prevent movement of the articles and inadvertent operation during normal conditions of carriage.		
The articles may also be carried unpackaged in dedicated handling devices, vehicles or containers when moved from where they are manufactured to an assembly plant.		
Additional requirement:		
Any pressure vessel shall be in accordance with the requirements of the competent authority for the substance(s) contained in the pressure vessel(s).		

P904: Amend (1) to read:

"(1) Packagings according to packing instruction P001 or P002 conforming to the packing group III performance level."

4.1.4.2 **IBC01** Replace the heading "Special packing provision" by "Special packing provision specific to RID and ADR", and amend "B12" to read "BB1".

IBC02 Amend "B11" to read "BB2" and move it into a new row (to be added at the end) with the heading "Special packing provision specific to RID and ADR".

IBC04 Under "Special packing provision" delete B1.

IBC05 Under "Special packing provisions" delete B1 and B2.

IBC06: Under "Special packing provisions" delete B1 and B2 and add a new special packing provision B12 to read as follows:

"B12 For UN 2907, IBCs shall meet the packing group II performance level. IBCs meeting the test criteria of packing group I shall not be used."

Under "(3) Composite" and in the additional requirement, delete "31HZ2".

IBC07 Under "Special packing provisions" delete B1 and B2.

IBC08 Under "Special packing provisions" delete B2.

IBC620 Amend the second sentence to read: "The following IBCs are authorized, provided that the general provisions of 4.1.1, 4.1.2 and 4.1.3 and the special provisions of 4.1.8 are met."

4.1.4.3 Add a new packing instruction LP902 to read:

LP902	PACKING INSTRUCTION	LP902
This instruction applies to UN No. 3268.		
<p>The following packagings are authorized, provided the general provisions of 4.1.1 and 4.1.3 are met:</p> <p>Packagings conforming to the packing group III performance level. The packagings shall be designed and constructed to prevent movement of the articles and inadvertent operation during normal conditions of carriage.</p> <p>The articles may also be carried unpackaged in dedicated handling devices, vehicles, or containers when moved from where they are manufactured to an assembly plant.</p>		
<p>Additional requirement:</p> <p>Any pressure vessel shall be in accordance with the requirements of the competent authority for the substance(s) contained in the pressure vessel(s).</p>		

- 4.1.4.4 In the first sentence, replace "gas cylinders or gas receptacles" with "cylinders, tubes or pressure drums".

Add in the table a new particular pressure receptacle requirement as follows:

Pressure receptacle requirements	UN Nos.	Applicable construction, testing, filling and marking requirements
PR7	1614	<p>Liquid hydrogen cyanide, stabilized, when completely absorbed by an inert porous material, shall be packed in metal receptacles of a capacity of not more than 7.5 litres, placed in wooden cases in such a manner that they cannot come into contact with one another. Such combination packagings shall comply with the following conditions:</p> <ol style="list-style-type: none"> (1) the receptacles shall be tested at a pressure of not less than 0.6 MPa (6 bar) (gauge pressure); (2) the receptacles shall be entirely filled with the porous material which shall not shake down or form dangerous spaces even after prolonged use or under impact, even at temperatures of up to 50 °C; (3) the date of filling shall be durably marked on the lid of each receptacle; (4) combination packagings shall be tested and approved, in accordance with 6.1.5.21 for packing group I; (5) a package shall not weigh more than 120 kg.

- 4.1.6.5 Delete the whole paragraph and renumber existing paragraph 4.1.6.6 as 4.1.6.5.

- 4.1.6.6 Add the following paragraphs after existing 4.1.6.6 (renumbered as 4.1.6.5) and renumber existing 4.1.6.7 as 4.1.6.10.

"4.1.6.6 Non-refillable pressure receptacles shall:

- (a) be carried in an outer packaging, such as a box, or crate, or in shrink-wrapped trays or stretch-wrapped trays;

- (b) be of a water capacity less than or equal to 1.25 litres when filled with flammable or toxic gas;
- (c) not be used for toxic gases with an LC₅₀ less than or equal to 200 ml/m³; and
- (d) not be repaired after being put into service.

4.1.6.7 Pressure receptacles shall not be subjected to repairs of any of the following;

- (a) weld cracks or other weld defects;
- (b) cracks in walls;
- (c) leaks or defects in the material of the wall, head or bottom.

4.1.6.8 Pressure receptacles shall not be offered for filling:

- (a) when damaged to such an extent that the integrity of the pressure receptacle or its service equipment may be affected;
- (b) unless the pressure receptacle and its service equipment has been examined and found to be in good working order; and
- (c) unless the required certification, retest, and filling markings are legible.

4.1.6.9 Charged pressure receptacles shall not be offered for carriage;

- (a) when leaking;
- (b) when damaged to such an extent that the integrity of the pressure receptacle or its service equipment may be affected;
- (c) unless the pressure receptacle and its service equipment has been examined and found to be in good working order; and
- (d) unless the required certification, retest, and filling markings are legible."

4.1.6.10 (Former 4.1.6.7) Add the following line to the table:

Applicable paragraphs	Reference	Title of document
4.1.6.4 (d)	Annex A of EN849:1996/A2:2001	Transportable gas cylinders – Cylinder valves: Specifications and type testing – Amendment 2

4.1.7.0.1

Add a new paragraph to read:

"4.1.7.0.1 For organic peroxides, all receptacles shall be "effectively closed". Where significant internal pressure may develop in a package by the evolution of a gas, a vent may be fitted, provided the gas emitted will not cause danger, otherwise the degree of filling shall be limited. Any venting device shall be so constructed that liquid will not escape when the package is in an upright position and it shall be able to prevent ingress of impurities. The outer packaging, if any, shall be so designed as not to interfere with the operation of the venting device."

- 4.1.7.2.3 Add a new paragraph to read:
"4.1.7.2.3 Emergencies to be taken into account are self-accelerating decomposition and fire engulfment. To prevent explosive rupture of metal or composite IBCs with a complete metal casing, the emergency-relief devices shall be designed to vent all the decomposition products and vapours evolved during self-accelerating decomposition or during a period of not less than one hour of complete fire engulfment calculated by the equations given in 4.2.1.13.8."
- 4.1.8.2 Amend to read as follows:
"The definitions in 1.2.1 and the general packing provisions of 4.1.1.1 to 4.1.1.14, except 4.1.1.10 to 4.1.1.12 apply to infectious substances packages. However, liquids shall be filled into packagings, including IBCs, which have an appropriate resistance to the internal pressure that may develop under normal conditions of carriage."
- 4.1.8.3 Amend the beginning to read: "For UN No. 2814 and UN No. 2900, an itemized..."
- 4.1.8.5 Add a new paragraph to read:
"4.1.8.5 The provisions of this section do not apply to UN No. 3373 Diagnostic specimens (see packing instruction P650)".
- 4.1.10.4 **MP5** Amend the second sentence to read: "They shall not be packed together with other goods; this does not apply to UN No. 3373 diagnostic specimens packed in accordance with P650 or to substances added..."

Chapter 4.2

In the title, add at the end: "AND UN CERTIFIED MULTIPLE-ELEMENT GAS CONTAINERS (MEGCs)".

- 4.2.2.1 [Does not apply to the English version.]
- 4.2.2.7.1 Amend the beginning of the first sentence to read as follows: "Prior to filling the portable tank shall be inspected to ensure that it is authorized for the non-refrigerated liquefied gas..."
- 4.2.3.6.1 Amend the beginning of the first sentence to read as follows: "Prior to filling the portable tank shall be inspected to ensure that it is authorized for the refrigerated liquefied gas..."
- 4.2.4 Renumber the existing 4.2.4 as "4.2.5" and add the following text as new 4.2.4:
4.2.4 General provisions for the use of UN certified multiple -element gas containers (MEGCs)
- 4.2.4.1 This section provides general requirements applicable to the use of multiple-element gas containers (MEGCs) for the carriage of non-refrigerated gases referred to in 6.7.5.
- 4.2.4.2 MEGCs shall conform to the design, construction, inspection and testing requirements detailed in 6.7.5. The elements of MEGCs shall be periodically inspected according to the provisions set out in packing instruction P200 of 4.1.4.1 and in 6.2.1.5.
- 4.2.4.3 During carriage, MEGCs shall be protected against damage to the elements and service equipment resulting from lateral and longitudinal impact and overturning. If the elements and service equipment are so constructed as to withstand impact or overturning, they need not be protected in this way. Examples of such protection are given in 6.7.5.10.4.

- 4.2.4.4 The periodic testing and inspection requirements for MEGCs are specified in 6.7.5.12. MEGCs or their elements shall not be charged or filled after they become due for periodic inspection but may be carried after the expiry of the time limit.
- 4.2.4.5 *Filling*
- 4.2.4.5.1 Prior to filling, the MEGC shall be inspected to ensure that it is authorized for the gas to be carried and that the applicable provisions of ADR have been met.
- 4.2.4.5.2 Elements of MEGCs shall be filled according to the working pressures, filling ratios and filling provisions specified in packing instruction P200 of 4.1.4.1 for the specific gas being filled into each element. In no case shall an MEGC or group of elements be filled as a unit in excess of the lowest working pressure of any given element.
- 4.2.4.5.3 MEGCs shall not be filled above their maximum permissible gross mass.
- 4.2.4.5.4 Isolation valves shall be closed after filling and remain closed during carriage. Toxic gases (gases of groups T, TF, TC, TO, TFC and TOC) shall only be carried in MEGCs where each element is equipped with an isolation valve.
- 4.2.4.5.5 The opening(s) for filling shall be closed by caps or plugs. The leakproofness of the closures and equipment shall be verified by the filler after filling.
- 4.2.4.5.6 MEGCs shall not be offered for filling:
- (a) when damaged to such an extent that the integrity of the pressure receptacles or its structural or service equipment may be affected;
 - (b) unless the pressure receptacles and its structural and service equipment has been examined and found to be in good working order; and
 - (c) unless the required certification, retest, and filling markings are legible.
- 4.2.4.6 Charged MEGCs shall not be offered for carriage;
- (a) when leaking;
 - (b) when damaged to such an extent that the integrity of the pressure receptacles or its structural or service equipment may be affected;
 - (c) unless the pressure receptacles and its structural and service equipment have been examined and found to be in good working order; and
 - (d) unless the required certification, retest, and filling markings are legible.
- 4.2.4.7 Empty MEGCs that have not been cleaned and purged shall comply with the same requirements as MEGCs filled with the previous substance."

Renumber following paragraphs accordingly.

- 4.2.5.2.6 (Former 4.2.4.2.6) In the second column of portable tank instruction T50, for UN No. 1062, add "with not more than 2% chloropicrin" and for UN No. 1581 add "with more than 2% chloropicrin".

Chapter 4.3

4.3.3.1.1 In the table, under "Tank code", for "P", amend "gases dissolved under pressure" to read "dissolved gases".

4.3.3.2 Amend to read as follows:

"4.3.3.2 Filling conditions and test pressures

4.3.3.2.1 The test pressure for tanks intended for the carriage of compressed gases shall be at least 1.5 times the working pressure as defined in 1.2.1 for pressure receptacles.

4.3.3.2.2. The test pressure for tanks intended for the carriage of:

- high pressure liquefied gases; and
- dissolved gases

shall be such that, when the shell is filled to the maximum filling ratio, the pressure reached in the shell by the substance at 55 °C for tanks with thermal insulation or 65 °C for tanks without thermal insulation does not exceed the test pressure.

4.3.3.2.3 The test pressure for tanks intended for the carriage of low pressure liquefied gases will be:

- (a) If the tank is equipped with thermal insulation, at least equal to the vapour pressure, reduced by 0.1 MPa (1 bar) of the liquid at 60 °C, but not less than 1 MPa (10 bar);
- (b) If the tank is not equipped with thermal insulation, at least equal to the vapour pressure, reduced by 0.1 MPa (1 bar), of the liquid at 65 °C, but not less than 1 MPa (10 bar).

The maximum permissible mass of contents per litre of capacity is calculated as follows:

Maximum permissible mass of contents per litre of capacity = 0.95 x density of the liquid phase at 50 °C (in kg/l)

Moreover the vapour phase shall not disappear below 60 °C.

If the shells are not more than 1.5 m in diameter, the values of the test pressure and maximum filling ratio conforming to packing instruction P200 in 4.1.4.1 shall be applicable.

4.3.3.2.4 The test pressure for tanks intended for the carriage of refrigerated liquefied gases shall be not less than 1.3 times the maximum allowable working pressure and indicated on the tank but not less than 300 kPa (3 bar) (gauge pressure); for tanks with vacuum insulation the test pressure shall be not less than 1.3 times the maximum allowable working pressure increased by 100 kPa (1 bar)."

4.3.3.2.5 Amend the text before the table as follows:

"4.3.3.2.5 *Table of gases and gas mixtures which may be carried in fixed tanks (tank-vehicles), battery-vehicles, demountable tanks, tank-containers or MEGCs indicating the minimum test pressure for tanks and as far as applicable the filling ratio*

In the case of gases and gas mixtures classified under n.o.s. entries, the values of the test pressure and the filling ratio shall be prescribed by the expert approved by the competent authority.

When tanks for compressed or high pressure liquefied gases have been subjected to a test pressure lower than shown in the table, and the tanks are fitted with thermal insulation, a lower maximum load may be prescribed by the expert approved by the competent authority, provided that the pressure reached in the tank by the substance at 55 °C does not exceed the test pressure stamped on the tank."

In the second column of the table, for UN No. 1062, add "with not more than 2% chloropicrin" and for UN No. 1581 add "with more than 2% chloropicrin".

Amend the following rows of the table:

UN No.	Name	Classification code	Minimum test pressure for tanks				Filling ratio
			With thermal insulation		Without thermal insulation		
			MPa	bar	MPa	bar	
1008	Boron trifluoride	2 TC	22.5	225	22.5	225	0.715 0.86
			30	300	30	300	
1859	Silicon tetrafluoride	2 TC	20	200	20	200	0.74 1.10
			30	300	30	300	
1962	Ethylene	2 F	12	120			0.25 0.36 0.34 0.37
			22.5	225			
					22.5	225	
					30	300	
1982	Tetrafluoromethane (Refrigerant gas R14)	2 A	20	200	20	200	0.62 0.94
			30	300	30	300	
2036	Xenon	2 A	12	120			1.30 1.24
					13	130	
2193	Hexafluoroethane, (Refrigerant gas R116)	2 A	16	160			1.28 1.34 1.10
			20	200			
					20	200	
2203	Silane ^b	2 F	22.5	225	22.5	225	0.32 0.36
			25	250	25	250	
2417	Carbonyl fluoride	2 TC	20	200	20	200	0.47 0.70
			30	300	30	300	
2451	Nitrogen trifluoride	2 O	20	200	20	200	0.50 0.75
			30	300	30	300	

^b *Considered as pyrophoric*

Add the following row:

3374	Acetylene, solvent free	2 F	only in battery-vehicles and MEGCs composed of receptacles				
------	-------------------------	-----	--	--	--	--	--

- 4.3.4.1.2 Add the following paragraph at the end of 4.3.4.1.2:
 "The list of tank codes permitted under the hierarchy of tanks given in the table above is not necessarily complete. This table is limited to the tank codes that are indicated in Table A of Chapter 3.2. Tanks with tank codes different from those indicated in this table or in Table A of Chapter 3.2 may also be used provided that the first part of the code (L or S) remains unchanged and that any other element (number or letter) of parts 2 to 4 of these tank codes correspond to a level of safety at least equivalent to the corresponding element of the tank code indicated in Table A of Chapter 3.2, according to the following increasing order:

Part 2: Calculation pressure

G ? 1.5 ? 2.65 ? 4 ? 10 ? 15 ? 21 bar

Part 3: Openings

A ? B ? C ? D

Part 4: Safety valves/devices

V ? F ? N ? H

For example, a tank with the tank code L10CN is authorized for the carriage of a substance to which the tank code L4BN has been assigned."

In the table of 4.3.4.1.2, delete the following tank codes under "Hierarchy of tanks":

For LGAV, delete: LGAH, LGBH, L1.5AH and L1.5BH.

For LGBV, delete: LGBH and L1.5BH.

For LGBF, delete: L1.5BH and LGBH.

For L1.5BN, delete: L1.5BH.

- 4.3.4.1.3 Amend the first paragraph to read as follows:
 "The following substances and groups of substances in respect of which a "(+)" is given after the tank code in Column (12) of Table A in Chapter 3.2 are subject to special provisions. In that case the alternate use of the tanks for other substances and groups of substances is permitted only where this is specified in the certificate of type approval. The hierarchy in 4.3.4.1.2 is not applicable. However, higher value tanks according to the provisions at the end of the table in 4.3.4.1.2 may be used with due regard to the special provisions indicated in Column (13) of Table A in Chapter 3.2."

- 4.3.4.1.4 Add a new paragraph to read as follows:
 "4.3.4.1.4 Tanks intended for the carriage of liquid wastes complying with the requirements of Chapter 6.10 and equipped with two closures in accordance with 6.10.3.2, shall be marked with the tank code L4AH. If the tanks concerned are equipped for the alternate carriage of liquid and solid substances, they shall be marked with the combined codes L4AH+S4AH."

- 4.3.5 TU11 Amend the second sentence to read:
 "A maximum filling temperature of 80 °C is allowed provided that smoulder spots are prevented and that the following conditions are met."

- TU14 Amend to read:
 "The protective caps of closures shall be locked during carriage."

Chapter 4.4

Amend the title of the chapter to read: "USE OF FIBRE-REINFORCED PLASTICS (FRP) FIXED TANKS (TANK-VEHICLES), DEMOUNTABLE TANKS, TANK-CONTAINERS AND TANK SWAP BODIES"

- 4.4.2.1 Add "4.3.4.1" to the paragraphs listed.

Chapter 4.5

- 4.5.1.1 Amend the beginning of the first sentence as follows: "Wastes consisting of substances..." and add the following text at the end: "Substances assigned to tank code LABH in Column (12) of Table A of Chapter 3.2 or to another tank code permitted under the hierarchy in 4.3.3.1.2 may be carried in vacuum operated waste tanks with the letter "A" or "B" in part 3 of the tank code, as indicated in No. 9.5 of the vehicle approval certificate conforming to 9.1.2.1.5."

PART 5**Chapter 5.1**

- 5.1.2.1 Rename as "(a)" and amend to read as follows:
 "(a) An overpack shall be marked with the UN number preceded by the letters "UN" and shall be labelled as required for packages in 5.2.2, for each item of dangerous goods contained in the overpack, unless the markings and the labels representative of all dangerous goods contained in the overpack are visible. If the same marking or the same label is required for different packages, it only needs to be applied once."

Insert the following new paragraph:

- "(b) Label conforming to model No. 11 illustrated in 5.2.2.2.2 shall be displayed on two opposite sides of the following overpacks:

- overpacks containing packages which shall be labelled in accordance with 5.2.2.1.12, unless the labels remain visible, and
- overpacks containing liquids in packages which need not be labelled in accordance with 5.2.2.1.12, unless the closures remain visible."

Chapter 5.2

- 5.2.1.6 In Note 1, replace "6.2.1.7.1" with "6.2.1.7".
 In Note 2, replace "6.2.1.7.2" with "6.2.1.8".
- 5.2.2.2.1.2 Amend the beginning to read "Cylinders for Class 2..."
- Add the following text at the end:
 "Notwithstanding the provisions of 5.2.2.1.6, labels may overlap to the extent provided for by ISO 7225. However, in all cases, the primary risk label and the figures appearing on any label shall remain fully visible and the symbols recognizable."
- 5.2.2.2.1.6 Add the following paragraph:
 "(c) labels conforming to model No. 2.1 displayed on cylinders and gas cartridges for UN No. 1965, where they may be shown in the background colour of the receptacle if adequate contrast is provided."
- 5.2.2.2.2 Amend the text under label model 2.1 to read as follows:
 "(No. 2.1)
 Flammable gases
 Symbol (flame): black or white (except as provided for in 5.2.2.2.1.6 (c))
 Background: red, Figure "2" in bottom corner".

Chapter 5.3

In the NOTE under the title, replace "1.1.4.2" with "1.1.4.2.1" and "1.1.4.2 (c)" with "1.1.4.2.1 (c)".

5.3.1.2

Add the following paragraph:

"When the MEGC, tank-container or portable tank has multiple compartments and carries two or more dangerous goods, the appropriate placards shall be displayed along each side at the position of the relevant compartments and one placard of each model shown on each side at both ends."

5.3.1.4

Add the following paragraphs:

"When the tank-vehicle, battery-vehicle or the demountable tank carried on the vehicle has multiple compartments and carries two or more dangerous goods, the appropriate placards shall be displayed along each side at the position of the relevant compartments and one placard of each model shown on each side at the rear of the vehicle. However, in such case, if all compartments have to bear the same placards, these placards need be displayed only once along each side and at the rear of the vehicle.

Where more than one placard is required for the same compartment, these placards shall be displayed adjacent to each other."

Chapter 5.4

5.4.1.1.1

(a) Add at the end "preceded by the letters "UN";".

(b) Amend to read as follows:

"The proper shipping name supplemented, when applicable (see 3.1.2.8.1) with the technical name (see 3.1.2.8.1.1) or the chemical group, as determined in accordance with 3.1.2."

(c) Amend to read as follows:

"- For substances and articles of Class 1: the classification code given in Column (3 b) of Table A in Chapter 3.2.

When, in Column (5) of Table A of Chapter 3.2, label model numbers other than 1, 1.4, 1.5 and 1.6, these label model numbers, in brackets, shall follow the classification code;

- For radioactive material of Class 7: see 5.4.1.2.5;

- For substances and articles of other classes: the label model numbers given in Column (5) of Table A in Chapter 3.2. When more than one label model numbers are given, the numbers following the first one shall be given in brackets."

(d) Amend to read as follows:

"where assigned, the packing group for the substance which may be preceded by the letters "PG" (e.g. "PG II"), or the initials corresponding to the words "Packing Group" in the languages used according to 5.4.1.4.1."

(e) Delete. Renumber paragraph (f) to (j) to be (e) to (i).

- (f) [Former (g)] Amend the beginning of the indent as follows: "the total quantity of each item of dangerous goods bearing a different UN number, proper shipping name or, when applicable, packing group (as a volume...);".

Amend the NOTE to read as follows:

"NOTE: In the case of intended application of 1.1.3.6, the total quantity of dangerous goods for each transport category shall be indicated in the transport document in accordance with 1.1.3.6.3."

Amend last paragraph to read as follows:

"The location and order in which the elements of information required appear in the transport document is left optional, except that (a), (b), (c) and (d) shall be shown either in sequence (a), (b), (c), (d) or in sequence (b), (c), (a), (d) with no information interspersed, except as provided in ADR. Examples of such permitted dangerous goods descriptions are:

**"UN 1098 ALLYL ALCOHOL, 6.1 (3), I" or
"ALLYL ALCOHOL, 6.1 (3), UN 1098, I"**

5.4.1.1.2

Add the following text:

"Although upper case is used in Chapter 3.1 and in Table A in Chapter 3.2 to indicate the elements which shall be part of the proper shipping name, and although upper and lower case are used in this Chapter to indicate the information required in the transport document, the use of upper or of lower case for entering the information in the transport document is left optional."

5.4.1.1.3

Delete "ADR" and insert "UN" before "1230" and "1993", in the two examples at the end of the paragraph.

5.4.1.1.6

Amend the beginning of the first sentence to read:

"For empty means of containment, uncleaned, which contain the residue of dangerous goods of classes other than Class 7, the description..."

At the end of the first sentence delete "and the letters "ADR or RID".

Add ", supplemented, if necessary (see 3.1.2.8) by the technical name and, if applicable, by the packing group" at the end of the second paragraph after "the goods last loaded".

Delete "ADR" in the two examples and insert "UN" before "1017" in the second example.

5.4.1.1.12

Add the following new paragraph:

"5.4.1.1.12 Special provisions for the carriage of substances carried under elevated temperature

If the proper shipping name of a substance which is carried or offered for carriage in a liquid state at a temperature equal to or exceeding 100 °C, or in a solid state at a temperature equal to or exceeding 240 °C, does not convey the elevated temperature condition (for example, by using the term "MOLTEN" or "ELEVATED TEMPERATURE" as part of the proper shipping name), the word "**HOT**" shall immediately precede the proper shipping name.

- 5.4.1.1.13 Add the following new paragraph:
5.4.1.1.13 *Special provisions for the carriage of substances stabilized by temperature control*

If the word "STABILIZED" is part of the proper shipping name (see also 3.1.2.6), when stabilization is by means of temperature control, the control and emergency temperatures (see 2.2.41.1.17) shall be indicated in the transport document, as follows:

"Control temperature: ...°C Emergency temperature: °C".

- 5.4.1.1.14 Add the following new paragraph:
"5.4.1.1.14 *Information required in accordance with special provision 640 in Chapter 3.3*

Where it is required by special provision 640 of Chapter 3.3, the transport document shall bear the inscription '**Special provision 640X**' where "X" is the capital letter appearing after the pertinent reference to special provision 640 in column (6) of Table A of Chapter 3.2."

- 5.4.1.2.1 (a) Replace "covered by a description" with "bearing a different UN number."

Add the following new paragraphs:

"(f) *(Reserved)*

(g) When fireworks of UN Nos. 0333, 0334, 0335, 0336 and 0337 are carried, the transport document shall bear the inscription: "**Classification recognized by the competent authority of ...** (State referred to in special provision 645 of 3.3.1)".

- 5.4.1.2.2 (a) Replace "(see also 3.1.2.6.1.2)" with "(see also 3.1.2.8.1.2)".
(b) Replace "4.1.6.6" with "4.1.6.5" (twice).

- 5.4.1.2.3.1 Add the following references after "temperature control during carriage": "(for self-reactive substances see 2.2.41.1.17; for organic peroxides, see 2.2.52.1.15 to 2.2.52.1.17)".

- 5.4.1.2.4 (b) Amend to read "*(Reserved)*".

- 5.4.3.1 (f) Amend to read as follows:
"the necessary equipment for additional and/or special actions, if applicable."

- 5.4.3.8 Amend the sentence under "PERSONAL PROTECTION" to read as follows:
"Mention of the personal protection intended for the driver in accordance with the requirements of 8.1.5 (b) and (c)."

Chapter 5.5

- 5.5.2 and 5.5.2.1 Replace "containers and vehicles" with "vehicles, containers and tanks".

- 5.5.2.2 Amend the beginning of the paragraph to read:
"A warning sign as specified in 5.5.2.3 shall be placed...".

Replace "container or vehicle" with "vehicle, container or tank" (twice).

Move the figure to 5.5.2.3.

- 5.5.2.3 Add a new paragraph to read:
 "The fumigation warning sign shall be rectangular and shall not be less than 300 mm wide and not less than 250 mm high. The markings shall be black print on a white background with lettering not less than 25 mm high. An illustration of this sign is given in the figure below."

PART 6

Chapter 6.1

- 6.1.1.1 (c) Replace "Receptacles" with "Pressure receptacles".
- 6.1.1.4 Add ", reconditioned" after "manufactured" and delete "manufactured" after "each".
- 6.1.1.5 Add the following new paragraph:
 "6.1.1.5 Manufacturers and subsequent distributors of packagings shall provide information regarding procedures to be followed and a description of the types and dimensions of closures (including required gaskets) and any other components needed to ensure that packages as presented for carriage are capable of passing the applicable performance tests of this Chapter."
- 6.1.2.3 Delete "and infectious substances packagings marked in accordance with 6.3.1.1".
- 6.1.3 Under Note 3, replace three times "Group" with "packing group".
- 6.1.3.2 Renumber this paragraph as "6.1.3.3" and amend to read as follows:
 "6.1.3.3 Every packaging other than those referred to in 6.1.3.2 liable to undergo a reconditioning process shall bear the marks indicated in 6.1.3.1 (a) to (e) in a permanent form. Marks are permanent if they are able to withstand the reconditioning process (e.g. embossed). For packagings other than metal drums of a capacity greater than 100 litres, these permanent marks may replace the corresponding durable markings prescribed in 6.1.3.1."
- 6.1.3.2.1, 6.1.3.2.2, 6.1.3.2.3
 and 6.1.3.2.4 Renumber these paragraphs as 6.1.3.2, 6.1.3.4, 6.1.3.5 and 6.1.3.6 respectively. Renumber 6.1.3.3 to 6.1.3.14 as 6.1.3.7 to 6.1.3.14.
- 6.1.3.2 (Former 6.1.3.2.1) In the last sentence, replace "6.1.3.2.3" with "6.1.3.5".
- 6.1.3.7 (Former 6.1.3.3) Amend this paragraph to read as follows:
 "6.1.3.7 Marking shall be applied in the sequence of the sub-paragraphs in 6.1.3.1; each element of the marking required in these sub-paragraphs and when appropriate sub-paragraphs (h) to (j) of 6.1.3.8 shall be clearly separated, e.g. by a slash or space, so as to be easily identifiable. For examples, see 6.1.3.11.
- Any additional markings authorized by a competent authority shall still enable the parts of the mark to be correctly identified with reference to 6.1.3.1."
- 6.1.3.8 (i) [Former 6.1.3.4 (i)] Amend to read as follows:
 "(i) the name of the reconditioner or other identification of the packaging specified by the competent authority."
- 6.1.3.9 (Former 6.1.3.5) Replace "6.1.3.4" with "6.1.3.8".
- 6.1.3.12 (Former 6.1.3.8) Replace "6.1.3.4" with "6.1.3.8" (twice).

6.1.3.13 (Former 6.1.3.9) In the Note, replace "6.1.3.7, 6.1.3.8 and 6.1.3.9" with "6.1.3.11, 6.1.3.12 and 6.1.3.13".

6.1.4.18.1 Amend the first sentence to read as follows:
"Bags shall be made of a suitable kraft paper or of an equivalent paper with at least three plies, the middle ply of which may be net-cloth and adhesive bonding to the outer paper plies."

6.1.5.5.4 (a), (b) and (c) Replace "substance" with "liquid".

6.1.5.5.5 Replace "substances" with "liquids".

6.1.5.6.2 Delete "non-dangerous" before "liquids" in the first sentence.

Chapter 6.2

Replace "receptacles for gases" with "pressure receptacles" in the title and throughout the existing text of Chapter 6.2, replace "receptacle(s)" with "pressure receptacle(s)".

6.2.1 In the title, delete "for receptacles for gases".

6.2.1.1.1 Insert the following text before the paragraph beginning with "The test pressure of...":
"Any additional thickness used for the purpose of providing a corrosion allowance shall not be taken into consideration in calculating the thickness of the walls.

For welded pressure receptacles, only metals of weldable quality whose adequate impact strength at an ambient temperature of - 20° C can be guaranteed shall be used."

6.2.1.1.2 Add at the end:
"The above requirements, excluding those for the solvent, apply equally to receptacles for UN No. 3374 acetylene, solvent free."

6.2.1.1.3 and

6.2.1.1.4 Add the following two new paragraphs:

"6.2.1.1.3 The following requirements apply to the construction of closed cryogenic pressure receptacles for refrigerated liquefied gases:

(a) The mechanical properties of the metal used shall be established for each pressure receptacle at the initial inspection, including the impact strength and the bending coefficient; with regard to the impact strength see 6.8.5.3;

(b) The pressure receptacles shall be thermally insulated. The thermal insulation shall be protected against impact by means of continuous sheathing. If the space between the pressure receptacle and the sheathing is evacuated of air (vacuum-insulation), the protective sheathing shall be designed to withstand without permanent deformation an external pressure of at least 100 kPa (1 bar). If the sheathing is so closed as to be gas-tight (e.g. in the case of vacuum-insulation), a device shall be provided to prevent any dangerous pressure from developing in the insulating layer in the event of inadequate gas-tightness of the pressure receptacle or its fittings. The device shall prevent moisture from penetrating into the insulation.

- 6.2.1.1.4 Pressure receptacles assembled in bundles shall be structurally supported and held together as a unit. Pressure receptacles shall be secured in a manner that prevents movement in relation to the structural assembly and movement that would result in the concentration of harmful local stresses. Manifolds shall be designed such that they are protected from impact. For gases with a classification code of 2T, 2TF, 2TC, 2TO, 2TFC or 2TOC, means shall be provided to ensure that each pressure receptacle can be separately filled and that no interchange of pressure receptacle contents can occur during carriage."
- 6.2.1.2 (a) and (b) Replace "gases dissolved under pressure" with "dissolved gases" and add at the end "as well as for substances not in Class 2 listed in Table 3 of packing instruction P200 in 4.1.4.1;"
- 6.2.1.2 (e) Replace "gases dissolved under pressure" with "dissolved gases".
- 6.2.1.3.1 Replace the existing text with the following:
"Pressure drums may be provided with openings for filling and discharge and with other openings intended for level gauges, pressure gauges or relief devices. The number of openings shall be kept to a minimum consistent with safe operations. Pressure drums may also be provided with an inspection opening, which shall be closed by an effective closure."
- 6.2.1.3.2 Add the following new subparagraphs (e) and (f):
"(e) If level gauges, pressure gauges or relief devices are installed, they shall be protected in the same way as is required for valves in 4.1.6.4.
(f) Pressure receptacles whose filling is measured by volume shall be provided with a level indicator."
- 6.2.1.5 In the title, add "and test".
- 6.2.1.5.1 Replace the existing text with the following:
"6.2.1.5.1 New pressure receptacles shall be subjected to testing and inspection during and after manufacture in accordance with the following:
On an adequate sample of pressure receptacles:
(a) Testing of the mechanical characteristics of the material of construction;
(b) Verification of the minimum wall thickness;
(c) Verification of the homogeneity of the material for each manufacturing batch, and inspection of the external and internal conditions of the pressure receptacles;
(d) Inspection of the neck threads;
(e) Verification of the conformance with the design standard;
For all pressure receptacles:
(f) A hydraulic pressure test. Pressure receptacles shall withstand the test pressure without undergoing permanent deformation or exhibiting cracks;

NOTE : *With the agreement of the inspection body, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.*

- (g) Inspection and assessment of manufacturing defects and either repairing them or rendering the pressure receptacles unserviceable;
- (h) An inspection of the markings on the pressure receptacles;
- (i) In addition, pressure receptacles intended for the carriage of UN No. 1001 acetylene, dissolved, and UN No. 3374 acetylene, solvent free, shall be inspected to ensure proper installation and condition of the porous material and the quantity of solvent."

6.2.1.6 In the title, add: "and test"

6.2.1.6.1 Renumber existing (c) as (d) and insert a new (c) as follows:
"(c) Checking of the neck threads if the fittings are removed;"

6.2.1.6.2 and
6.2.1.6.3

Replace the existing text with the following:

"6.2.1.6.2 For pressure receptacles intended for the carriage of UN No. 1001 acetylene, dissolved, and UN No. 3374 acetylene, solvent free, only the external condition (corrosion, deformation) and the condition of the porous mass (loosening, settlement) shall be required to be examined.

6.2.1.6.3 By derogation from 6.2.1.6.1 (d) closed cryogenic pressure receptacles shall be inspected to verify external conditions, condition and operation of pressure relief devices and subjected to a leakproofness test. The leakproofness test shall be carried out with the gas contained in the receptacle or with an inert gas. Checking shall be performed by means of a pressure gauge or by vacuum measurement. The thermal insulation need not be removed."

6.2.1.7 Amend as follows:

"6.2.1.7 *Marking of refillable pressure receptacles*

Refillable pressure receptacles shall be marked clearly and legibly with certification and gas or pressure receptacle specific marks. These marks shall be permanently affixed (e.g. stamped, engraved, or etched) on the pressure receptacle. The marks shall be on the shoulder, top end or neck of the pressure receptacle or on a permanently affixed component of the pressure receptacle (e.g. welded collar).

The minimum size of the marks shall be 5 mm for pressure receptacles with a diameter greater than or equal to 140 mm and 2.5 mm for pressure receptacles with a diameter less than 140 mm.

6.2.1.7.1 The following certification marks shall be applied:

- (a) The technical standard used for design, construction and testing, as listed in the table under 6.2.2 or the approval number;
- (b) The character(s) identifying the country of approval as indicated by the distinguishing signs of motor vehicles in international traffic;

- (c) The identity mark or stamp of the inspection body that is registered with the competent authority of the country authorizing the marking;
- (d) The date of the initial inspection, the year (four digits) followed by the month (two digits) separated by a slash (i.e. "/").

6.2.1.7.2 The following operational marks shall be applied:

- (e) The test pressure in bar, preceded by the letters "PH" and followed by the letters "BAR";
- (f) The empty mass of the pressure receptacle including all permanently attached integral parts (e.g. neck ring, foot ring, etc.) in kilograms, followed by the letters "KG". With the exception of pressure receptacles of UN No. 1965 hydrocarbon gas mixture, liquefied, n.o.s., this mass shall not include the mass of valve, valve cap or valve guard, any coating, or porous mass for acetylene. The empty mass shall be expressed to three significant figures rounded up to the last digit. For cylinders of less than 1 kg, the mass shall be expressed to two significant figures rounded up to the last digit;
- (g) The minimum guaranteed wall thickness of the pressure receptacle in millimetres followed by the letters "MM". This mark is not required for pressure receptacles of UN No. 1965 hydrocarbon gas mixture, liquefied, n.o.s., nor for pressure receptacles with a water capacity less than or equal to 1 l or for composite cylinders;
- (h) In the case of pressure receptacles intended for the carriage of compressed gases, UN No. 1001 acetylene, dissolved, and UN No. 3374 acetylene, solvent free, the working pressure in bar, preceded by the letters "PW";
- (i) In the case of liquefied gases, the water capacity in litres expressed to three significant digits rounded down to the last digit, followed by the letter "L". If the value of the minimum or nominal water capacity is an integer, the digits after the decimal point may be neglected;
- (j) In the case of UN No. 1001 acetylene, dissolved, the total of the mass of the empty receptacle, the fittings and accessories not removed during filling, the porous material, the solvent and the saturation gas expressed to two significant figures rounded down to the last digit followed by the letters "KG";
- (k) In the case of UN No. 3374 acetylene, solvent free, the total of the mass of the empty receptacle, the fittings and accessories not removed during filling and the porous material expressed to two significant figures rounded down to the last digit followed by the letters "KG".

6.2.1.7.3 The following manufacturing marks shall be applied:

- (l) Identification of the cylinder thread (e.g. 25E). This mark is not required for pressure receptacles of UN No. 1965 hydrocarbon gas mixture, liquefied, n.o.s.;

- (m) The manufacturer's mark registered by the competent authority. When the country of manufacture is not the same as the country of approval, then the manufacturer's mark shall be preceded by the character(s) identifying the country of manufacture as indicated by the distinguishing signs of motor vehicles in international traffic. The country mark and the manufacturer's mark shall be separated by a space or slash;
- (n) The serial number assigned by the manufacturer;
- (o) In the case of steel pressure receptacles and composite pressure receptacles with steel liner intended for the carriage of gases with a risk of hydrogen embrittlement, the letter "H" showing compatibility of the steel (see ISO 11114-1:1997).

6.2.1.7.4 The above marks shall be placed in three groups.

- Manufacturing marks shall be the top grouping and shall appear consecutively in the sequence given in 6.2.1.7.3.
- The middle grouping shall include the test pressure (e) which shall be immediately preceded by the working pressure (h) when the latter is required.
- Certification marks shall be the bottom grouping and shall appear in the sequence given in 6.2.1.7.1.

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

6.2.1.7.6 In addition to the preceding marks, each refillable pressure receptacle shall be marked indicating the date (year (two digits) followed by the month (two digits) separated by a slash (i.e. "/")) of the last periodic inspection and the registered mark of the inspection body authorized by the competent authority of the country of use.

6.2.1.7.7 For acetylene cylinders, with the agreement of the competent authority, the date of the most recent periodic inspection and the stamp of the expert may be engraved on a ring affixed to the cylinder when the valve is installed and which is removable only by disconnecting the valve from the cylinder."

6.2.1.8 Add a new section as follows:

6.2.1.8 *Marking of non-refillable pressure receptacles*

Non-refillable pressure receptacles shall be marked clearly and legibly with certification and gas or pressure receptacle specific marks. These marks shall be permanently affixed (e.g. stencilled, stamped, engraved, or etched) on the pressure receptacle. Except when stencilled, the marks shall be on the shoulder, top end or neck of the pressure receptacle or on a permanently affixed component of the pressure receptacle (e.g. welded collar). Except for the "DO NOT REFILL" mark, the minimum size of the marks shall be 5mm for pressure receptacles with a diameter greater than or equal to 140 mm and 2.5 mm for pressure receptacles with a diameter less than 140 mm. The minimum size of the "DO NOT REFILL" mark shall be 5 mm.

6.2.1.8.1 The marks listed in 6.2.1.7.1 to 6.2.1.7.3 shall be applied with the exception of (f), (g), and (l). The serial number (n) may be replaced by the batch number. In addition, the words "DO NOT REFILL" in letters of at least 5 mm in height are required.

6.2.1.8.2 The requirements of 6.2.1.7.4 shall apply.

NOTE: Non-refillable pressure receptacles may, on account of their size, substitute this marking by a label (see 5.2.2.2.1.2).

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

6.2.2 Under the heading "for materials", delete the last row (beginning with EN 1252-1:1998) and amend the first row to read as follows:

EN 1797:2001	Cryogenic vessels-Gas/material compatibility	6.2.1.2
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Under the heading "for cylinders", for the standard EN 1442:1998, in last column replace "6.2.1.1, 6.2.1.5 and 6.2.1.7" with "6.2.1.1 and 6.2.1.5".

Delete the row with the reference to EN 1251-1:2000

Under the heading "for closures", in the first row amend the first column to read as follows: "EN849:1996/A2:2001".

Delete the last two rows of the table.

6.2.3.1 Delete the paragraph beginning with "For welded receptacles only..." and the one beginning with "Any additional thickness...".

6.2.3.2 In the title, replace "gases dissolved under pressure" with "dissolved gases".

6.2.3.4.1 Delete this paragraph and renumber following paragraphs accordingly.

6.2.3.4.2 (New 6.2.3.4.1) Amend as follows:

"6.2.3.4.1 If non-metallic materials are used, they shall resist brittle fracture at the lowest working temperature of the pressure receptacle and its fittings."

6.2.3.4.4 and

6.2.3.4.5 (Former 6.2.3.4.5 and 6.2.3.4.6 respectively). Delete.

6.2.5 Insert a new section 6.2.5 as follows:

6.2.5 Requirements for UN certified pressure receptacles

In addition to the general requirements of 6.2.1, UN certified pressure receptacles shall comply with the requirements of this section, including the standards, as applicable.

NOTE: With the agreement of the competent authority, more recently published versions of the standards, if available, may be used.

6.2.5.1 General requirements

6.2.5.1.1 *Service equipment*

Except for pressure relief devices, valves, piping, fittings and other equipment subjected to pressure, shall be designed and constructed to withstand at least 1.5 times the test pressure of the pressure receptacles.

Service equipment shall be configured or designed to prevent damage that could result in the release of the pressure receptacle contents during normal conditions of handling and carriage. Manifold piping leading to shut-off valves shall be sufficiently flexible to protect the valves and the piping from shearing or releasing the pressure receptacle contents. The filling and discharge valves and any protective caps shall be capable of being secured against unintended opening. Valves shall be protected as specified in 4.1.6.4 (a) to (e) or pressure receptacles are carried in an outer packaging, which as prepared for carriage shall be capable of meeting the drop test specified in 6.1.5.3 for the packing group I performance level.

6.2.5.1.2 *Pressure relief devices*

Each pressure receptacle used for the carriage of UN No. 1013 carbon dioxide and UN No. 1070 nitrous oxide shall be equipped with approved pressure relief devices or, for other gases, as specified by the competent authority of the country of use, except when forbidden by packing instruction P200 in 4.1.4.1. The type of pressure relief device, the set-to-discharge pressure and relief capacity of pressure relief devices, if required, shall be specified by the competent authority of the country of use.

When fitted, pressure relief devices on manifolded horizontal pressure receptacles filled with flammable gas shall be arranged to discharge freely to the open air in such a manner as to prevent any impingement of escaping gas upon the pressure receptacles under normal conditions of carriage.

6.2.5.2 *Design, construction and initial inspection and test*

6.2.5.2.1 The following standards apply for the design, construction, and initial inspection and test of UN certified cylinders:

ISO 9809-1:1999	Gas cylinders - Refillable seamless steel gas cylinders - Design, construction and testing - Part 1: Quenched and tempered steel cylinders with tensile strength less than 1100 MPa . <i>NOTE: The note concerning the F factor in section 7.3 of this standard shall not be applied for UN certified cylinders.</i>
ISO 9809-2:2000	Gas cylinders - Refillable seamless steel gas cylinders - Design, construction and testing - Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1100 MPa.
ISO 9809-3:2000	Gas cylinders - Refillable seamless steel gas cylinders - Design, construction and testing - Part 3: Normalized steel cylinders.
ISO 7866:1999	Gas cylinders - Refillable seamless aluminium alloy gas cylinders - Design, construction and testing <i>NOTE: The note concerning the F factor in section 7.2 of this standard shall not be applied for UN certified cylinders. Aluminium alloy 6351A - T6 or equivalent shall not be authorized.</i>
ISO 11118:1999	Gas cylinders - Non-refillable metallic gas cylinders - Specification and test methods.

6.2.5.2.2 The following standards apply for the design, construction, and initial inspection and test of UN certified tubes:

ISO 11120:1999	Gas cylinders - Refillable seamless steel tubes for compressed gas transport, of water capacity between 150 l and 3000 l - Design, construction and testing. <i>NOTE: The note concerning the F factor in section 7.1 of this standard shall not be applied for UN certified tubes.</i>
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6.2.5.2.3 The following standards apply for the design, construction and initial inspection and test of UN certified acetylene cylinders:

For the cylinder shell:

ISO 9809-1:1999	Gas cylinders - Refillable seamless steel gas cylinders - Design, construction and testing - Part 1: Quenched and tempered steel cylinders with tensile strength less than 1100 MPa. <i>NOTE: The note concerning the F factor in section 7.3 of this standard shall not be applied for UN certified cylinders.</i>
ISO 9809-3:2000	Gas cylinders - Refillable seamless steel gas cylinders - Design, construction and testing - Part 3: Normalized steel cylinders.
ISO 7866:1999	Gas cylinders - Refillable seamless aluminium alloy gas cylinders - Design, construction and testing. <i>NOTE: The note concerning the F factor in section 7.2 of this standard shall not be applied for UN certified cylinders. Aluminium alloy 6351A - T6 or equivalent shall not be authorized.</i>
ISO 11118:1999	Gas cylinders - Non-refillable metallic gas cylinders - Specification and test methods.

For the porous mass in the cylinder:

ISO 3807-1:2000	Cylinders for acetylene - Basic requirements - Part 1: Cylinders without fusible plugs.
ISO 3807-2:2000	Cylinders for acetylene - Basic requirements - Part 2: Cylinders with fusible plugs.

6.2.5.3 *Materials*

In addition to the material requirements specified in the pressure receptacle design and construction standards, and any restrictions specified in the applicable packing instruction for the gas(es) to be carried (e.g. packing instruction P200), the following standards apply to material compatibility:

ISO 11114-1:1997	Transportable gas cylinders - Compatibility of cylinder and valve materials with gas contents - Part 1: Metallic materials.
ISO 11114-2:2000	Transportable gas cylinders - Compatibility of cylinder and valve materials with gas contents - Part 2: Non-metallic materials.

6.2.5.4 Service equipment

The following standards apply to closures and their protection:

ISO 11117:1998	Gas cylinders - Valve protection caps and valve guards for industrial and medical gas cylinders - Design, construction and tests.
ISO 10297:1999	Gas cylinders - Refillable gas cylinder valves - Specification and type testing.

6.2.5.5 Periodic inspection and test

The following standards apply to the periodic inspection and testing of UN certified cylinders:

ISO 6406:1992	Periodic inspection and testing of seamless steel gas cylinders
ISO 10461:1993	Seamless aluminium - alloy gas cylinders - Periodic inspection and testing.
ISO 10462:1994	Cylinders for dissolved acetylene - Periodic inspection and maintenance.

6.2.5.6 Conformity assessment system and approval of pressure receptacles**6.2.5.6.1 Definitions**

For the purposes of this sub-section:

Conformity assessment system means a system for competent authority approval of a manufacturer, by pressure receptacle design type approval, approval of manufacturer's quality system and approval of inspection bodies;

Design type means a pressure receptacle design as specified by a particular pressure receptacle standard;

Verify means confirm by examination or provision of objective evidence that specified requirements have been fulfilled.

6.2.5.6.2 General requirements*Competent Authority*

- 6.2.5.6.2.1 The competent authority that approves the pressure receptacle shall approve the conformity assessment system for the purpose of ensuring that pressure receptacles conform to the requirements of ADR. In instances where the competent authority that approves a pressure receptacle is not the competent authority in the country of manufacture, the marks of the approval country and the country of manufacture shall be indicated in the pressure receptacle marking (see 6.2.5.7 and 6.2.5.8).

The competent authority of the country of approval shall supply, upon request, evidence demonstrating compliance to this conformity assessment system to its counterpart in a country of use.

- 6.2.5.6.2.2 The competent authority may delegate its functions in this conformity assessment system in whole or in part.

- 6.2.5.6.2.3 The competent authority shall ensure that a current list of approved inspection bodies and their identity marks and approved manufacturers and their identity marks is available.

Inspection body

- 6.2.5.6.2.4 The inspection body shall be approved by the competent authority for the inspection of pressure receptacles and shall:
- (a) have a staff with an organisational structure, capable, trained, competent, and skilled, to satisfactorily perform its technical functions;
 - (b) have access to suitable and adequate facilities and equipment;
 - (c) operate in an impartial manner and be free from any influence which could prevent it from doing so;
 - (d) ensure confidentiality of the commercial and proprietary activities of the manufacturer and other bodies;
 - (e) maintain clear demarcation between actual inspection body functions and unrelated functions;
 - (f) operate a documented quality system;
 - (g) ensure that the tests and inspections specified in the relevant pressure receptacle standard and in the ADR are performed; and
 - (h) maintain an effective and appropriate report and record system in accordance with 6.2.5.6.6.
- 6.2.5.6.2.5 The inspection body shall perform design type approval, pressure receptacle production testing and inspection and certification to verify conformity with the relevant pressure receptacle standard (see 6.2.5.6.4 and 6.2.5.6.5).

Manufacturer

- 6.2.5.6.2.6 The manufacturer shall
- (a) operate a documented quality system in accordance with 6.2.5.6.3;
 - (b) apply for design type approvals in accordance with 6.2.5.6.4;
 - (c) select an inspection body from the list of approved inspection bodies maintained by the competent authority in the country of approval; and
 - (d) maintain records in accordance with 6.2.5.6.6.

Testing laboratory

6.2.5.6.2.7 The testing laboratory shall have:

- (a) staff with an organisational structure, sufficient in number, competence, and skill; and
- (b) suitable and adequate facilities and equipment to perform the tests required by the manufacturing standard to the satisfaction of the inspection body.

6.2.5.6.3 *Manufacturer's quality system*

6.2.5.6.3.1 The quality system shall contain all the elements, requirements, and provisions adopted by the manufacturer. It shall be documented in a systematic and orderly manner in the form of written policies, procedures and instructions. The contents shall in particular include adequate descriptions of:

- (a) the organisational structure, responsibilities, and power of the management with regard to design and product quality;
- (b) the design control and design verification techniques, processes, and systematic actions that will be used when designing the pressure receptacles;
- (c) the relevant pressure receptacle manufacturing, quality control, quality assurance, and process operation instructions that will be used;
- (d) quality records, such as inspection reports, test data, and calibration data;
- (e) management reviews to ensure the effective operation of the quality system arising from the audits in accordance with 6.2.5.6.3.2 ;
- (f) the process describing how customer requirements are met;
- (g) the process for control of documents and their revision;
- (h) the means for control of non-conforming pressure receptacles, purchased components, in-process and final materials; and
- (i) training programmes for relevant personnel.

6.2.5.6.3.2 *Audit of the quality system*

The quality system shall be initially assessed to determine whether it meets the requirements in 6.2.5.6.3.1 to the satisfaction of the competent authority.

The manufacturer shall be notified of the results of the audit. The notification shall contain the conclusions of the audit and any corrective actions required.

Periodic audits shall be carried out, to the satisfaction of the competent authority, to ensure that the manufacturer maintains and applies the quality system. Reports of the periodic audits shall be provided to the manufacturer.

6.2.5.6.3.3 Maintenance of the quality system

The manufacturer shall maintain the quality system as approved in order that it remains adequate and efficient.

The manufacturer shall notify the competent authority that approved the quality system, of any intended changes. The proposed changes shall be evaluated in order to determine whether the amended quality system will still satisfy the requirements in 6.2.5.6.3.1.

6.2.5.6.4 Approval process

Initial design type approval

6.2.5.6.4.1 The initial design type approval shall consist of approval of the manufacturer's quality system and approval of the pressure receptacle design to be produced. An application for an initial design type approval shall meet the requirements of 6.2.5.6.3, 6.2.5.6.4.2 to 6.2.5.6.4.6 and 6.2.5.6.4.9.

6.2.5.6.4.2 A manufacturer desiring to produce pressure receptacles in accordance with a pressure receptacle standard and with the ADR shall apply for, obtain, and retain a Design Type Approval Certificate issued by the competent authority in the country of approval for at least one pressure receptacle design type in accordance with the procedure given in 6.2.5.6.4.9. This certificate shall, on request, be submitted to the competent authority of the country of use.

6.2.5.6.4.3 An application shall be made for each manufacturing facility and shall include:

- (a) the name and registered address of the manufacturer and in addition, if the application is submitted by an authorised representative, its name and address;
- (b) the address of the manufacturing facility (if different from the above);
- (c) the name and title of the person(s) responsible for the quality system;
- (d) the designation of the pressure receptacle and the relevant pressure receptacle standard;
- (e) details of any refusal of approval of a similar application by any other competent authority;
- (f) the identity of the inspection body for design type approval;
- (g) documentation on the manufacturing facility as specified under 6.2.5.6.3.1 and
- (h) the technical documentation required for design type approval, which shall enable verification of the conformity of the pressure receptacles with the requirements of the relevant pressure receptacle design standard. The technical documentation shall cover the design and method of manufacture and shall contain, as far as is relevant for assessment, at least the following:

- (i) pressure receptacle design standard, design and manufacturing drawings, showing components and subassemblies, if any;
- (ii) descriptions and explanations necessary for the understanding of the drawings and intended use of the pressure receptacles;
- (iii) a list of the standards necessary to fully define the manufacturing process;
- (iv) design calculations and material specifications; and
- (v) design type approval test reports, describing the results of examinations and tests carried out in accordance with 6.2.5.6.4.9.

6.2.5.6.4.4 An initial audit in accordance with 6.2.5.6.3.2 shall be performed to the satisfaction of the competent authority.

6.2.5.6.4.5 If the manufacturer is denied approval, the competent authority shall provide written detailed reasons for such denial.

6.2.5.6.4.6 Following approval, changes to the information submitted under 6.2.5.6.4.2 relating to the initial approval shall be provided to the competent authority.

Subsequent design type approvals

6.2.5.6.4.7 An application for a subsequent design type approval shall meet the requirements of 6.2.5.6.4.8 and 6.2.5.6.4.9, provided a manufacturer is in the possession of an initial design type approval. In such a case, the manufacturer's quality system according to 6.2.5.6.3 shall have been approved during the initial design type approval and shall be applicable for the new design.

6.2.5.6.4.8 The application shall include:

- (a) the name and address of the manufacturer and in addition, if the application is submitted by an authorised representative, its name and address;
- (b) details of any refusal of approval of a similar application by any other competent authority;
- (c) evidence that initial design type approval has been granted; and
- (d) the technical documentation, as described in 6.2.5.6.4.3 (h).

Procedure for design type approval

6.2.5.6.4.9 The inspection body shall:

- (a) examine the technical documentation to verify that:
 - (i) the design is in accordance with the relevant provisions of the standard, and
 - (ii) the prototype lot has been manufactured in conformity with the technical documentation and is representative of the design;

- (b) verify that the production inspections have been carried out as required in accordance with 6.2.5.6.5;
- (c) select pressure receptacles from a prototype production lot and supervise the tests of these pressure receptacles as required for design type approval;
- (d) perform or have performed the examinations and tests specified in the pressure receptacle standard to determine that:
 - (i) the standard has been applied and fulfilled, and
 - (ii) the procedures adopted by the manufacturer meet the requirements of the standard; and
- (e) ensure that the various type approval examinations and tests are correctly and competently carried out.

After prototype testing has been carried out with satisfactory results and all applicable requirements of 6.2.5.6.4 have been satisfied, a design type approval certificate shall be issued which shall include the name and address of the manufacturer, results and conclusions of the examination, and the necessary data for identification of the design type.

If the manufacturer is denied a design type approval, the competent authority shall provide written detailed reasons for such denial.

6.2.5.6.4.10 Modifications to approved design types

The manufacturer shall inform the issuing competent authority of modifications to the approved design type as specified in the pressure receptacle standard. A subsequent design type approval shall be requested where such modifications constitute a new design according to the relevant pressure receptacle standard. This additional approval shall be given in the form of an amendment to the original Design Type Approval Certificate.

- 6.2.5.6.4.11 Upon request, the competent authority shall communicate to any other competent authority, information concerning design type approval, modifications of approvals, and withdrawn approvals.

6.2.5.6.5 *Production inspection and certification*

An inspection body, or its delegate, shall carry out the inspection and certification of each pressure receptacle. The inspection body selected by the manufacturer for inspection and testing during production may be different from the inspection body used for the design type approval testing.

Where it can be demonstrated to the satisfaction of the inspection body that the manufacturer has trained and competent inspectors, independent of the manufacturing operations, inspection may be performed by those inspectors. In such a case, the manufacturer shall maintain training records of the inspectors.

The inspection body shall verify that the inspections by the manufacturer and tests performed on those pressure receptacles, fully conform to the standard and the requirements of ADR. Should non-conformance in conjunction with this

inspection and testing be determined, the permission to have inspection performed by the manufacturer's inspectors may be withdrawn.

The manufacturer shall, after approval by the inspection body, make a declaration of conformity with the certified design type. The application of the pressure receptacle certification marking shall be considered a declaration that the pressure receptacle complies with the applicable pressure receptacle standards and the requirements of this conformity assessment system and ADR. The inspection body shall affix or delegate the manufacturer to affix the pressure receptacle certification marking and the registered mark of the inspection body to each approved pressure receptacle.

A certificate of compliance, signed by the inspection body and the manufacturer, shall be issued before the pressure receptacles are filled.

6.2.5.6.6 *Records*

Design type approval and certificate of compliance records shall be retained by the manufacturer and the inspection body for not less than 20 years.

6.2.5.7 *Marking of UN certified refillable pressure receptacles*

UN certified refillable pressure receptacles shall be marked clearly and legibly with certification and gas and pressure receptacle specific marks. These marks shall be permanently affixed (e.g. stamped, engraved, or etched) on the pressure receptacle. The marks shall be on the shoulder, top end or neck of the pressure receptacle or on a permanently affixed component of the pressure receptacle (e.g. welded collar). Except for the "UN" mark, the minimum size of the marks shall be 5 mm for pressure receptacles with a diameter greater than or equal to 140 mm and 2.5 mm for pressure receptacles with a diameter less than 140 mm. The minimum size of the "UN" mark shall be 10 mm for pressure receptacles with a diameter greater than or equal to 140 mm and 5 mm for pressure receptacles with a diameter less than 140 mm.

6.2.5.7.1 The following certification marks shall be applied:

- (a) The UN packaging symbol



This symbol shall only be marked on pressure receptacles which conform to the requirements of ADR for UN certified pressure receptacles.

- (b) The technical standard (e.g. ISO 9809-1) used for design, construction and testing;
- (c) The character(s) identifying the country of approval as indicated by the distinguishing signs of motor vehicles in international traffic;
- (d) The identity mark or stamp of the inspection body that is registered with the competent authority of the country authorizing the marking;
- (e) The date of the initial inspection, the year (four digits) followed by the month (two digits) separated by a slash (i.e. "/").

6.2.5.7.2 The following operational marks shall be applied:

- (f) The test pressure in bar, preceded by the letters "PH" and followed by the letters "BAR";
- (g) The empty mass of the pressure receptacle including all permanently attached integral parts (e.g. neck ring, foot ring, etc.) in kilograms, followed by the letters "KG". This mass shall not include the mass of valve, valve cap or valve guard, any coating, or porous mass for acetylene. The empty mass shall be expressed to three significant figures rounded up to the last digit. For cylinders of less than 1 kg, the mass shall be expressed to two significant figures rounded up to the last digit;
- (h) The minimum guaranteed wall thickness of the pressure receptacle in millimetres followed by the letters "MM". This mark is not required for pressure receptacles with a water capacity less than or equal to 1 l or for composite cylinders;
- (i) In the case of pressure receptacles intended for the carriage of compressed gases, UN No. 1001 acetylene, dissolved, and UN No. 3374 acetylene, solvent free, the working pressure in bar, preceded by the letters "PW";
- (j) In the case of liquefied gases, the water capacity in litres expressed to three significant digits rounded down to the last digit, followed by the letter "L". If the value of the minimum or nominal water capacity is an integer, the digits after the decimal point may be neglected;
- (k) In the case of UN No. 1001 acetylene, dissolved, the total of the mass of the empty receptacle, the fittings and accessories not removed during filling, the porous material, the solvent and the saturation gas expressed to two significant figures rounded down to the last digit followed by the letters "KG";
- (l) In the case of UN No. 3374 acetylene, solvent free, the total of the mass of the empty receptacle, the fittings and accessories not removed during filling and the porous material expressed to two significant figures rounded down to the last digit followed by the letters "KG".

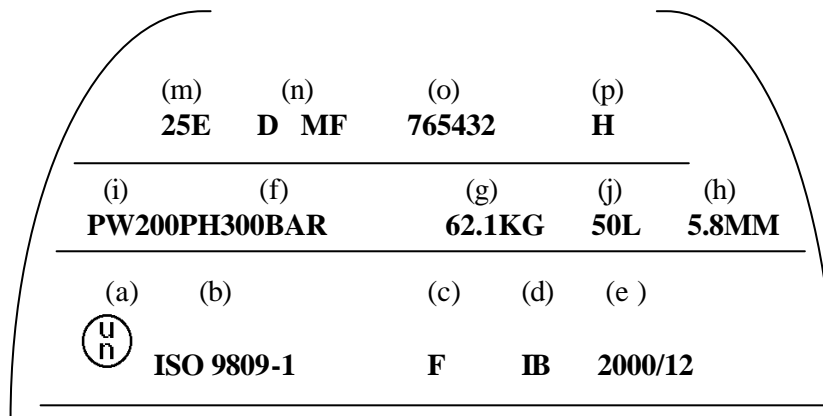
6.2.5.7.3 The following manufacturing marks shall be applied

- (m) Identification of the cylinder thread (e.g. 25E);
- (n) The manufacturer's mark registered by the competent authority. When the country of manufacture is not the same as the country of approval, then the manufacturer's mark shall be preceded by the character(s) identifying the country of manufacture as indicated by the distinguishing signs of motor vehicles in international traffic. The country mark and the manufacturer's mark shall be separated by a space or slash;
- (o) The serial number assigned by the manufacturer;
- (p) In the case of steel pressure receptacles and composite pressure receptacles with steel liner intended for the carriage of gases with a risk

of hydrogen embrittlement, the letter "H" showing compatibility of the steel (see ISO 11114-1:1997).

6.2.5.7.4 The above marks shall be placed in three groups as shown in the example below.

- Manufacturing marks shall be the top grouping and shall appear consecutively in the sequence given in 6.2.5.7.3.
- The middle grouping shall include the test pressure (f) which shall be immediately preceded by the working pressure (i) when the latter is required.
- Certification marks shall be the bottom grouping and shall appear in the sequence given in 6.2.5.7.1.



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

6.2.5.7.6 In addition to the preceding marks, each refillable pressure receptacle shall be marked indicating the date (year and month) of the last periodic inspection and the registered mark of the inspection body authorized by the competent authority of the country of use.

6.2.5.8 Marking of UN certified non-refillable pressure receptacles

UN certified non-refillable pressure receptacles shall be marked clearly and legibly with certification and gas or pressure receptacle specific marks. These marks shall be permanently affixed (e.g. stencilled, stamped, engraved, or etched) on the pressure receptacle. Except when stencilled, the marks shall be on the shoulder, top end or neck of the pressure receptacle or on a permanently affixed component of the pressure receptacle (e.g. welded collar). Except for the "UN" mark and the "DO NOT REFILL" mark, the minimum size of the marks shall be 5 mm for pressure receptacles with a diameter greater than or equal to 140 mm and 2.5 mm for pressure receptacles with a diameter less than 140 mm.

The minimum size of the "UN" mark shall be 10 mm for pressure receptacles with a diameter greater than or equal to 140 mm and 5 mm for pressure receptacles with a diameter less than 140 mm.

The minimum size of the "DO NOT REFILL" mark shall be 5 mm.

- 6.2.5.8.1 The marks listed in 6.2.5.7.1 to 6.2.5.7.3 shall be applied with the exception of (g), (h), and (m). The serial number (o) may be replaced by the batch number. In addition, the words "DO NOT REFILL" in letters of at least 5 mm in height are required.
- 6.2.5.8.2 The requirements of 6.2.5.7.4 shall apply.
- NOTE: Non-refillable pressure receptacles may, on account of their size, substitute this marking by a label (see 5.2.2.2.1.2).*
- 6.2.5.8.3 Other marks are allowed provided they are made in low stress areas other than the side wall and are not of a size and depth that will create harmful stress concentrations. Such marks shall not conflict with required marks."

Chapter 6.3

- 6.3.1.1 In the first sentence, replace "may, after decision by the competent authority" with "shall".
- Add the following sentence at the end:
- "Each element of the marking applied in accordance with (a) to (g) shall be clearly separated, e.g. by a slash or space, so as to be easily identifiable."
- 6.3.1.3 Add the following new paragraph:
- "6.3.1.3 Manufacturers and subsequent distributors of packagings shall provide information regarding procedures to be followed and a description of the types and dimensions of closures (including required gaskets) and any other components needed to ensure that packages as presented for carriage are capable of passing the applicable performance tests of this Chapter."
- 6.3.3 Add a new section as follows:
- 6.3.3 Test report**
- 6.3.3.1 A test report containing at least the following particulars shall be drawn up and shall be available to the users of the packaging:
1. Name and address of the test facility;
 2. Name and address of applicant (where appropriate);
 3. A unique test report identification;
 4. Date of the test report;
 5. Manufacturer of the packaging;
 6. Description of the packaging design type (e.g. dimensions, materials, closures, thickness, etc.), including method of manufacture (e.g. blow moulding) and which may include drawing(s) and/or photograph(s);
 7. Maximum capacity;
 8. Characteristics of test contents, e.g. viscosity and relative density for liquids and particle size for solids;
 9. Test descriptions and results;
 10. The test report shall be signed with the name and status of the signatory.

- 6.3.3.2 The test report shall contain statements that the packaging prepared as for carriage was tested in accordance with the appropriate requirements of this Chapter and that the use of other packaging methods or components may render it invalid. A copy of the test report shall be available to the competent authority."

Chapter 6.4

- 6.4.2.12 Add the following new paragraph:

"6.4.2.12 Manufacturers and subsequent distributors of packagings shall provide information regarding procedures to be followed and a description of the types and dimensions of closures (including required gaskets) and any other components needed to ensure that packages as presented for carriage are capable of passing the applicable performance tests of this Chapter."

- 6.4.10 Replace "(Reserved)" with following text:

"6.4.10 Requirements for Type C packages

- 6.4.10.1 Type C packages shall be designed to meet the requirements specified in 6.4.2 and of 6.4.7.2 to 6.4.7.15, except as specified in 6.4.7.14 (a), and of the requirements specified in 6.4.8.2 to 6.4.8.5, 6.4.8.9 to 6.4.8.15, and, in addition, of 6.4.10.2 to 6.4.10.4.
- 6.4.10.2 A package shall be capable of meeting the assessment criteria prescribed for tests in 6.4.8.7 (b) and 6.4.8.11 after burial in an environment defined by a thermal conductivity of $0.33 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ and a temperature of $38 \text{ }^\circ\text{C}$ in the steady state. Initial conditions for the assessment shall assume that any thermal insulation of the package remains intact, the package is at the maximum normal operating pressure and the ambient temperature is $38 \text{ }^\circ\text{C}$.
- 6.4.10.3 A package shall be so designed that, if it were at the maximum normal operating pressure and subjected to:
- (a) The tests specified in 6.4.15, it would restrict the loss of radioactive contents to not more than 10^6 A_2 per hour; and
 - (b) The test sequences in 6.4.20.1, it would meet the following requirements:
 - (i) retain sufficient shielding to ensure that the radiation level at 1 m from the surface of the package would not exceed 10 mSv/h with the maximum radioactive contents which the package is designed to contain; and
 - (ii) restrict the accumulated loss of radioactive contents in a period of 1 week to not more than 10 A_2 for krypton-85 and not more than A_2 for all other radionuclides.

Where mixtures of different radionuclides are present, the provisions of 2.2.7.7.2.4 to 2.2.7.7.2.6 shall apply except that for krypton-85 an effective $\text{A}_2(\text{i})$ value equal to 10 A_2 may be used. For case (a) above, the assessment shall take into account the external contamination limits of 4.1.9.1.2.

- 6.4.10.4 A package shall be so designed that there will be no rupture of the containment system following performance of the enhanced water immersion test specified in 6.4.18."

- 6.4.18 In the title, add at the end: "and type C packages"
- 6.4.20 Replace "(Reserved)" with following text:
"6.4.20 Tests for Type C packages"
- 6.4.20.1 Specimens shall be subjected to the effects of each of the following test sequences in the orders specified:
- (a) The tests specified in 6.4.17.2 (a), 6.4.17.2 (c), 6.4.20.2 and 6.4.20.3; and
 - (b) The test specified in 6.4.20.4.
- Separate specimens are allowed to be used for each of the sequences (a) and (b).
- 6.4.20.2 Puncture/tearing test: The specimen shall be subjected to the damaging effects of a solid probe made of mild steel. The orientation of the probe to the surface of the specimen shall be as to cause maximum damage at the conclusion of the test sequence specified in 6.4.20.1 (a).
- (a) The specimen, representing a package having a mass less than 250 kg, shall be placed on a target and subjected to a probe having a mass of 250 kg falling from a height of 3 m above the intended impact point. For this test the probe shall be a 20 cm diameter cylindrical bar with the striking end forming a frustum of a right circular cone with the following dimensions: 30 cm height and 2.5 cm in diameter at the top. The target on which the specimen is placed shall be as specified in 6.4.14;
 - (b) For packages having a mass of 250 kg or more, the base of the probe shall be placed on a target and the specimen dropped onto the probe. The height of the drop, measured from the point of impact with the specimen to the upper surface of the probe shall be 3 m. For this test the probe shall have the same properties and dimensions as specified in (a) above, except that the length and mass of the probe shall be such as to incur maximum damage to the specimen. The target on which the base of the probe is placed shall be as specified in 6.4.14.
- 6.4.20.3 Enhanced thermal test: The conditions for this test shall be as specified in 6.4.17.3, except that the exposure to the thermal environment shall be for a period of 60 minutes.
- 6.4.20.4 Impact test: The specimen shall be subject to an impact on a target at a velocity of not less than 90 m/s, at such an orientation as to suffer maximum damage. The target shall be as defined in 6.4.14."
- 6.4.23.4 [Does not apply to the English version]

Chapter 6.5

- 6.5.1.1.4 Add a new paragraph to read:
"6.5.1.1.4 Manufacturers and subsequent distributors of IBCs shall provide information regarding procedures to be followed and a description of the types and dimensions of closures (including required gaskets) and any other components needed to ensure that IBCs as presented for carriage are capable of passing the applicable performance tests of this Chapter."

- 6.5.1.4.1 (a) Amend the top line centre column in the table to read "For solids, filled or discharged".
- 6.5.1.4.3 Change "loaded" to "filled" in the table 18 times.
- 6.5.1.6.4 Amend last sentence to read:
"A report of each inspection shall be kept by the owner of the IBC at least until the next inspection. The report shall include the results of the inspection and shall identify the party performing the inspection (see also the marking requirements in 6.5.2.2.1)".
- 6.5.1.6.5 Amend to read:
"When an IBC is impaired as a result of impact (e.g. accident) or any other cause, it shall be repaired or otherwise maintained (see definition of "*Routine maintenance of IBCs*" in 1.2.1), so as to conform to the design type. The bodies of rigid plastics IBCs and the inner receptacles of composite IBCs that are impaired shall be replaced."
- 6.5.1.6.6 Renumber existing 6.5.1.6.6 as 6.5.1.6.7 and insert a new 6.5.1.6.6 to read:
"6.5.1.6.6 *Repaired IBCs*
- 6.5.1.6.6.1 In addition to any other testing and inspection requirements in ADR, an IBC shall be subjected to the full testing and inspection requirements set out in 6.5.4.14.3 and 6.5.1.6.4 (a), and the required reports shall be prepared, whenever it is repaired.
- 6.5.1.6.6.2 The Party performing the tests and inspections after the repair shall durably mark the IBC near the manufacturer's UN design type marking to show:
- (a) the State in which the tests and inspections were carried out;
 - (b) the name or authorized symbol of the party performing the tests and inspections; and
 - (c) the date (month, year) of the tests and inspections.
- 6.5.1.6.6.3 Test and inspections performed in accordance with 6.5.1.6.6.1 may be considered to satisfy the requirements for the two and a half and five year periodic tests and inspections."
- 6.5.2.1.1 (h) Amend to read: "(h) The maximum permissible gross mass in kg."
- 6.5.2.1.1 Add the following sentence at the end:
"Each element of the marking 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."
- 6.5.2.2.1 Change "Maximum loading/discharge pressure" to "Maximum filling/discharge pressure".
- 6.5.3.1.1 Change "loaded" to "filled" twice.
- 6.5.3.3.1 Change "loaded" to "filled" 4 times.
- 6.5.3.3.6 Delete.
- 6.5.3.4.1 Change "loaded" to "filled" 4 times.
- 6.5.3.4.10 Delete this paragraph and renumber subsequent paragraphs accordingly.

- 6.5.3.5.1 and
6.5.3.6.1 Change "loaded" to "filled".
- 6.5.4.4.2 Amend to read as follows:
"The IBC shall be filled. A load shall be added and evenly distributed. The mass of the filled IBC and the load shall be 1.25 times the maximum permissible gross mass."
- 6.5.4.4.2, 6.5.4.5.2, 6.5.4.6.2, 6.5.4.7.2, 6.5.4.8.2, 6.5.4.9.2, 6.5.4.10.2, 6.5.4.11.2
and 6.5.4.12.2 Amend the heading of these paragraphs to read "Preparation of the IBC for test".
- 6.5.4.5.2 Amend to read as follows:
"Metal, rigid plastics and composite IBCs shall be filled. A load shall be added and evenly distributed. The mass of the filled IBC and the load shall be twice the maximum permissible gross mass. Flexible IBCs shall be filled to six times their maximum permissible load, the load being evenly distributed."
- 6.5.4.6.2 Amend to read as follows:
"The IBC shall be filled to its maximum permissible gross mass. If the specific gravity of the product being used for testing makes this impracticable, the IBC shall additionally be loaded so that it is tested at its maximum permissible gross mass the load being evenly distributed."
- 6.5.4.6.3 (b)(i) Amend to read:
"(i) one or more IBCs of the same type filled to the maximum permissible gross mass stacked on the test IBC;"
- 6.5.4.7.1 and
6.5.4.8.1 Change "loaded" to "filled".
- 6.5.4.9.2 (b) Amend to read:
"(b) Flexible IBCs: the IBC shall be filled to not less than 95% of its capacity and to its maximum permissible gross mass, the contents being evenly distributed."
- 6.5.4.10.2, 6.5.4.11.2
and 6.5.4.12.2 Amend these paragraphs to read as follows:
"The IBC shall be filled to not less than 95% of its capacity and to its maximum permissible gross mass, the contents being evenly distributed."
- 6.5.4.10.3 Amend the second sentence to read: "The IBC shall then be subjected to a uniformly distributed superimposed load equivalent to twice the maximum permissible gross mass."
- 6.5.4.14 Amend the heading to read: "Testing of individual metal, rigid plastics and composite IBCs".
- 6.5.4.14.3 Amend to read as follows:
"Each metal, rigid plastics and composite IBC for liquids, or for solids which are filled or discharged under pressure, shall be subjected to the leakproofness test, as an initial test (i.e. before the IBC is first used for carriage), after repair, and at intervals of not more than two and a half years."
- 6.5.4.14.4 Delete this paragraph and renumber the following paragraph accordingly.
- 6.5.4.14.5 (new 6.5.4.14.4) Amend to read as follows:
"6.5.4.14.4 The results of tests and the identity of the party performing the tests shall be recorded in test reports to be kept by the owner of the IBC at least until the date of the next test."

Chapter 6.6

6.6.1.3 Add the following new paragraph:

"6.6.1.3 The specific requirements for large packagings in 6.6.4 are based on large packagings currently used. In order to take into account progress in science and technology, there is no objection to the use of large packagings having specifications different from those in 6.6.4 provided they are equally effective, acceptable to the competent authority and able successfully to withstand the tests described in 6.6.5. Methods of testing other than those described in ADR are acceptable provided they are equivalent and are recognized by the competent authority."

6.6.1.4 Add the following new paragraph:

"6.6.1.4 Manufacturers and subsequent distributors of packagings shall provide information regarding procedures to be followed and a description of the types and dimensions of closures (including required gaskets) and any other components needed to ensure that packages as presented for carriage are capable of passing the applicable performance tests of this Chapter."

6.6.2 Insert the number 6.6.2.1 before the existing text ("The code used...") and add the following new paragraph:

"6.6.2.2 The letter "W" may follow the Large Packaging code. The letter "W" signifies that the large packaging, although of the same type indicated by the code, is manufactured to a specification different from those in 6.6.4 and is considered equivalent in accordance with the requirements in 6.6.1.3."

6.6.3.1 Add the following sentence at the end:

"Each element of the marking applied in accordance with (a) to (h) shall be clearly separated, e.g. by a slash or space, so as to be easily identifiable."

6.6.5.3.1.2, 6.6.5.3.1.3, 6.6.5.3.1.4, 6.6.5.3.2.3, 6.6.5.3.3.2, 6.6.5.3.3.3, 6.6.5.3.3.4, 6.6.5.3.3.5, 6.6.5.3.4.2, 6.6.5.3.4.3, and

6.6.5.3.4.5.1 Replace "packagings" with "packaging".

6.6.5.3.2.2 Replace the existing paragraph with the following text:

"6.6.5.3.2.2 Preparation of large packaging for test

The large packaging shall be loaded to twice its maximum permissible gross mass. A flexible large packaging shall be loaded to six times its maximum permissible gross mass, the load being evenly distributed."

6.6.5.3.3.3 Replace "plastic" with "plastics".

6.6.5.3.3.4 Replace "must" with "may".

6.6.5.3.4.5.3 Insert a comma after "drop test".

6.6.5.4.1, 6.6.5.4.2 and

6.6.5.4.3 Replace "large packagings" with "large packaging" (5 times).

Chapter 6.7

In the title, add at the end: "AND UN CERTIFIED MULTIPLE-ELEMENT GAS CONTAINERS (MEGCs)".

6.7.1.1 Amend the first sentence to read:
"The requirements of this Chapter apply to portable tanks intended for the carriage of dangerous goods of Classes 2, 3, 4.1, 4.2, 4.3, 5.1, 5.2, 6.1, 6.2, 7, 8 and 9, and to MEGCs intended for the carriage of non-refrigerated gases of Class 2, by all modes of carriage."

6.7.1.1 and
6.7.1.2 Insert "or MEGC" after "portable tank" in the second sentence and "or MEGCs" after "portable tanks" in the third.

6.7.2.1, 6.7.3.1 and
6.7.4.1 Add the following definition:
"*Alternative arrangement* means an approval granted by the competent authority for a portable tank or MEGC that has been designed, constructed or tested to technical requirements or testing methods other than those specified in this Chapter;"

6.7.5 Add a new section to read:
"6.7.5 Requirements for the design, construction, inspection and testing of UN certified multiple-element gas containers (MEGCs) intended for the carriage of non-refrigerated gases

6.7.5.1 Definitions

For the purposes of this section:

Alternative arrangement means an approval granted by the competent authority for a portable tank or MEGC that has been designed, constructed or tested to technical requirements or testing methods other than those specified in this Chapter;

Elements are cylinders, tubes or bundles of cylinders;

Leakproofness test means a test using gas subjecting the elements and the service equipment of the MEGC to an effective internal pressure of not less than 20% of the test pressure;

Manifold means an assembly of piping and valves connecting the filling and/or discharge openings of the elements;

Maximum permissible gross mass (MPGM) means the sum of the tare mass of the MEGC and the heaviest load authorized for carriage;

UN certified Multiple-element gas containers (MEGCs) are multimodal assemblies of cylinders, tubes and bundles of cylinders which are interconnected by a manifold and which are assembled within a framework. The MEGC includes service equipment and structural equipment necessary for the carriage of gases;

Service equipment means measuring instruments and filling, discharge, venting and safety devices;

Structural equipment means the reinforcing, fastening, protective and stabilizing members external to the elements.

6.7.5.2 *General design and construction requirements*

- 6.7.5.2.1 The MEGC shall be capable of being filled and discharged without the removal of its structural equipment. It shall possess stabilizing members external to the elements to provide structural integrity for handling and carriage. MEGCs shall be designed and constructed with supports to provide a secure base during carriage and with lifting and tie-down attachments which are adequate for lifting the MEGC including when loaded to its maximum permissible gross mass. The MEGC shall be designed to be loaded onto a transport unit or ship and shall be equipped with skids, mountings or accessories to facilitate mechanical handling.
- 6.7.5.2.2 MEGCs shall be designed, manufactured and equipped in such a way as to withstand all conditions to which they will be subjected during normal conditions of handling and carriage. The design shall take into account the effects of dynamic loading and fatigue.
- 6.7.5.2.3 Elements of an MEGC shall be made of seamless steel and be constructed and tested according to 6.2.5. All of the elements in an MEGC shall be of the same design type.
- 6.7.5.2.4 Elements of MEGCs, fittings and pipework shall be:
- (a) compatible with the substances intended to be carried (see ISO 11114-1:1997 and ISO 11114-2:2000); or
 - (b) properly passivated or neutralized by chemical reaction.
- 6.7.5.2.5 Contact between dissimilar metals which could result in damage by galvanic action shall be avoided.
- 6.7.5.2.6 The materials of the MEGC, including any devices, gaskets, and accessories, shall not adversely affect the gas(es) intended for carriage in the MEGC.
- 6.7.5.2.7 MEGCs shall be designed to withstand, without loss of contents, at least the internal pressure due to the contents, and the static, dynamic and thermal loads during normal conditions of handling and carriage. The design shall demonstrate that the effects of fatigue, caused by repeated application of these loads through the expected life of the multiple-element gas container, have been taken into account.
- 6.7.5.2.8 MEGCs and their fastenings shall, under the maximum permissible load, be capable of withstanding the following separately applied static forces:
- (a) in the direction of travel: twice the MPGM multiplied by the acceleration due to gravity (g)^{*};
 - (b) horizontally at right angles to the direction of travel: the MPGM (when the direction of travel is not clearly determined, the forces shall be equal to twice the MPGM) multiplied by the acceleration due to gravity (g)^{*};
 - (c) vertically upwards: the MPGM multiplied by the acceleration due to gravity (g)^{*}; and

* For calculation purposes $g = 9.81 \text{ m/s}^2$.

- (d) vertically downwards: twice the MPGM (total loading including the effect of gravity) multiplied by the acceleration due to gravity (g) *.
- 6.7.5.2.9 Under the forces defined in 6.7.5.2.8, the stress at the most severely stressed point of the elements shall not exceed the values given in either the relevant standards of 6.2.5.2 or, if the elements are not designed, constructed and tested according to those standards, in the technical code or standard recognised or approved by the competent authority of the country of use (see 6.2.3).
- 6.7.5.2.10 Under each of the forces in 6.7.5.2.8, the safety factor for the framework and fastenings to be observed shall be as follows:
- (a) for steels having a clearly defined yield point, a safety factor of 1.5 in relation to the guaranteed yield strength; or
- (b) for steels with no clearly defined yield point, a safety factor of 1.5 in relation to the guaranteed 0.2% proof strength and, for austenitic steels, the 1% proof strength.
- 6.7.5.2.11 MEGCs intended for the carriage of flammable gases shall be capable of being electrically earthed.
- 6.7.5.2.12 The elements shall be secured in a manner that prevents undesired movement in relation to the structure and the concentration of harmful localized stresses.

6.7.5.3 *Service equipment*

- 6.7.5.3.1 Service equipment shall be configured or designed to prevent damage that could result in the release of the pressure receptacle contents during normal conditions of handling and carriage. When the connection between the frame and the elements allows relative movement between the sub-assemblies, the equipment shall be so fastened as to permit such movement without damage to working parts. The manifolds, the discharge fittings (pipe sockets, shut-off devices), and the stop-valves shall be protected from being wrenched off by external forces. Manifold piping leading to shut-off valves shall be sufficiently flexible to protect the valves and the piping from shearing, or releasing the pressure receptacle contents. The filling and discharge devices (including flanges or threaded plugs) and any protective caps shall be capable of being secured against unintended opening.
- 6.7.5.3.2 Each element intended for the carriage of toxic gases (gases of groups T, TF, TC, TO, TFC and TOC) shall be fitted with a valve. The manifold for liquefied toxic gases (gases of classification codes 2T, 2TF, 2TC, 2TO, 2TFC and 2TOC) shall be so designed that the elements can be filled separately and be kept isolated by a valve capable of being sealed. For the carriage of flammable gases (gases of groups F, TF and TFC), the elements shall be isolated by a valve into assemblies of not more than 3 000 litres.
- 6.7.5.3.3 For filling and discharge openings of the MEGC, two valves in series shall be placed in an accessible position on each discharge and filling pipe. One of the valves may be a non-return valve. The filling and discharge devices may be fitted to a manifold. For sections of piping which can be closed at both ends and where a liquid product can be trapped, a pressure-relief valve shall be provided to prevent excessive pressure build-up. The main isolation valves on an MEGC shall be clearly marked to indicate their directions of closure. Each stop-valve

or other means of closure shall be designed and constructed to withstand a pressure equal to or greater than 1.5 times the test pressure of the MEGC. All stop-valves with screwed spindles shall close by a clockwise motion of the handwheel. For other stop-valves, the position (open and closed) and direction of closure shall be clearly indicated. All stop-valves shall be designed and positioned to prevent unintentional opening. Ductile metals shall be used in the construction of valves or accessories.

- 6.7.5.3.4 Piping shall be designed, constructed and installed so as to avoid damage due to expansion and contraction, mechanical shock and vibration. Joints in tubing shall be brazed or have an equally strong metal union. The melting point of brazing materials shall be no lower than 525 °C. The rated pressure of the service equipment and of the manifold shall be not less than two thirds of the test pressure of the elements.

6.7.5.4 *Pressure-relief devices*

- 6.7.5.4.1 One or more pressure relief devices shall be fitted on MEGCs used for the carriage of UN No. 1013 carbon dioxide and UN No. 1070 nitrous oxide. MEGCs for other gases shall be fitted with pressure relief devices as specified by the competent authority for the country of use.
- 6.7.5.4.2 When pressure relief devices are fitted, every element or group of elements of an MEGC that can be isolated shall then be fitted with one or more pressure relief devices. Pressure relief devices shall be of a type that will resist dynamic forces including liquid surge and shall be designed to prevent the entry of foreign matter, the leakage of gas and the development of any dangerous excess pressure.
- 6.7.5.4.3 MEGCs used for the carriage of certain non-refrigerated gases identified in portable tank instruction T50 in 4.2.5.2.6 may have a pressure-relief device as required by the competent authority of the country of use. Unless an MEGC in dedicated service is fitted with an approved pressure relief device constructed of materials compatible with the gas carried, such a device shall comprise a frangible disc preceding a spring-loaded device. The space between the frangible disc and the spring-loaded device may be equipped with a pressure gauge or a suitable telltale indicator. This arrangement permits the detection of disc rupture, pinholing or leakage which could cause a malfunction of the pressure relief device. The frangible disc shall rupture at a nominal pressure 10% above the start-to-discharge pressure of the spring-loaded device.
- 6.7.5.4.4 In the case of multi-purpose MEGCs used for the carriage of low-pressure liquefied gases, the pressure-relief devices shall open at a pressure as specified in 6.7.3.7.1 for the gas having the highest maximum allowable working pressure of the gases allowed to be carried in the MEGC.

6.7.5.5 *Capacity of pressure relief devices*

- 6.7.5.5.1 The combined delivery capacity of the pressure relief devices when fitted shall be sufficient that, in the event of total fire engulfment of the MEGC, the pressure (including accumulation) inside the elements does not exceed 120% of the set pressure of the pressure relief device. The formula provided in CGA S-1.2-1995 shall be used to determine the minimum total flow capacity for the system of pressure relief devices. CGA S-1.1-1994 may be used to determine the relief capacity of individual elements. Spring-loaded pressure

relief devices may be used to achieve the full relief capacity prescribed in the case of low pressure liquefied gases. In the case of multi-purpose MEGCs, the combined delivery capacity of the pressure-relief devices shall be taken for the gas which requires the highest delivery capacity of the gases allowed to be carried in the MEGC.

- 6.7.5.5.2 To determine the total required capacity of the pressure relief devices installed on the elements for the carriage of liquefied gases, the thermodynamic properties of the gas shall be considered (see, for example, CGA S-1.2-1995 for low pressure liquefied gases and CGA S-1.1-1994 for high pressure liquefied gases).

6.7.5.6 *Marking of pressure-relief devices*

- 6.7.5.6.1 Spring loaded pressure relief devices shall be clearly and permanently marked with the following:

- (a) the pressure (in bar or kPa) at which it is set to discharge;
- (b) the allowable tolerance at the discharge pressure;
- (c) the rated flow capacity of the device in standard cubic metres of air per second (m^3/s);

When practicable, the following information shall also be shown:

- (d) the manufacturer's name and relevant catalogue number.

- 6.7.5.6.2 The rated flow capacity marked on frangible discs shall be determined according to CGA S-1.1-1994.

- 6.7.5.6.3 The rated flow capacity marked on spring loaded pressure relief devices for low pressure liquefied gases shall be determined according to ISO 4126-1:1991.

6.7.5.7 *Connections to pressure-relief devices*

- 6.7.5.7.1 Connections to pressure-relief devices shall be of sufficient size to enable the required discharge to pass unrestricted to the pressure relief device. No stop-valve shall be installed between the element and the pressure-relief devices, except when duplicate devices are provided for maintenance or other reasons, and the stop-valves serving the devices actually in use are locked open, or the stop-valves are interlocked so that at least one of the duplicate devices is always operable and capable of meeting the requirements of 6.7.5.5. There shall be no obstruction in an opening leading to or leaving from a vent or pressure-relief device which might restrict or cut-off the flow from the element to that device. The opening through all piping and fittings shall have at least the same flow area as the inlet of the pressure relief device to which it is connected. The nominal size of the discharge piping shall be at least as large as that of the pressure relief device outlet. Vents from the pressure-relief devices, when used, shall deliver the relieved vapour or liquid to the atmosphere in conditions of minimum back-pressure on the relieving device.

6.7.5.8 *Siting of pressure-relief devices*

- 6.7.5.8.1 Each pressure relief device shall, under maximum filling conditions, be in communication with the vapour space of the elements for the carriage of liquefied gases. The devices, when fitted, shall be so arranged as to ensure that the escaping vapour is discharged upwards and unrestrictedly as to prevent any impingement of escaping gas or liquid upon the MEGC, its elements or personnel. For flammable and oxidizing gases, the escaping gas shall be directed away from the element in such a manner that it cannot impinge upon the other elements. Heat resistant protective devices which deflect the flow of gas are permissible provided the required pressure relief device capacity is not reduced.
- 6.7.5.8.2 Arrangements shall be made to prevent access to the pressure-relief devices by unauthorized persons and to protect the devices from damage caused by the MEGC overturning.

6.7.5.9 *Gauging devices*

- 6.7.5.9.1 When an MEGC is intended to be filled by mass, it shall be equipped with one or more gauging devices. Level-gauges made of glass or other fragile material shall not be used.

6.7.5.10 *MEGC supports, frameworks, lifting and tie-down attachments*

- 6.7.5.10.1 MEGCs shall be designed and constructed with a support structure to provide a secure base during carriage. The forces specified in 6.7.5.2.8 and the safety factor specified in 6.7.5.2.10 shall be considered in this aspect of the design. Skids, frameworks, cradles or other similar structures are acceptable.
- 6.7.5.10.2 The combined stresses caused by element mountings (e.g. cradles, frameworks, etc.) and MEGC lifting and tie-down attachments shall not cause excessive stress in any element. Permanent lifting and tie-down attachments shall be fitted to all MEGCs. In no case shall mountings or attachments be welded onto the elements.
- 6.7.5.10.3 In the design of supports and frameworks, the effects of environmental corrosion shall be taken into account.
- 6.7.5.10.4 When MEGCs are not protected during carriage, according to 4.2.5.3, the elements and service equipment shall be protected against damage resulting from lateral or longitudinal impact or overturning. External fittings shall be protected so as to preclude the release of the elements' contents upon impact or overturning of the MEGC on its fittings. Particular attention shall be paid to the protection of the manifold. Examples of protection include:
- (a) protection against lateral impact which may consist of longitudinal bars;
 - (b) protection against overturning which may consist of reinforcement rings or bars fixed across the frame;
 - (c) protection against rear impact which may consist of a bumper or frame;

- (d) protection of the elements and service equipment against damage from impact or overturning by use of an ISO frame in accordance with the relevant provisions of ISO 1496-3:1995.

6.7.5.11 *Design approval*

- 6.7.5.11.1 The competent authority or its authorized body shall issue a design approval certificate for any new design of an MEGC. This certificate shall attest that the MEGC has been surveyed by that authority, is suitable for its intended purpose and meets the requirements of this Chapter, the applicable provisions for gases of Chapter 4.1 and of packing instruction P200. When a series of MEGCs are manufactured without change in the design, the certificate shall be valid for the entire series. The certificate shall refer to the prototype test report, the materials of construction of the manifold, the standards to which the elements are made and an approval number. The approval number shall consist of the distinguishing sign or mark of the country granting the approval, i.e. the distinguishing sign for use in international traffic, as prescribed by the Convention on Road Traffic, Vienna 1968, and a registration number. Any alternative arrangements according to 6.7.1.2 shall be indicated on the certificate. A design approval may serve for the approval of smaller MEGCs made of materials of the same type and thickness, by the same fabrication techniques and with identical supports, equivalent closures and other appurtenances.
- 6.7.5.11.2 The prototype test report for the design approval shall include at least the following:
 - (a) the results of the applicable framework test specified in ISO1496-3:1995;
 - (b) the results of the initial inspection and test specified in 6.7.5.12.3;
 - (c) the results of the impact test specified in 6.7.5.12.1; and
 - (d) certification documents verifying that the cylinders and tubes comply with the applicable standards.

6.7.5.12 *Inspection and testing*

- 6.7.5.12.1 For MEGCs meeting the definition of container in the CSC, a prototype representing each design shall be subjected to an impact test. The prototype MEGC shall be shown to be capable of absorbing the forces resulting from an impact not less than 4 times (4 g) the MPGM of the fully loaded MEGC at a duration typical of the mechanical shocks experienced in rail transport. The following is a listing of standards describing methods acceptable for performing the impact test:

Association of American Railroads,
Manual of Standards and Recommended Practices,
Specifications for Acceptability of Tank Containers (AAR.600), 1992

Canadian Standards Association (CSA),
Highway Tanks and Portable Tanks for the Transportation of Dangerous Goods
(B620-1987)

Deutsche Bahn AG
Zentralbereich Technik, Minden
Transportable tanks, longitudinal dynamic impact test

Société Nationale des Chemins de Fer Français
C.N.E.S.T. 002-1966.
Tank containers, longitudinal external stresses and dynamic impact tests

Spoornet, South Africa
Engineering Development Centre (EDC)
Testing of ISO Tank Containers
Method EDC/TES/023/000/1991-06.

- 6.7.5.12.2 The elements and items of equipment of each MEGC shall be inspected and tested before being put into service for the first time (initial inspection and test). Thereafter, MEGCs shall be inspected at no more than five-year intervals (5 year periodic inspection). An exceptional inspection and test shall be performed, regardless of the last periodic inspection and test, when necessary according to 6.7.5.12.5.
- 6.7.5.12.3 The initial inspection and test of an MEGC shall include a check of the design characteristics, an external examination of the MEGC and its fittings with due regard to the gases to be carried, and a pressure test performed at the test pressures according to packing instruction P200 of 4.1.4.1. The pressure test of the manifold may be performed as a hydraulic test or by using another liquid or gas with the agreement of the competent authority or its authorized body. Before the MEGC is placed into service, a leakproofness test and a test of the satisfactory operation of all service equipment shall also be performed. When the elements and their fittings have been pressure-tested separately, they shall be subjected together after assembly to a leakproofness test.
- 6.7.5.12.4 The 5-year periodic inspection and test shall include an external examination of the structure, the elements and the service equipment in accordance with 6.7.5.12.6. The elements and the piping shall be tested at the periodicity specified in packing instruction P200 and in accordance with the provisions described in 6.2.1.5. When the elements and equipment have been pressure-tested separately, they shall be subjected together after assembly to a leakproofness test.
- 6.7.5.12.5 An exceptional inspection and test is necessary when the MEGC shows evidence of damaged or corroded areas, leakage, or other conditions that indicate a deficiency that could affect the integrity of the MEGC. The extent of the exceptional inspection and test shall depend on the amount of damage or deterioration of the MEGC. It shall include at least the examinations required under 6.7.5.12.6.
- 6.7.5.12.6 The examinations shall ensure that:
- (a) the elements are inspected externally for pitting, corrosion, abrasions, dents, distortions, defects in welds or any other conditions, including leakage, that might render the MEGC unsafe for carriage;
 - (b) the piping, valves, and gaskets are inspected for corroded areas, defects, and other conditions, including leakage, that might render the MEGC unsafe for filling, discharge or carriage;

NOTE: *No metal plate may be fixed to the elements.*

- 6.7.5.13.2 The following information shall be marked on a metal plate firmly secured to the MEGC:

Name of the operator

Maximum permissible load mass _____ kg

Working pressure at 15°C: _____ bar gauge

Maximum permissible gross mass (MPGM) _____ kg

Unladen (tare) mass _____ kg"

Chapter 6.8

- 6.8.2.1.7 For tank vehicles and tank containers, add the following after the existing text:
"Shells, other than shells according to 6.8.2.2.6, designed to be equipped with vacuum valves shall be able to withstand, without permanent deformation, an external pressure of not less than 21 kPa (0.21 bar) above the internal pressure. The vacuum valves shall be set to relieve at a vacuum setting not greater than the tank's design vacuum pressure. Shells, which are not designed to be equipped with a vacuum valve shall be able to withstand, without permanent deformation an external pressure of not less than 40 kPa (0.4 bar) above the internal pressure."
- 6.8.2.1.16 Add at the end the following sentence:
"The minimum values shall, however, not be exceeded when the formula given in 6.8.2.1.18 is applied."
- 6.8.2.1.18 Right hand column: Delete the formula and the line between the columns in 6.8.2.1.18 (in the text and in footnote 4). The formulae in the left hand column apply to the whole page.
- 6.8.2.1.19 The table in left hand column should apply to both columns.

Add the following text to the right hand column before the table:
"The thickness of shells with protection against damage in accordance with 6.8.2.1.20 shall not be less than the values given in the table below."
- 6.8.2.3.1 Amend the fourth indent as follows:
"- Special construction (TC), equipment (TE) and type approval (TA) requirements of 6.8.4 applicable to the type."
- 6.8.2.4.1 Amend as follows:
"Shells and their equipment shall either together or separately undergo an initial inspection before being put into service. This inspection shall include:
- a check of conformity to the approved type;
 - a check of the design characteristics⁸
 - an examination of the internal and external conditions;

⁸ *The check of the design characteristics shall also include, for shells requiring a test pressure of 1 MPa (10 bar) or higher, the taking of weld test-pieces (work samples) in accordance with 6.8.2.1.23 and the tests prescribed in 6.8.5.*

- a hydraulic pressure test⁹ at the test pressure indicated on the plate prescribed in 6.8.2.5.1; and
- a leakproofness test and a check of satisfactory operation of the equipment.

Except in the case of Class 2, the test pressure for the hydraulic pressure test depends on the calculation pressure and shall be at least equal to the pressure indicated below:

Calculation pressure (bar)	Test pressure (bar)
G^{10}	G^{10}
1.5	1.5
2.65	2.65
4	4
10	4
15	4
21	10 (4) ¹¹

The minimum test pressures for Class 2 are given in the table of gases and gas mixtures in 4.3.3.2.5.

The hydraulic pressure test shall be carried out on the shell as a whole and separately on each compartment of compartmented shells.

The test shall be carried out on each compartment at a pressure at least equal to 1.3 times the maximum working pressure.

The hydraulic pressure test shall be carried out before the installation of a thermal insulation as may be necessary.

If the shells and their equipment are tested separately, they shall be jointly subjected to a leakproofness test after assembly in accordance with 6.8.2.4.3.

The leakproofness test shall be carried out separately on each compartment of compartmented shells."

6.8.2.4.2

Amend as follows:

"Shells and their equipment shall undergo periodic inspections at fixed intervals. The periodic inspections shall include: an external and internal examination and, as a general rule, a hydraulic pressure test⁹ (for the test pressure for the shells and compartments if applicable, see 6.8.2.4.1).

Sheathing for thermal or other insulation shall be removed only to the extent required for reliable appraisal of the characteristics of the shell.

⁹ *In special cases and with the agreement of the expert approved by the competent authority, the hydraulic pressure test may be replaced by a pressure test using another liquid or gas, where such an operation does not present any danger.*

¹⁰ *G = minimum calculation pressure according to the general requirements of 6.8.2.1.14 (see 4.3.4.1).*

¹¹ *Minimum test pressure for UN No. 1744 bromine or UN No. 1744 bromine solution.*

In the case of tanks intended for the carriage of powdery or granular substances, and with the agreement of the expert approved by the competent authority, the periodic hydraulic pressure test may be omitted and replaced by leakproofness tests in accordance with 6.8.2.4.3.

The maximum intervals for inspection shall be six years.	The maximum intervals for inspections shall be five years."
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6.8.2.4.3 Amend the second sentence to read as follows:
 "For this purpose the tank shall be subjected to an effective internal pressure at least equal to the maximum working pressure. For tanks intended for the carriage of liquids, when a gas is used for the leakproofness test it shall be carried out at a pressure at least equal to 25% of the maximum working pressure. In all cases, it shall not be less than 20 kPa (0.2 bar) (gauge pressure)."

6.8.2.6 Replace "(Reserved)" with the following:
 "The requirements of Chapter 6.8 are considered to have been complied with if the following standard is applied:

Applicable paragraphs	Reference	Title of document
6.8.2.4 6.8.3.4	EN 12972:2001 (with the exception of annexes D and E)	Tanks for transport of dangerous goods - testing, inspection and marking of metallic tanks."

6.8.3.1.1, 6.8.3.4.4, 6.8.3.4.9, 6.8.3.5.2, 6.8.3.5.6 (b) and

6.8.5.1.1. (a) Replace "gases dissolved under pressure" with "dissolved gases".

6.8.3.2.9 Amend as follows:
 "Tanks intended for the carriage of compressed or liquefied gases or dissolved gases, may be fitted with spring-loaded safety valves. These valves shall be capable of opening automatically under a pressure between 0.9 and 1.0 times the test pressure of the tank to which they are fitted. They shall be of such a type as to resist dynamic stresses, including liquid surge. The use of dead weight or counter weight valves is prohibited. The required capacity of the safety valves shall be calculated in accordance with the formula contained in 6.7.3.8.1.1."

6.8.4 (b) Amend as follows:

TE2 Becomes "(Reserved)".

TE15 Add a new special provision TE15 as follows:
 "Tanks fitted with vacuum valves which open at a negative pressure of not less than 21 kPa (0.21 bar) shall be considered as being hermetically closed."

TE21 Add a new special provision TE21 as follows:
 "The closures shall be protected with lockable caps."

6.8.4 (d) Delete the Note and relevant footnotes 18 and 19.

6.8.5.4 Add the following new paragraph:
"6.8.5.4 Reference to standards

The requirements of 6.8.5.2 and 6.8.5.3 shall be deemed to have been complied with if the following relevant standards have been applied:

EN 1252-1:1998 Cryogenic vessels - Materials - Part 1: Toughness requirements for temperature below - 80 °C.

EN 1252-2: 2001 Cryogenic vessels - Materials - Part 2: Toughness requirements for temperature between - 80 °C and - 20 °C."

PART 7

Chapter 7.2

7.2.3 Becomes "(Reserved)".

7.2.4 V8 (1) Replace "Organic peroxides and self-reactive substances" with "substances stabilized by temperature control".

Add at the end a NOTE as follows:

"NOTE: This provision V8 does not apply to substances referred to in 3.1.2.6 when substances are stabilized by the addition of chemical inhibitors such that the SADT is greater than 50 °C. In this latter case, temperature control may be required under conditions of carriage where the temperature may exceed 55 °C."

7.2.4 Add the following new special provisions:
 "V9 (Reserved)

V10 IBCs shall be carried in closed or sheeted vehicles or closed or sheeted containers.

V11 IBCs other than metal or rigid plastics IBCs shall be carried in closed or sheeted vehicles or closed or sheeted containers.

V12 IBCs of type 31HZ2 shall be carried in closed vehicles or containers.

V13 When packed in 5H1, 5L1 or 5 M1 bags, shall be carried in closed vehicles or containers."

Chapter 7.4

7.4.1 Replace "Columns (12) and (13)" with " Columns (10) or (12)".

Chapter 7.5

7.5.2.1 In the table:
 Add "c" in the intersection of row "1.4" and column "9" and column "1.4" and row "9", and add at the end of the table a new "c" as follows:

^c *Mixed loading permitted between air bag inflators, or air bag modules, or seat-belt pretensioners of Division 1.4, compatibility group G, (UN No. 0503) and air bag inflators or air bag modules or seat-belt pretensioners of Class 9 (UN No. 3268)."*

Add "d" in the intersection of row "1" and column "5.1" and column "5.1" and row "1", and add at the end of the table a new "d" as follows:

"d" *Mixed loading permitted between blasting explosives (except UN No. 0083 explosive, blasting, type C) and ammonium nitrate and inorganic nitrates of Class 5.1 (UN Nos. 1942 and 2067) provided the aggregate is treated as blasting explosives under Class 1 for the purposes of placarding, segregation, stowage and maximum permissible load."*

PART 8

Chapter 8.1

8.1.5 Amend to read as follows:

"Every transport unit carrying dangerous goods shall be equipped with:

(a) The following general purpose safety equipment:

- For each vehicle, at least one chock of a size suited to the weight of the vehicle and to the diameter of the wheels;
- Two self-standing warning signs (e.g. reflective cones or triangles or flashing amber lights which are independent from the electrical equipment of the vehicle);
- A suitable warning vest or warning clothing (e.g. as described in European Standard EN 471) for each member of the vehicle crew;
- A pocket lamp (see also 8.3.4) for each member of the vehicle crew;

(b) A respiratory protective device in conformity with additional requirement S7 (see Chapter 8.5) if this additional requirement applies according to the indication in Column (19) of Table A of Chapter 3.2;

(c) The personal protection and the equipment necessary to take the additional and/or special actions referred to in the instructions in writing set out in 5.4.3."

Chapter 8.5

S3 Delete "8.1.4.3".

S4 Add a NOTE as follows:

"NOTE: This provision S4 does not apply to substances referred to in 3.1.2.6 when substances are stabilized by the addition of chemical inhibitors such that the SADT is greater than 50 °C. In this latter case, temperature control may be required under conditions of carriage where the temperature may exceed 55 °C."

PART 9

Chapter 9.1

- 9.1.2.1.2 First sentence unchanged. Amend the rest of the paragraph to read as follows:
"It shall be drawn up in the language or one of the languages of the country issuing it. It shall conform to the model shown in 9.1.2.1.5. The title of the certificate of approval and any remarks under item 11 shall be drawn up in the language or one of the languages of the country issuing it and also, if that language is not English, French or German, in English, French or German."
- 9.1.2.1.5 Amend the third sentence to read "Both front and back may be used."

Chapter 9.2

- 9.2.1 Amend the text of note "c" in last column of the table to read:
"^c Applicable to motor vehicles first registered after 30 June 1993 having a maximum mass exceeding 16 tonnes or authorized to tow a trailer with a maximum mass exceeding 10 tonnes."
- 9.2.5 Amend last sentence of this section to read:
"The device shall be set in such a way that the speed cannot exceed 90 km/h, bearing in mind the technological tolerance of the device."

Chapter 9.6

Amend the title to read: "ADDITIONAL REQUIREMENTS CONCERNING COMPLETE OR COMPLETED VEHICLES INTENDED FOR THE CARRIAGE OF TEMPERATURE CONTROLLED SUBSTANCES"

- 9.6.1 Replace "self-reactive substances of Class 4.1 and organic peroxides of Class 5.2" with "substances".
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