



**Economic and Social  
Council**

Distr.  
GENERAL

TRANS/WP.15/AC.1/94/Add.4  
10 November 2003

ENGLISH  
ORIGINAL : ENGLISH AND FRENCH

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ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

Working Party on the Transport of Dangerous Goods

Joint Meeting of the RID Safety Committee and the  
Working Party on the Transport of Dangerous Goods

**REPORT OF THE SESSION\***

held in Geneva from 1<sup>st</sup> to 10 September 2003 and in Bonn from 13 to 17 October 2003

Addendum 4

Annex 1 (cont'd.)

Proposals of amendments of RID/ADR/ADN adopted by the Joint Meeting in 2003 (cont'd.)

Proposals of amendments to Part 4 of RID/ADR/ADN

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## PART 4

### Chapter 4.1

#### 4.1.1.2

Add a note as follows:

**NOTE:** *For chemical compatibility of plastics packaging made from high and medium molecular mass polyethylene see 4.1.1.19."*

#### 4.1.1.8

Amend to read as follows:

"4.1.1.8 Liquids may only be filled into inner packagings which have an appropriate resistance to internal pressure that may be developed under normal conditions of carriage. Where pressure may develop in a package by the emission of gas from the contents (as a result of temperature increase or other causes), the packaging, including IBC, may be fitted with a vent. A venting device shall be fitted if dangerous overpressure may develop due to normal decomposition of substances. However, the gas emitted shall not cause danger on account of its toxicity, its flammability, the quantity released, etc. The vent shall be so designed that, when the packaging, including IBC, is in the attitude in which it is intended to be carried, leakages of liquid and the penetration of foreign matter are prevented under normal conditions of carriage.

**NOTE:** *Venting of the package is not permitted for air transport."*

#### 4.1.1.9

Insert the words "or routinely maintained" after "repaired", in the first and last sentences.

#### 4.1.1.19

Add a new sub-section before 4.1.2 with the title and paragraphs as outlined below:

#### "4.1.1.19

***Verification of the chemical compatibility of plastics packagings and IBCs by assimilation of filling substances to standard liquids***

#### 4.1.1.19.1

*Scope*

For high and medium molecular mass polyethylene packagings as specified in 6.1.5.2.6 and for high molecular mass polyethylene IBCs as specified in 6.5.4.3.5 the chemical compatibility with filling substances may be verified by assimilation to standard liquids following the procedures as set out in 4.1.1.19.3 to 4.1.1.19.5 and using the list in 4.1.1.19.6, provided that the particular design types have been tested with these standard liquids in accordance with 6.1.5 or 6.5.4 taking into account 6.1.6 and that the conditions in 4.1.1.19.2 are met. When assimilation in accordance with this sub-section is not possible, the chemical compatibility needs to be verified by design type testing in accordance with 6.1.5.2.5 or by laboratory tests in accordance with 6.1.5.2.7 for packagings and in accordance with 6.5.4.3.3 or 6.5.4.3.6 for IBCs respectively.

**NOTE:** *Irrespective of the provisions of this sub-section, the use of packagings and IBCs for a specific filling substance is subject to the limitations of Table A of Chapter 3.2, and the packing instructions in Chapter 4.1.*

#### 4.1.1.19.2 *Conditions*

The relative densities of the filling substances shall not exceed that used to determine the height for the drop test performed successfully according to 6.1.5.3.4 or 6.5.4.1.3 and the mass for the stacking test performed successfully according to 6.1.5.6 or where necessary according to 6.5.4.6 with the assimilated standard liquid(s). The vapour pressures of the filling substances at 50 °C or 55 °C shall not exceed that used to determine the pressure for the internal pressure (hydraulic) test performed successfully according to 6.1.5.5.4 or 6.5.4.8.4.2 with the assimilated standard liquid(s). In case that filling substances are assimilated to a combination of standard liquids, the corresponding values of the filling substances shall not exceed the minimum values derived from the applied drop heights, stacking masses and internal test pressures.

Example: UN 1736 Benzoyl chloride is assimilated to the combination of standard liquids "Mixture of hydrocarbons and wetting solution". Benzoyl chloride has a vapour pressure of 0.34 kPa at 50 °C and a density of approximately 1.2 kg/litres. Design type tests for plastics drums and jerricans were frequently performed at minimum required test levels. In practice this means that the stacking test is commonly performed with stacking loads considering only a density of 1.0 for the "Mixture of hydrocarbons" and a density of 1.2 for the "Wetting solution" (see definition of standard liquids in 6.1.6). As a consequence chemical compatibility of such tested design types would not be verified for benzoyl chloride by reason of the inadequate test level of the design type with the standard liquid "mixture of hydrocarbons". (Due to the fact that in the majority of cases the applied internal hydraulic test pressure is not less than 100 kPa, the vapour pressure of benzoyl chloride would be covered by such test level according to 4.1.1.10.

All components of a filling substance, which may be a solution, mixture or preparation, such as wetting agents in detergents and disinfectants, irrespective whether dangerous or non-dangerous, shall be included in the assimilation procedure.

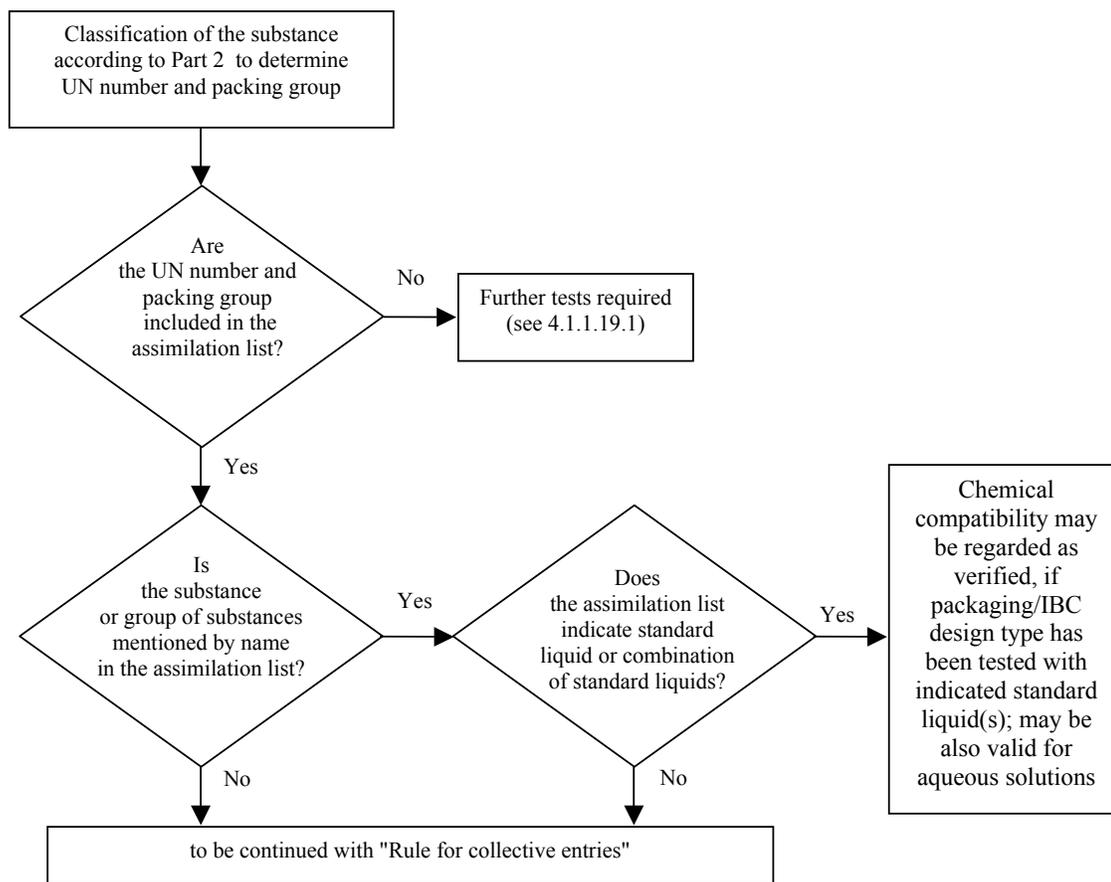
#### 4.1.1.19.3 *Assimilation procedure*

The following steps shall be taken to assign filling substances to listed substances or groups of substances in 4.1.1.19.6 (see also scheme in Figure 4.1.1.19.1).

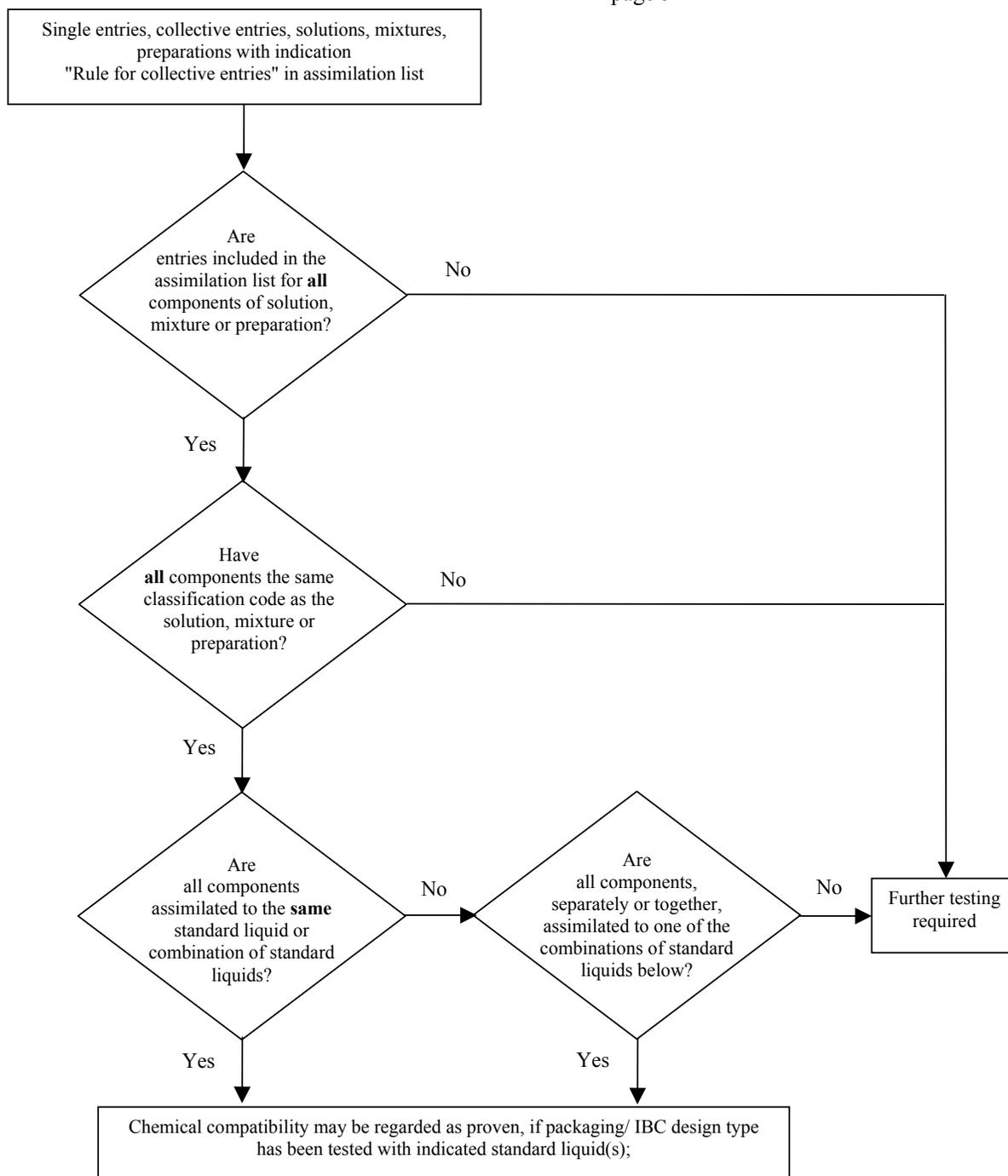
- (a) Classify the filling substance in accordance with the procedures and criteria of Part 2 (determination of the UN number and packing group);
- (b) If it is included there, go to the UN number in column 1 of the assimilation list in 4.1.1.19.6;
- (c) Select the line that corresponds in terms of packing group, concentration, flashpoint, the presence of non-dangerous components etc. by means of the information given in columns 2, 3 and 6, if there is more than one entry for this UN number.

If this is not possible, the chemical compatibility shall be verified in accordance with 6.1.5.2.5 or 6.1.5.2.7 for packagings and in accordance with 6.5.4.3.3 or 6.5.4.3.6 for IBCs (however, in the case of aqueous solutions, see 4.1.1.19.4).

- (d) If the UN number and packing group of the filling substance determined in accordance with (a) is not included in the assimilation list, the chemical compatibility shall be proved in accordance with 6.1.5.2.5 or 6.1.5.2.7 for packagings and in accordance with 6.5.4.3.3 or 6.5.4.3.6 for IBCs;
- (e) Apply the "Rule for collective entries" as described in 4.1.1.19.5 if this is indicated in column 7 of the selected line;
- (f) The chemical compatibility of the filling substance may be regarded as verified taking into account 4.1.1.19.1 and 4.1.1.19.2, if a standard liquid or a combination of standard liquids is assimilated in column 7 and the design type is approved for that/those standard liquid(s).



**Figure 4.1.1.19.1: Scheme for the assimilation of filling substances to standard liquids**



Acceptable combinations of standard liquids:

- water/nitric acid (55%), with exemption of inorganic acids of classification code C1 which are assigned to standard liquid water;
- water/wetting solution;
- water/acetic acid;
- water/mixture of hydrocarbons;
- water/n-butyl acetate – n-butyl acetate saturated wetting solution

**Figure 4.1.1.19.2: Scheme "Rules for collective entries"**

4.1.1.19.4 *Aqueous solutions*

Aqueous solutions of substances and groups of substances assimilated to specific standard liquid(s) in accordance with 4.1.1.19.3 may also be assimilated to that/those standard liquid(s) provided the following conditions are met:

- the aqueous solution can be assigned to the same UN number as the listed substance in accordance with the criteria of 2.1.3.3, and
- the aqueous solution is not specifically mentioned by name otherwise in the assimilation list in 4.1.1.19.6, and
- no chemical reaction is taking place between the dangerous substance and the solvent water.

*Example: Aqueous solutions of UN 1120 tert-Butanol:*

- *Pure tert-Butanol itself is assigned to the standard liquid acetic acid in the assimilation list.*
- *Aqueous solutions of tert-Butanol can be classified under the entry UN 1120 BUTANOLS in accordance with 2.1.3.3, because the aqueous solution of tert-Butanol does not differ from the entries of the pure substances relating to the class, the packing group(s) and the physical state. Furthermore, the entry "1120 BUTANOLS" is not explicitly limited to the pure substances, and aqueous solutions of these substances are not specifically mentioned by name otherwise in chapter 3.2, Table A as well as in the assimilation list.*
- *UN 1120 BUTANOLS do not react with water under normal conditions of transport.*

*As a consequence, aqueous solutions of UN 1120 tert-Butanol may be assigned to the standard liquid acetic acid.*

## 4.1.1.19.5 Rule for collective entries:

For the assimilation of filling substances for which "Rule for collective entries" is indicated in column 7, the following steps shall be taken and conditions be met (see also scheme in Figure 4.1.1.19.2):

- (a) Perform the assimilation procedure for each component of the solution, mixture or preparation in accordance with 4.1.1.19.3 taking into account the conditions in 4.1.1.19.2. In the case of generic entries, components may be neglected, that are known to have no damaging effect on high density polyethylene (e.g. solid pigments in UN 1263 PAINT or PAINT RELATED MATERIAL).
- (b) A solution, mixture or preparation cannot be assimilated to a standard liquid, if :

- the UN number and packing group of one or more of the dangerous components does not appear in the assimilation list or
  - "Rule for collective entries" is indicated in column 7 of the assimilation list for one or more of the components, or
  - (with exemption of UN 2059 NITROCELLULOSE SOLUTION; FLAMMABLE) the classification code of one or more of its dangerous components differs from that of the solution, mixture or preparation.
- (c) If all dangerous components are listed in the assimilation list, and its classification codes are in accordance with the classification code of the solution, mixture or preparation itself, and all dangerous components are assimilated to the same standard liquid or combination of standard liquids in column 7, the chemical compatibility of the solution, mixture or preparation may be regarded as verified taking into account 4.1.1.19.1 and 4.1.1.19.2.
- (d) If all dangerous components are listed in the assimilation list and its classification codes are in accordance with the classification code of the solution, mixture or preparation itself, but different standard liquids are indicated in column 7, the chemical compatibility may only be regarded as verified for the following combinations of standard liquids taking into account 4.1.1.19.1 and 4.1.1.19.2:
- water/nitric acid 55 %; with exemption of inorganic acids with the classification code C1, which are assigned to standard liquid water;
  - water/wetting solution;
  - water/acetic acid;
  - water/mixture of hydrocarbons;
  - water/n-butyl acetate – n-butyl acetate-saturated wetting solution.
- (e) In the scope of this rule the chemical compatibility is not regarded as verified for other combinations of standard liquids than specified in (d) and for all cases specified in (b). In such cases the chemical compatibility has to be verified by another way (see 4.1.1.19.3 (d)).

*Example 1: Mixture of UN 1940 THIOGLYCOLIC ACID (50%) and UN 2531 METHACRYLIC ACID; STABILIZED (50%); classification of the mixture: UN 3265 CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.*

- Both the UN numbers of the components and the UN number of the mixture are included in the assimilation list;
- Both the components and the mixture have the same classification code: C3;

- UN 1940 THIOGLYCOLIC ACID is assimilated to standard liquid "acetic acid", and UN 2531 METHACRYLIC ACID; STABILIZED is assimilated to standard liquid "n-butyl acetate/n-butyl acetate-sat. wetting solution". According to paragraph d) this is not an acceptable combination of standard liquids. The chemical compatibility of the mixture has to be verified by another way.

*Example 2: Mixture of UN 1793 ISOPROPYL ACID PHOSPHATE (50%) and UN 1803 PHENOLSULPHONIC ACID, LIQUID (50%); classification of the mixture: UN 3265 CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.*

- Both the UN numbers of the components and the UN number of the mixture are included in the assimilation list.
- Both the components and the mixture have the same classification code: C3;
- UN 1793 ISOPROPYL ACID PHOSPHATE is assimilated to standard liquid "wetting solution", and UN 1803 PHENOLSULPHONIC ACID, LIQUID is assimilated to standard liquid "water". According to paragraph d) this is one of the acceptable combinations of standard liquids. As a consequence the chemical compatibility may be regarded as verified for this mixture, provided the packaging design type is approved for the standard liquids wetting solution and water.

#### 4.1.1.19.6 *Assimilation list*

In the following table (assimilation list) dangerous substances are sorted in the order of their UN numbers. As a rule, each line deals with a dangerous substance, single entry or collective entry covered by a specific UN number. However, several consecutive lines may be used for the same UN number, if substances belonging to the same UN number have different names (e.g. individual isomers of a group of substances), different chemical properties, different physical properties and/or different transport conditions. In such cases the single entry or collective entry within the particular packing group is the last one of such consecutive lines.

Columns 1 to 6 are used to identify the substance for the purpose of this sub-section similar to the structure of the dangerous goods list in Chapter 3.2. The last column indicates the standard liquid(s) to which the substance can be assimilated.

In detail, the columns can be explained as follows:

#### **Column 1      UN No.**

This column contains the UN number

- of the dangerous substance if the substance has been assigned to its own specific UN number, or
- of the collective entry to which dangerous substances not listed by name have been assigned in accordance with the criteria ("decision trees") of Part 2.

**Column 2      Name**

This column contains the name of the substance, the name of the single entry, which may cover various isomers, or the name of the collective entry itself.

The indicated name can deviate from the applicable proper shipping name.

**Column 3      Description**

This column contains a descriptive text to clarify the scope of the entry in those cases when the classification, the transport conditions and/or the chemical compatibility of the substance may be variable.

**Column 4      Class**

This column contains the number of the Class, whose heading covers the dangerous substance. This Class number is assigned in accordance with the procedures and criteria of Part 2.

**Column 5      Classification code**

This column contains the classification code of the dangerous substance in accordance with the procedures and criteria of Part 2.

**Column 6      Packing group**

This column contains the packing group number (I, II or III) assigned to the dangerous substance. These packing group numbers are assigned on the basis of the procedures and criteria of Part 2. Certain substances are not assigned to packing groups.

**Column 7      Standard Liquid**

This column indicates either a standard liquid or a combination of standard liquids to which the substance can be assimilated as definite information, or contains a reference to the rule for collective entries in 4.1.1.19.5.

[To be completed with the assimilation list.]

- 4.1.2.4      Replace "rigid plastics and composite IBCs" with " rigid plastics, composite and flexible IBCs" in the first sentence.
- 4.1.3.4      Add a new line for large packagings, immediately before the line for IBCs, as follows:  
"Large packagings  
Flexible plastics: 51H (outer packaging)"
- 4.1.3.5      In the first sentence, delete "outer" (twice) and "in a combination packaging" and add ";1A2" after "4G" and ";1A2V, 1A2U or 1A2W" after "4GW" in the examples between brackets.

4.1.4.1 **P002** Under "Special packing provisions":

In special packing provision **PP9**, add a new sentence at the end to read as follows:  
"For UN No. 3175, the leakproofness test is not required when the liquids are fully absorbed in solid material contained in sealed bags."

Add the following new special provision:

**PP84** For UN No. 1057, rigid outer packagings meeting the packing group II performance level shall be used. The packagings shall be designed and constructed and arranged to prevent movement, inadvertent ignition of the devices or inadvertent release of flammable gas or liquid."

Add, at the end of the table, a row with the following text:

**"Special packing provision specific to RID and ADR**

**RR4** Notwithstanding special packing provision PP84, packagings for UN No. 1057, with a maximum gross mass of not more than 10 kg need only comply with the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.5 to 4.1.1.7."

**P200** In paragraph 3(d), insert a note to read as follows:

*"NOTE: For pressure receptacles which make use of composite materials, the periodic inspection frequencies shall be as determined by the competent authority which approved the receptacles."*

Rename existing provision "t" as "ta" and modify corresponding reference in Table 2 accordingly (UN No. 1965).

Paragraph (10), add the following entry before the existing ones:

(7)	EN 13365:2002	Transportable gas cylinders – Cylinder bundles for permanent and liquefied gases (excluding acetylene) – Inspection at the time of filling
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Amendments to the tables:

Amend Table 1 as follows:

UN Nos.	Column	Amendment
1953, 1955, 3303, 3304, 3305 and 3306	LC <sub>50</sub>	Add "≤ 5000".
2600	LC <sub>50</sub>	Add "between 3760 and 5000".

Amend Table 2 as follows:

UN No.	Column	Amendment
1010 (third entry)	Name and description	Insert "BUTADIENES, STABILIZED:" before the first entry. Amend the third entry to read: "BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED".
	Test pressure, bar	Delete "10" (third entry only).
	Filling ratio	Delete "0.50" (third entry only).
	Special packing provisions	Add "v," (third entry).

UN No.	Column	Amendment
3160, 3162, 3307, 3308, 3309 and 3310	LC <sub>50</sub>	Add "≤ 5000".
3083	Special packing provisions	Delete "k".

Amend Table 3 as follows:

UN Nos.	Column	Amendment
1051	LC <sub>50</sub>	Replace "140" with "40"
1746	LC <sub>50</sub>	Replace "180" with "50"

**P203** Replace the existing paragraphs (4) to (8) of packing instruction P203 with the following:

- "(4) Closed cryogenic receptacles constructed as specified in Chapter 6.2 are authorized for the carriage of refrigerated liquefied gases.
- (5) Test pressure  
Refrigerated liquids shall be filled in closed cryogenic receptacles with the following minimum test pressures:
- (a) For closed cryogenic receptacles with vacuum insulation, the test pressure shall not be less than 1.3 times the sum of the maximum internal pressure of the filled receptacle, including during filling and discharge, plus 100 kPa (1 bar);
- (b) For other closed cryogenic receptacles, the test pressure shall be not less than 1.3 times the maximum internal pressure of the filled receptacle, taking into account the pressure developed during filling and discharge.
- (6) Degree of filling  
For non-flammable, non-toxic refrigerated liquefied gases (classification codes 3A and 3O) the volume of liquid phase at the filling temperature and at a pressure of 100 kPa (1 bar) shall not exceed 98% of the water capacity of the pressure receptacle.  
For flammable refrigerated liquefied gases (classification code 3F) the degree of filling shall remain below the level at which, if the contents were raised to the temperature at which the vapour pressure equalled the opening pressure of the relief valve, the volume of the liquid phase would reach 98% of the water capacity at that temperature.
- (7) Pressure-relief devices  
Closed cryogenic receptacles shall be fitted with at least one pressure-relief device.
- (8) Compatibility  
Materials used to ensure the leakproofness of the joints or for the maintenance of the closures shall be compatible with the contents. For oxidizing gases (classification code 3O) see also (3) above."

In paragraph (9), add a title to read "Periodic inspection" and combine existing text of (7) and (8).

Renumber (9) to (13) accordingly.

**P204** Delete (3), (4) and (5), and renumber existing (6) to (8) as (3) to (5).

**P205** Delete.

**P400** In paragraph (1), at the end of the second sentence, replace "in strong wood, fibreboard or plastics boxes" with "in strong rigid outer packagings", and in the third sentence, replace "box" with "outer packaging".

At the end of the table, add a new row with the heading "Special packing provision" and a new special packing provision PP86, as follows:

**"Special packing provisions"**

**PP86** For UN Nos. 3392 and 3394, air shall be eliminated from the vapour space by nitrogen or other means."

**P403** Under "Inner packagings", replace "shall have threaded closures" with "shall be hermetically sealed (e.g. by taping or by threaded closures)".

At the end of the table, add a new row with the heading "Special packing provision" and a new special packing provision PP83, as follows:

**"Special packing provision"**

**PP83** For UN No. 2813, waterproof bags containing not more than 20 g of substance for the purposes of heat formation may be packaged for carriage. Each waterproof bag shall be sealed in a plastics bag and placed within an intermediate packaging. No outer packaging shall contain more than 400 g of substance. Water or liquid which may react with the water reactive substance shall not be included in the packaging."

**P404** Replace ", 2881, 3052, 3200 and 3203)." with ", 2881, 3200, 3391, 3393 and 3461)." at the end of the first sentence.

At the end of the table, add a new row with the heading "Special packing provision" and a new special packing provision PP86, as follows:

**"Special packing provision"**

**PP86** For UN Nos 3391 and 3393, air shall be eliminated from the vapour space by nitrogen or other means."

**P407** In the text before "Additional requirement", amend the beginning of the last sentence to read "The maximum gross mass of the package shall not exceed...".

**P410** Under "Special packing provisions", add PP83 (same wording as in P403).

**P504** Delete special provision PP29 and modify PP10 as to read follows:

**"PP10** For UN Nos 2014, 2984 and 3149, the packaging shall be vented".

**P520** In column OP8, replace "200 <sup>b</sup>" with "400 <sup>b</sup>" and amend note b to read:

*"<sup>b</sup> 60 kg for jerricans/200 kg for boxes and, for solids, 400 kg in combination packagings with outer packagings comprising boxes (4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2) and with inner packagings of plastics or fibre with a maximum net mass of 25 kg."*

**P601** In (3), replace "Combination packagings" with "Packagings consisting of:" and amend the first paragraph to read as follows:

"Outer packagings: Steel or plastic drums, removable head (1A2 or 1H2), tested in accordance with the test requirements in 6.1.5 at a mass corresponding to the mass of the assembled package either as a packaging intended to contain inner packagings, or as a single packaging intended to contain solids or liquids, and marked accordingly."

Before the row "Special packing provision specific to RID and ADR", add a new row with the heading "Special packing provision" and a new special packing provision PP82, as follows:

**"Special packing provision**

**PP82** For UN No.1744, glass inner packagings with a capacity of not more than 1.3 litres may be used in a permitted outer packaging with a maximum gross mass of 25 kg."

**P602** In paragraph (3), amend the text between brackets in the first line, to read: "(1A1, 1B1, 1N1, 1H1, 6HA1 or 6HH1)".

**P620** In (a)(iii), insert "either" before "individually" and "or separated" after "wrapped" at the end.

In (b), replace "An outer packaging" with "A rigid outer packaging" in the first sentence and replace "at least" with "not less than" in the second sentence.

Under 2, replace existing "(a), (b), (i), (ii), (iii)" with the following:

- " (a) Substances consigned at ambient temperatures or at a higher temperature: Primary receptacles shall be of glass, metal or plastics. Positive means of ensuring a leakproof seal shall be provided, e.g. a heat seal, a skirted stopper or a metal crimp seal. If screw caps are used, they shall be secured by positive means, e.g., tape, paraffin sealing tape or manufactured locking closure;
- (b) Substances consigned refrigerated or frozen: Ice, dry ice or other refrigerant shall be placed around the secondary packaging(s) or alternatively in an overpack with one or more complete packages marked in accordance with 6.3.1.1. Interior supports shall be provided to secure secondary packaging(s) or packages in position after the ice or dry ice has dissipated. If ice is used, the outer packaging or overpack shall be leakproof. If dry ice is used, the outer packaging or overpack shall permit the release of carbon dioxide gas. The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the refrigerant used;
- (c) Substances consigned in liquid nitrogen: Plastics primary receptacles capable of withstanding very low temperature shall be used. The secondary packaging shall also be capable of withstanding very low temperatures, and in most cases will need to be fitted over the primary receptacle individually. Provisions for the consignment of liquid nitrogen shall also be fulfilled. The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the liquid nitrogen.

- (d) Lyophilised substances may also be carried in primary receptacles that are flame-sealed glass ampoules or rubber-stoppered glass vials fitted with metal seals;".

**P650** Replace the existing P650 with the following:

<b>P650</b>	<b>PACKING INSTRUCTION</b>	<b>P650</b>
This packing instruction applies to UN No. 3373.		
<p>(1) The packaging shall be of good quality, strong enough to withstand the shocks and loadings normally encountered during carriage, including transshipment between [ADR: vehicles or containers and between vehicles or containers and warehouses] [RID: wagons or containers and between wagons or containers and warehouses] [ADN: transport units and between cargo 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 to prevent any loss of contents that might be caused under normal conditions of carriage by vibration or by changes in temperature, humidity or pressure.</p> <p>(2) The packaging shall consist of three components:</p> <ol style="list-style-type: none"> <li>(a) a primary receptacle;</li> <li>(b) a secondary packaging; and</li> <li>(c) an outer packaging.</li> </ol> <p>(3) 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 compromise the integrity of the cushioning material or of the outer packaging.</p> <p>(4) For carriage, the mark illustrated below shall be displayed on the external surface of the outer packaging on a background of a contrasting colour and shall be clearly visible and legible. The width of the line shall be at least 2 mm; the letters and numbers shall be at least 6 mm high.</p> <div style="text-align: center; margin: 20px 0;">  </div> <p>(5) 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>(6) For liquid substances:</p> <ol style="list-style-type: none"> <li>(a) The primary receptacle(s) shall be leakproof;</li> <li>(b) The secondary packaging shall be leakproof;</li> <li>(c) If multiple fragile primary receptacles are placed in a single secondary packaging, they shall be either individually wrapped or separated to prevent contact between them;</li> </ol>		

P650	PACKING INSTRUCTION	P650
<p>(d) Absorbent material shall be placed between the primary receptacle(s) and the secondary packaging. The absorbent material shall be in quantity sufficient to absorb the entire contents of the primary receptacle(s) so that any release of the liquid substance will not compromise the integrity of the cushioning material or of the outer packaging;</p> <p>(e) The primary receptacle or the secondary packaging shall be capable of withstanding, without leakage, an internal pressure of 95 kPa (0.95 bar).</p> <p>(7) For solid substances:</p> <p>(a) The primary receptacle(s) shall be siftproof;</p> <p>(b) The secondary packaging shall be siftproof;</p> <p>(c) If multiple fragile primary receptacles are placed in a single secondary packaging, they shall be either individually wrapped or separated to prevent contact between them.</p> <p>(8) Refrigerated or frozen specimens: Ice, dry ice and liquid nitrogen:</p> <p>(a) When dry ice or liquid nitrogen is used to keep specimens cold, all applicable requirements of RID/ADR/ADN shall be met. When used, ice or dry ice shall be placed outside the secondary packagings or in the outer packaging or an overpack. Interior supports shall be provided to secure the secondary packagings in the original position after the ice or dry ice has dissipated. If ice is used, the outside packaging or overpack shall be leakproof. If carbon dioxide, solid (dry ice) is used, the packaging shall be designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packagings and the package (the outer packaging or the overpack) shall be marked "Carbon dioxide, solid" or "Dry ice".</p> <p>(b) The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the refrigerant used as well as the temperatures and the pressures which could result if refrigeration were lost.</p> <p>(9) Infectious substances assigned to UN No. 3373 which are packed and marked in accordance with this packing instruction are not subject to any other requirement in RID/ADR/ADN.</p> <p>(10) Clear instructions on filling and closing such packages shall be provided by packaging manufacturers and subsequent distributors to the consignor or to the person who prepares the package (e.g. patient) to enable the package to be correctly prepared for carriage.</p> <p>(11) If any substance have leaked and have been spilled in a wagon/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 wagon/vehicle or container shall be examined for possible contamination.</p>		

**P903** Add the following paragraph after the sentence "Packagings conforming to the packing group II performance level.":  
"In addition, batteries employing a strong, impact resistant outer casing of a gross mass of 12 kg or more, and assemblies of such batteries, may be packed in strong outer packagings, in protective enclosures (e.g., in fully enclosed or wooden slatted crates) unpackaged or on pallets. Batteries shall be secured to prevent inadvertent movement, and the terminals shall not support the weight of other superimposed elements."

**P903b** Add a new special packing provision P903b to read as follows:

<b>P903b</b>	<b>PACKING INSTRUCTION</b>	<b>P903b</b>
<b>This instruction applies to used cells and batteries of UN Nos. 3090 and 3091.</b>		
Used lithium cells and batteries, with a gross mass of not more than 250 g collected for disposal, together with other used non-lithium batteries or alone, may be carried, without being individually protected, under the following conditions:		
(1) In 1H2 drums or 4H2 boxes conforming to the packing group II performance level for solids; (2) In collecting trays with a gross mass of less than 30 kg made from non-conducting material meeting the general conditions of 4.1.1.1, 4.1.1.2 and 4.1.1.5 to 4.1.1.8.		
<b>Additional requirements</b>		
The empty space in the packaging shall be filled with appropriate cushioning material so as to restrict the relative movements of the batteries during carriage.		
Hermetically sealed packagings shall be fitted with a venting device according to 4.1.1.8. The venting device shall be so designed that an overpressure caused by gases does not exceed 10 kPa.		

**P904** Amend to read as follows:

<b>P904</b>	<b>PACKING INSTRUCTION</b>	<b>P904</b>
This packing instruction applies to UN No. 3245.		
The following packagings are authorized provided the general provisions of 4.1.1 and 4.1.3 are met:		
(1) Packagings according to P001 or P002 conforming to the packing group III performance level. (2) Packagings, which need not conform to the packaging test requirements of Part 6, but conforming to the following: <ul style="list-style-type: none"> <li>(a) An inner packaging comprising:               <ul style="list-style-type: none"> <li>(i) a watertight primary receptacle(s);</li> <li>(ii) a watertight secondary packaging which is leakproof;</li> <li>(iii) absorbent material placed between the primary receptacle(s) and the secondary packaging. The absorbent material shall be in a quantity sufficient to absorb the entire contents of the primary receptacle(s) so that any release of the liquid substance will not compromise the integrity of the cushioning material or of the outer packaging;</li> <li>(iv) if multiple fragile primary receptacles are placed in a single secondary packaging they shall be individually wrapped or separated to prevent contact between them;</li> </ul> </li> <li>(b) An outer packaging shall be strong enough for its capacity, mass and intended use and with a smallest external dimension of at least 100 mm.</li> </ul>		
<b>Additional requirement</b>		
<u>Dry ice and liquid nitrogen</u>		
When carbon dioxide, solid, (dry ice) is used as a refrigerant, the packaging shall be designed and constructed to permit the release of the gaseous carbon dioxide to prevent the build up of pressure that could rupture the packaging.		

P904	PACKING INSTRUCTION	P904
<p>Substances consigned in liquid nitrogen or dry ice shall be packed in primary receptacles that are capable of withstanding very low temperatures. The secondary packaging shall also be capable of withstanding very low temperatures and, in most cases, will need to be fitted over the primary receptacle individually.</p>		

4.1.4.2 **IBC08** In special provision B6, insert "1408," after "1386,".

Add a new special packing provision B13, to read as follows:

**"B13** *NOTE: For UN Nos. 1748, 2208 and 2880, carriage by sea in IBCs is prohibited according to the IMDG Code."*

**IBC520** Insert the following new entries:

UN No.	Organic peroxide	Type of IBC	Maximum quantity (litres)	Control temp.	Emergency temp.
3119	Dicyclohexylperoxydicarbonate, not more than 42% as a stable dispersion, in water	31A	1250	+ 10 °C	+ 15 °C
<b>3110</b>	<b>ORGANIC PEROXIDE, TYPE F, SOLID</b> Dicumyl peroxide	31A 31H1 31HA1	2000		
<b>3120</b>	<b>ORGANIC PEROXIDE, TYPE F, SOLID, TEMPERATURE CONTROLLED</b> No formulation listed				

4.1.4.3 **LP02** Insert "Flexible plastics (51H)<sup>c</sup>" in the column for "Large outer packagings", and a note c under the table, as follows: "<sup>c</sup> To be used with flexible inner packagings only.".

4.1.4.4 **PR1** In the "UN Nos" column delete the following Nos.: "3049", "3050", "3203" and "3207".

4.1.6 Replace the existing 4.1.6 with the following:

**"4.1.6 Special packing provisions for goods of Class 2 and goods of other classes assigned to packing instruction P200**

*NOTE: For goods of other classes carried in pressure receptacles and assigned to packing instructions PR1 to PR7, see 4.1.4.4.*

4.1.6.1 This section provides general requirements applicable to the use of pressure receptacles and open cryogenic receptacles for the carriage of Class 2 gases and goods of other classes assigned to packing instruction P200 (e.g. UN 1051 hydrogen cyanide, stabilized). Pressure receptacles shall be constructed and closed so as to prevent any loss of contents which might be caused under normal conditions of carriage, including by vibration, or by changes in temperature, humidity or pressure (resulting from change in altitude, for example).

4.1.6.2 Parts of pressure receptacles and open cryogenic receptacles which are in direct contact with dangerous goods shall not be affected or weakened by those dangerous goods and shall not cause a dangerous effect (e.g. catalysing a reaction or reacting with the dangerous goods) (see also table of standards at the end of this section). Pressure receptacles for UN 1001 acetylene, dissolved, and UN 3374 acetylene, solvent free, shall be filled with a porous mass, uniformly distributed, of a type that conforms to the requirements and testing specified by the competent authority and which:

- (a) is compatible with the pressure receptacle and does not form harmful or dangerous compounds either with the acetylene or with the solvent in the case of UN 1001; and
- (b) is capable of preventing the spread of decomposition of the acetylene in the mass.

In the case of UN 1001, the solvent shall be compatible with the pressure receptacles.

4.1.6.3 Pressure receptacles, including their closures and open cryogenic receptacles, shall be selected to contain a gas or a mixture of gases according to the requirements of 6.2.1.2 and the requirements of the relevant packing instructions of 4.1.4.1. This sub-section also applies to pressure receptacles which are elements of MEGCs and battery vehicles/battery wagons.

4.1.6.4 A change of use of a refillable pressure receptacle shall include emptying, purging and evacuation operations to the extent necessary for safe operation (see also table of standards at the end of this section). In addition, a pressure receptacle that previously contained a Class 8 corrosive substance or a substance of another class with a corrosive subsidiary risk shall not be authorized for the carriage of a Class 2 substance unless the necessary inspection and testing as specified in 6.2.1.5 have been performed.

4.1.6.5 Prior to filling, the packer shall perform an inspection of the pressure receptacle or open cryogenic receptacle and ensure that the pressure receptacle or open cryogenic receptacle is authorized for the substance to be carried and that the requirements have been met. Shut-off valves shall be closed after filling and remain closed during carriage. The consignor shall verify that the closures and equipment are not leaking.

*NOTE: Shut-off valves fitted to individual cylinders in bundles may be open during carriage, unless the substance carried is subject to special packing provision 'k' or 'q' in P200.*

4.1.6.6 Pressure receptacles and open cryogenic receptacles shall be filled according to the working pressures, filling ratios and provisions specified in the appropriate packing instruction for the specific substance being filled. Reactive gases and gas mixtures shall be filled to a pressure such that if complete decomposition of the gas occurs, the working pressure of the pressure receptacle shall not be exceeded. Bundles of cylinders shall not be filled in excess of the lowest working pressure of any given cylinder in the bundle.

4.1.6.7 Pressure receptacles, including their closures, shall conform to the design, construction, inspection and testing requirements detailed in Chapter 6.2. When outer

packagings are prescribed, the pressure receptacles and open cryogenic receptacles shall be firmly secured therein. Unless otherwise specified in the detailed packing instructions, one or more inner packagings may be enclosed in one outer packaging.

- 4.1.6.8 Valves shall be designed and constructed in such a way that they are inherently able to withstand damage without release of the contents or shall be protected from damage which could cause inadvertent release of the contents of the pressure receptacle, by one of the following methods (see also table of standards at the end of this section):
- (a) Valves are placed inside the neck of the pressure receptacle and protected by a threaded plug or cap;
  - (b) Valves are protected by caps. Caps shall possess vent-holes of sufficient cross-sectional area to evacuate the gas if leakage occurs at the valves;
  - (c) Valves are protected by shrouds or guards;
  - (d) Valves are placed in a protective frame;
  - (e) Pressure receptacles are carried in frames, (e.g. cylinders in bundles); or
  - (f) Pressure receptacles are carried in protective boxes.
- 4.1.6.9 Non-refillable pressure receptacles shall:
- (a) be carried in an outer packaging, such as a box or crate, or in shrink-wrapped 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  $LC_{50}$  less than or equal to  $200 \text{ ml/m}^3$ ; and
  - (d) not be repaired after being put into service.
- 4.1.6.10 Refillable pressure receptacles shall be periodically inspected according to the provisions of 6.2.1.6 and packing instruction P200 or P203 as applicable. Pressure receptacles shall not be filled after they become due for periodic inspection but may be carried after the expiry of the time-limit for purposes of performing inspection or disposal, including the intermediate carriage operations.
- 4.1.6.11 Repairs shall be consistent with the fabrication and testing requirements of the applicable design and construction standards and are only permitted as indicated in the relevant periodic inspection standards specified in chapter 6.2. Pressure receptacles, other than the jacket of closed cryogenic 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.

4.1.6.12 Receptacles shall not be offered for filling:

- (a) when damaged to such an extent that the integrity of the receptacle or its service equipment may be affected;
- (b) unless the 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.

4.1.6.13 Filled receptacles shall not be offered for carriage;

- (a) when leaking;
- (b) when damaged to such an extent that the integrity of the receptacle or its service equipment may be affected;
- (c) unless the 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.

4.1.6.14 For pressure receptacles bearing the UN mark, the ISO standards listed below shall be applied. For other pressure receptacles, the requirements of section 4.1.6 are considered to have been complied with if the following standards, as relevant, are applied:

<b>Applicable paragraphs</b>	<b>Reference</b>	<b>Title of document</b>
4.1.6.2	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
4.1.6.4	ISO 11621:1997	Gas cylinders – Procedures for change of gas service
	EN 1795:1997	Gas cylinders (excluding LPG) – Procedures for change of gas service.
4.1.6.8 Valves with inherent protection	Annex B of ISO 10297:1999	Gas cylinder – Refillable gas cylinder valves – Specification and type testing
	Annex A of EN 849:1996/A2:2001	Transportable gas cylinders – Cylinder valves: specification and type testing – Amendment 2
	EN 13152:2001	Testing and specifications of LPG cylinder valves – self closing
	EN 13153:2001	Testing and specifications of LPG cylinder valves – manually operated
4.1.6.8 (b) and (c)	ISO 11117:1998	Gas Cylinders – Valve Protection caps and valve guards for industrial and medical gas cylinders – Design construction and tests
	EN 962:1996/A2:2000	Valve protection caps and valve guards for industrial and medical gas cylinders – Design, construction and tests

- 4.1.7.2.1 Amend to read: "The currently assigned organic peroxides specifically listed in packing instruction IBC520 may be carried in IBCs in accordance with this packing instruction."
- 4.1.8.3 Add the following sentence at the end:  
"When the infectious substances to be carried are unknown, but suspected of meeting the criteria for inclusion in category A and assignment to UN Nos 2814 or 2900, the words "suspected category A infectious substance" shall be shown, in parenthesis, following the proper shipping name on the document inside the outer packaging."
- 4.1.8.5 Replace "UN No. 3373 Diagnostic specimens" with: "UN No. 3373 Diagnostic specimens or clinical specimens".
- 4.1.9.1.4 Replace "and intermediate bulk containers" with "intermediate bulk containers and [RID: wagons] [ADR: vehicles] [ADN: conveyances].".
- 4.1.9.2.1 Replace "Industrial package Type 1 (Type IP-1), Industrial package Type 2 (Type IP-2), Industrial package Type 3 (Type IP-3)" with " Type IP-1 package, Type IP-2 package, Type IP-3 package,".
- 4.1.10.4 **MP5** Replace "UN No. 3373 Diagnostic specimens" with: "UN No. 3373 Diagnostic specimens or clinical specimens".

## Chapter 4.2

- 4.2.1 Insert "Class 1 and" before "Classes 3 to 9".
- 4.2.1.1 At the end of the first sentence insert "1," before "3"
- 4.2.1.4 Amend the second sentence to read as follows: "When necessary, the shell shall be thermally insulated."
- 4.2.1.9.5.1 Amend the sentence before the formula to read as follows:  
"The maximum degree of filling (in %) for solids carried above their melting points and for elevated temperature liquids shall be determined by the following formula:".
- 4.2.1.18 Add the following new paragraphs:  
**"4.2.1.18 *Additional provisions applicable to the carriage of solid substances carried above their melting point***
- 4.2.1.18.1 Solid substances carried or offered for carriage above their melting point which are not assigned a portable tank instruction in column (10) of the Table A of Chapter 3.2 or when the assigned portable tank instruction does not apply to carriage at temperatures above their melting point may be carried in portable tanks provided that the solid substances are classified in Classes 4.1, 4.2, 4.3, 5.1, 6.1, 8 or 9 and have no subsidiary risk other than that of Classes 6.1 or Class 8 and are in packing group II or III.
- 4.2.1.18.2 Unless otherwise indicated in the Table A of Chapter 3.2, portable tanks used for the carriage of these solid substances above their melting point shall conform to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II. A portable tank which affords an

equivalent or greater level of safety may be selected according to 4.2.5.2.5. The maximum degree of filling (in %) shall be determined according to 4.2.1.9.5 (TP3)."

- 4.2.5.2.1 Replace "2" with "1" at the end of the first sentence.
- 4.2.5.2.2 Insert "Class 1 and" before "Classes 3 to 9" at the beginning of the first sentence.
- 4.2.5.2.5 For portable tank instructions T2 and T4, delete "T6" under "Portable tank instructions also permitted".
- 4.2.5.2.6 Insert the following paragraph after the title:  
 "Portable tank instructions specify the requirements applicable to a portable tank when used for the carriage of specific substances. Portable tank instructions T1 to T22 specify the applicable minimum test pressure, the minimum shell thickness (in mm reference steel), and the pressure-relief and bottom-opening requirements."

In the table for portable tank instruction "T1-T22" add a reference "<sup>a</sup>" to a footnote at the end of the heading "Pressure-relief requirements". The footnote will read as follows:

<sup>a</sup> *When the word "Normal" is indicated, all the requirements of 6.7.2.8 apply except for 6.7.2.8.3.*

**T50** In the table for portable tank instruction "T50":

- In the heading "Max. allowable working pressure (bar) Small; Bare; Sunshield; Insulated", add at the end "respectively<sup>a</sup>" and a footnote to read as follows:  
<sup>a</sup> *"Small" means tanks having a shell with a diameter of 1.5 m or less; "Bare" means tanks having a shell with a diameter of more than 1.5 m without insulation or sun shield (see 6.7.3.2.12); "Sunshield" means tanks having a shell with a diameter of more than 1.5 m with sun shield (see 6.7.3.2.12); "Insulated" means tanks having a shell with a diameter of more than 1.5 m with insulation (see 6.7.3.2.12); (See definition of "Design reference temperature" in 6.7.3.1).*
- Add a reference "<sup>b</sup>" to a footnote at the end of the heading "Pressure-relief requirements", and a footnote to read as follows:  
<sup>b</sup> *The word "Normal" in the pressure relief requirements column indicates that a frangible disc as specified in 6.7.3.7.3 is not required.*
- Add a new row as follows:

UN No.	Non-refrigerated liquefied gases	Max. allowable working pressure (bar) Small; Bare; Sunshield; Insulated	Openings below liquid level	Pressure-relief requirements (see 6.7.3.7)	Maximum filling ratio
1010	Butadienes, stabilized or butadienes and hydrocarbon mixture, stabilized	See MAWP definition in 6.7.3.1	Allowed	Normal	See 4.2.2.7

- 4.2.5.3 **TP3** Amend to read as follows: "The maximum degree of filling (in %) for solids carried above their melting points and for elevated temperature liquids shall be determined in accordance with 4.2.1.9.5."

**TP5** Amend to read as follows: "The degree of filling prescribed in 4.2.3.6 shall be met."

Add the following new portable tank instructions:

**TP32** For UN Nos. 0331, 0332 and 3375, portable tanks may be used subject to the following conditions:

- (a) To avoid unnecessary confinement, each portable tank constructed of metal shall be fitted with a pressure-relief device that may be of the reclosing spring loaded type, a frangible disc or a fusible element. The set to discharge or burst pressure, as applicable, shall not be greater than 2.65 bar for portable tanks with minimum test pressures greater than 4 bar.
- (b) The suitability for carriage in tanks shall be demonstrated. One method to evaluate this suitability is test 8 (d) in Test Series 8 (see Manual of Tests and Criteria, Part 1, Sub-section 18.7).
- (c) Substances shall not be allowed to remain in the portable tank for any period that could result in caking. Appropriate measures shall be taken to avoid accumulation and packing of substances in the tank (e.g. cleaning, etc).

**TP33** The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and carried as a solid mass. For solids which are carried above their melting point see 4.2.1.18.

**TP34** Portable tanks need not be subjected to the impact test in 6.7.4.14.1 if the portable tank is marked "NOT FOR RAIL TRANSPORT" on the plate specified in 6.7.4.15.1 and also in letters of at least 10 cm high on both sides of the outer jacket."

### Chapter 4.3

4.3.3.1.1 At the end of Note 1, add "the elements of which are composed of receptacles."

4.3.3.2.5 For UN No. 1010, add before the first two entries in the column "Name": "BUTADIENES, STABILIZED".  
Amend the third entry to read as follows: "BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED".

4.3.4.1.1 Replace the explanation for "N" with:  
"N = tank without a venting system according to 6.8.2.2.6 and not hermetically closed;"

4.3.4.1.2 In the table, for the tank code L4BH, Class 6.2 delete "risk group 2" in column "Classification code".

4.3.4.1.2 In the table, delete the last column "Hierarchy of tanks".  
Transfer the text of the note below the table to the end of this paragraph and change the first word of this text from "This" in "The".

After the table add the title "Hierarchy of tanks" and delete the two first sentences of the present text after the table (below the new title) starting with "The list of tank codes".

- 4.3.4.1.3 In 4.3.4.1.3 delete the third sentence starting with "The hierarchy" and the word "However" at the beginning of the last sentence.

"UN No. 3401 alkali metal amalgam, solid, UN No. 3402 alkaline earth metal amalgam, solid, 3403 potassium metal alloys, solid and UN No. 3404 potassium sodium alloys, solid: code L10BN."

- 4.3.4.1.3 d) Add:  
"UN No. 3375 ammonium nitrate emulsion, suspension or gel, liquid: code LGAV;  
UN No. 3375 ammonium nitrate emulsion, suspension or gel, solid: code SGAV"

- 4.3.5 Add a new special provision TU37 which reads as follows:  
"**TU37** Carriage in tanks is limited to substances containing pathogens which are unlikely to be a serious hazard, and, while capable of causing serious infection on exposure, effective treatment and preventive measures are available and the risk of spread of infection is limited (i.e. moderate individual risk and low community risk)."

Add a new special provision TU39 which reads as follows:  
"**TU39:** The suitability of the substance for carriage in tanks shall be demonstrated. The method to evaluate this suitability shall be approved by the competent authority. One method is test 8(d) in Test Series 8 (see Manual of Tests and Criteria, Part 1, sub-section 18.7).

Substances shall not be allowed to remain in the tank for any period that could result in caking. Appropriate measures shall be taken to avoid accumulation and packing of substances in the tank (e.g. cleaning etc.)."

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