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**COMMITTEE OF EXPERTS ON THE
TRANSPORT OF DANGEROUS GOODS**

**(Twentieth session,
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# WORK OF THE SUB-COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS

## Packing instructions

## Report of the informal Working Group on Packing Instructions (Frankfurt, 7 - 11 September 1998)

## Annex 1

## Proposed packing instructions

## Transmitted by the Expert from the United Kingdom

**4.1.3.10 General Packing Instructions**

| **P001** | **PACKING INSTRUCTION LIQUIDS** | | | **P001** |
|---|---|---|---|---|
| The following packagings are authorized : | | | | |
| **Combination packagings:** | | | | |
| **Inner packagings** | **Outer packagings** | **Packing group (PG) Maximum capacity/Net mass (see 4.1.3.3.2)** | | |
| | | **PG I** | **PG II** | **PG III** |
| Glass 10 *l*<br>Plastics 30 *l*<br>Metal 40 *l* | **Drums:** | | | |
| | Steel: 1A2 | 250 kg | 400 kg | 400 kg |
| | Aluminium: 1B2 | 250 kg | 400 kg | 400 kg |
| | Other metal: 1N2 | 250 kg | 400 kg | 400 kg |
| | Plastics: 1H2 | 250 kg | 400 kg | 400 kg |
| | Plywood: 1D | 150 kg | 400 kg | 400 kg |
| | Fibre: 1G | 75 kg | 400 kg | 400 kg |
| | **Boxes**: | | | |
| | Steel: 4A | 250 kg | 400 kg | 400 kg |
| | Aluminium: 4B | 250 kg | 400 kg | 400 kg |
| | Natural wood: 4C1, 4C2 | 150 kg | 400 kg | 400 kg |
| | Plywood: 4D | 150 kg | 400 kg | 400 kg |
| | Reconstituted wood: 4F | 75 kg | 400 kg | 400 kg |
| | Fibreboard: 4G | 75 kg | 400 kg | 400 kg |
| | Expanded plastics: 4H1 | 60 kg | 60 kg | 60 kg |
| | Solid plastics: 4H2 | 150 kg | 400 kg | 400 kg |
| | **Jerricans:** | | | |
| | Steel: 3A2 | 120 kg | 120 kg | 120 kg |
| | Aluminium: 3B2 | 120 kg | 120 kg | 120 kg |
| | Plastics: 3H2 | 120 kg | 120 kg | 120 kg |

| **Single packagings:** | | | |
|---|---|---|---|
| **Drums** | | | |
| Steel non-removable head: 1A1 | 250 *l* | 450 *l* | 450 *l* |
| Steel removable head: 1A2 | [250 *l**] | 450 *l* | 450 *l* |
| Aluminium non-removable head: 1B1 | 250 *l* | 450 *l* | 450 *l* |
| Aluminium removable head: 1B2 | [250 *l* *] | 450 *l* | 450 *l* |
| Other metal non-removable head: 1N | 250 *l* | 450 *l* | 450 *l* |
| Other metal removable head: 1N2 | [250 *l* *] | 450 *l* | 450 *l* ] |
| Plastics non-removable head: 1H1 | 250 *l*[1] | 450 *l* | 450 *l* |
| Plastics removable head: 1H2 | [250 *l* *] | 450 *l* | 450 *l* |
| **Jerricans** | | | |
| Steel jerrican non-removable head: 3A1 | 60 *l* | 60 *l* | 60 *l* |
| Steel jerrican removable head: 3A2 | [60 *l* *] | 60 *l* | 60 *l* |
| Aluminium jerricans non-removable head: 3B1 | 60 *l* | 60 *l* | 60 *l* |
| Aluminium jerricans removable head: 3B2 | [60 *l* *] | 60 *l* | 60 *l* |
| Other metal non-removable head: 1N1 | 60 *l* | 60 *l* | 60 *l* |
| Other metal removable head: 1N2 | [60 *l* *] | 60 *l* | 60 *l* |
| Plastics jerricans non-removable head: 3H1 | 60 *l* | 60 *l* | 60 *l* |
| Plastics jerrican removable head: 3H2: | [60 *l* *] | 60 *l* | 60 *l* |
| **Composite packagings** | | | |
| Plastics receptacle in steel or aluminium drum: 6HA1, 6HB1 | 250 *l* | 250 *l* | 250 *l* |
| Plastics receptacle in fibre, plastics or plywood drum: 6HG1, 6HH1, 6HD1 | 120 *l* | 250 *l* | 250 *l* |
| Plastics receptacle in steel or aluminium crate or box or Plastic receptacle in wood, plywood, fibreboard or solid plastics box: 6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2 | 60 *l* | 60 *l* | 60 *l* |
| Glass receptacle in steel, aluminium, fibre, plywood, solid plastics or expanded plastics drum: 6PA1, 6PB1, 6PG1, 6PD1, 6PH1 or 6PH2 or in a steel, aluminium, wood, fibreboard or plywood box: 6PA2, 6PB2, 6PC, 6PG2 or 6PD2 | 60 *l* | 60 *l* | 60 *l* |

**Special packing provisions**

1 For UN 1133, UN1210, UN1263 and UN1866, packaging tests are not necessary for substances of packing groups II and III in quantities of 5 litres or less per metal or plastics packaging when:

(a) In palletized loads, a pallet box or unit load device, e.g. individual packagings placed or stacked and secured by strapping, shrink or stretch-wrapping or other suitable means to a pallet. For sea transport, the palletized loads, pallet boxes or unit load devices shall be firmly packed and secured in closed cargo transport units.

(b) As an inner packaging of a combination packaging with a maximum net mass of 40 kg.

2 For UN 3065 and UN1170 wooden barrels (2C1 and 2C2) may be used.

3 For UN 1261, removable head single packagings are not allowed.

4 For UN 1774, packagings shall meet the packing group II performance level.

5 For UN 1204 packagings shall be so constructed that explosion is not possible by reason of increased internal pressure. Gas cylinders and gas receptacles shall not be used for these substances.

6 For UN 1851, UN 3248, UN 3249 the maximum net quantity per package shall be 5 *l* or 5kg

[10 For sea transport only UN1791 PGII the packaging shall be vented]

XX For UN 1131 hermetically sealed packagings shall be used

[28. For UN 2984 the minimum ullage shall be 10%]

29. For UN 1790 Hydrofluoric acid and UN 2031 Nitric acid (PGI only) the permissible period of use for plastic packagings shall be two years from the date of manufacture.

*** [ Only Substances with a viscosity >200mm$^2$/sec are permitted]**

| **P002** | **PACKING INSTRUCTION SOLIDS** | | | **P002** |
|---|---|---|---|---|
| The following packagings are authorized: | | | | |
| **Combination packagings:** | | | | |
| **Inner packagings** | **Outer packagings** | **Packaging group (PG) Maximum net mass (see 4.1.3.3.1)** | | |
| | | **PG I** | **PG II** | **PG III** |
| Glass 10 kg<br>Plastics [2] 50 kg<br>Metal 50 kg<br>Paper[1,2,3] 50 kg<br>Fibre[1,2,3] 50 kg<br><br>[1] These packagings shall not be used when the substances being transported may become liquid during transport.<br>[2] Packagings shall be siftproof<br>[3] Paper and fibre packagings shall not be used for substances of PG I | **Drums** | | | |
| | Steel: 1A2 | 400 kg | 400 kg | 400 kg |
| | Aluminium: 1B2 | 400 kg | 400 kg | 400 kg |
| | Other metal: 1N2 | 400 kg | 400 kg | 400 kg |
| | Plastics: 1H2 | 400 kg | 400 kg | 400 kg |
| | Plywood: 1D | 400 kg | 400 kg | 400 kg |
| | Fibre: 1G | 400 kg | 400 kg | 400 kg |
| | **Boxes** | | | |
| | Steel: 4A | 400 kg | 400 kg | 400 kg |
| | Aluminium: 4B | 400 kg | 400 kg | 400 kg |
| | Natural wood: 4C1 | 250 kg | 400 kg | 400 kg |
| | Natural wood with sift proof walls: 4C2 | 250 kg | 400 kg | 400 kg |
| | Plywood: 4D | 250 kg | 400 kg | 400 kg |
| | Reconstituted wood: 4F | 125 kg | 400 kg | 400 kg |
| | Fibreboard: 4G | 125 kg | 400 kg | 400 kg |
| | Expanded plastics: 4H1 | 60 kg | 60 kg | 60 kg |
| | Solid plastics: 4H2 | 250 kg | 400 kg | 400 kg |
| | **Jerricans** | | | |
| | Steel: 3A2 | 120 kg | 120 kg | 120 kg |
| | Aluminium: 3B2 | 120 kg | 120 kg | 120 kg |
| | Plastics: 3H2 | 120 kg | 120 kg | 120 kg |

| | | | |
|---|---|---|---|
| **Single packagings:** | | | |
| **Drums** | | | |
| Steel drum: 1A1 or 1A2[2] | 400 kg | 400 kg | 400 kg |
| Aluminium drum: 1B1 or 1B2[2] | 400 kg | 400 kg | 400 kg |
| Metal drum other than steel, or aluminium: 1N1 or 1N2[2] | 400 kg | 400 kg | 400 kg |
| Plastics drum: 1H1 or 1H2[2] | 400 kg | 400 kg | 400 kg |
| Fibre drum: 1G[1] | 400 kg | 400 kg | 400 kg |
| Plywood drum: 1D[1] | 400 kg | 400 kg | 400 kg |
| **Jerricans** | | | |
| Steel jerrican: 3A1 or 3A2[2] | 120 kg | 120 kg | 120 kg |
| Aluminium: 3B1 or 3B2[2] | 120 kg | 120 kg | 120 kg |
| Plastics jerrican: 3H1 or 3H2[2] | 120 kg | 120 kg | 120 kg |
| **Boxes** | | | |
| Steel box 4A | Not allowed | 400 kg | 400 kg |
| Aluminium box 4B | Not allowed | 400 kg | 400 kg |
| Natural wood box: 4C1[1] | Not allowed | 400 kg | 400 kg |
| Plywood box: 4D[1] | Not allowed | 400 kg | 400 kg |
| Reconstituted wood box: 4F[1] | Not allowed | 400 kg | 400 kg |
| Natural wood with sift proof walls: 4C2[1] | Not allowed | 400 kg | 400 kg |
| Fibreboard: 4G[1] | Not allowed | 400 kg | 400 kg |
| Solid plastics: 4H2 | Not allowed | 400 kg | 400 kg |
| **Bags** | | | |
| Bags: 5H3[1], 5H4[1], 5L3[1], 5M2[1] | Not allowed | 50 kg | 50 kg |
| **Composite packagings** | | | |
| Plastics receptacle in steel, aluminium, plywood, fibre or plastics drum: 6HA1, 6HB1, 6HG1[1] , 6HD1[1] , or 6HH1 | 400 kg | 400 kg | 400 kg |
| Plastics receptacle in steel or aluminium crate or box, wooden box, plywood box, fibreboard box or solid plastics box: 6HA2, 6HB2, 6HC, 6HD2[1] , 6HG2[1] or 6HH2 | 75 kg | 75 kg | 75 kg |
| Glass receptacle in steel, aluminium, plywood or fibre drum: 6PA1, 6PB1, 6PD1[1] or 6PG1[1] or in steel, aluminium, wood, plywood or fibreboard box: 6PA2, 6PB2, 6PC, 6PD2[1] , or 6PG2[1] or in solid or expanded plastics packaging: 6PH2 or 6PH1[1] | 75 kg | 75 kg | 75 kg |

[1] **These packagings shall not be used when the substances may become liquid during transport.**

[2] **These packagings shall not be used for packing group I substances when the substances may become liquid during transport.**

**Special packing provisions**

6 For UN 3248, UN3249 the maximum net quantity per package shall be 5 *l* or 5kg

7 For UN2000 celluloid in sheets may also be transported unpacked on pallets, wrapped in plastic film and secured by appropriate means, such as steel bands as a full load in closed transport units. Each pallet shall not exceed 1000kg

8 For UN 2002, packagings shall be so constructed that explosion is not possible by reason of increased internal pressure. Gas cylinders and gas receptacles shall not be used for these substances.

9 For UN 3175, UN3243 and UN3244 packagings shall be a design type that has passed a leakproofness test at the packing group II performance level.

11 For UN 1309, and UN1362, 5H1, 5L1 and 5M1 bags are allowed if they are overpacked in plastic bags or are wrapped in shrink or stretch wrap on pallets.

12 For UN 1361, UN2213 and UN3077, 5H1, 5L1 and 5M1 bags are allowed when transported in closed transport units.

[XC For UN 2590 5M1 bags may be used when transported in closed transport units or as shrinkwrapped or stretch wrapped unit loads]

[XD For 2969 as whole beans 5H1, 5L1 and 5M1 bags are permitted]

13 For articles of UN 2870, only combination packagings meeting the packing group I performance level.

14 For UN 2211, UN2694 and UN 3314 packagings are not required to meet the packaging tests of Chapter 6.1

15 For UN 1324 and UN 2623 packagings shall meet the packing group III performance level.

20 For UN 2798 may be carried in any siftproof or tearproof receptacle

XA For UN 2471 paper or fibre inner packagings are not permitted

| **P003** | **PACKING INSTRUCTION** | **P003** |
|---|---|---|

Dangerous goods shall be placed in suitable outer packagings. The packagings shall meet the provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8 and be so designed that they meet the construction requirements of 6.1.4. Outer packagings constructed of suitable material of adequate strength and design in relation to the packaging capacity and its intended use shall be used. Where this packing instruction is used for the transport of articles or inner packagings of combination packagings the package shall be designed and constructed to prevent inadvertent discharge of articles during normal conditions of transport.

**Special Packing Provisions**

16 For UN 2800, batteries shall be protected from short circuit within the packagings.

17 For UN 1044, UN1950 and UN2037 packagings shall not exceed 55kg net mass for fibreboard or 125kg net mass for other packagings.

18 UN 1845 Carbon dioxide, solid (dry ice) shall be packed in packagings designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packagings.

19 UN 1327, UN1364 and UN1365 may be transported in bales.

20 UN 1363, UN1386, UN1408, UN2217 and UN2793 may be carried in any siftproof, tearproof recptacle.

XB UN 2857 may be transported unpackaged, in crates or in appropriate overpacks.

**P052** **PACKING INSTRUCTION** **P052**

The packagings listed below are authorized for organic peroxides and self-reactive substances. The packing methods for organic peroxides and self-reactive substances are designated OP1 to OP8. The packing methods appropriate for the individual currently assigned organic peroxides and self-reactive substances are listed in 4.1.5.1.3 and 2.4.2.3.2.4. and 2.5.3.2.4. The quantities specified for each packing method are the maximum quantities authorized per package. In addition to the requirements covered by this packing instruction, the special packing provisions of 4.1.5.1 shall be met. The following packagings are authorized:

(a) Combination packagings with outer packagings comprising boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2), drums (1A2, 1B2, 1G, 1H2 and 1D) jerricans (3A2, 3B2 and 3H2)

(b) Single packagings consisting of drums (1A1, 1A2, 1B1, 1B2, 1G, 1H1, 1H2, 1D) and jerricans (3A1, 3A2, 3B1, 3B2, 3H1 and 3H2)

(c) Composite packagings with plastics inner receptacles (6HA1, 6HA2, 6HB1, 6HB2, 6HC, 6HD1, 6HD2, 6HG1, 6HG2, 6HH1, 6HH2)

**Maximum quantity per packaging/package 1/ for packing methods OP1 to OP8**

| **Packing Method** / **Maximum Quantity** | **OP1** | **OP2 1/** | **OP3** | **OP4 1/** | **OP5** | **OP6** | **OP7** | **OP8** |
|---|---|---|---|---|---|---|---|---|
| Maximum mass (kg) for solids and for combination packagings (liquid and solid) | 0.5 | 0.5/10 | 5 | 5/25 | 25 | 50 | 50 | 200 2/ |
| Maximum contents in litres for liquids 3/ | 0.5 | - | 5 | - | 30 | 60 | 60 | 225 4/ |

1/ If two values are given, the first applies to the maximum net mass per inner packaging and the second to the maximum net mass of the complete package.
2/ 60 kg for jerricans/ 100 kg for boxes.
3/ Viscous liquids shall be treated as solids when they do not meet the criteria provided in the definition for “liquids” presented in 1.2.1.
4/ 60 litres for jerricans.

**Additional Requirements**:

1. Metal packagings, including inner packagings of combination packagings and outer packagings of combination or composite packagings may only be used for packing methods OP7 and OP8;
2. In combination packagings, glass receptacles may only be used as inner packagings with a maximum content of 0.5 kg or 0.5 litre.
3. In combination packagings, cushioning materials shall not be readily combustible.
4. The packaging of an organic peroxide or self-reactive substance required to bear an “EXPLOSIVE” subsidiary risk label (Model No. 01) shall also comply with the provisions given in 4.1.3.10 and 4.1.3.11.

**Special packing provisions:**

21 For certain self-reactive substances of types B or C, UN 3221, UN3222, UN3223, UN3224, UN3231, UN3232, UN3233 and UN3234 a smaller packaging than that allowed by packing methods OP5 or OP6 respectively shall be used (see 4.1.5 and 2.4.2.3.2.4).

22 UN 3241, 2-Bromo-2-nitropropane-1, 3-diol, shall be packed in accordance with packing method OP6.

**P099** **PACKING INSTRUCTION** **P099**

Only packagings which are approved by the competent authority may be used (see 4.1.3.1).

| P200 | PACKING INSTRUCTION | P200 |
|---|---|---|

Compressed gas cylinders and gas receptacles conforming to the construction, testing and filling requirements approved by the competent authority are authorized. Cylinders and receptacles with capacities of 1 litre or less shall be packed in outer packagings constructed of suitable material of adequate strength and design in relation to the packaging capacity and its intended use and secured or cushioned so as to prevent significant movement within the outer packaging during normal conditions of transport.

**Special packing provisions:**

23 For UN 1001 cylinders shall be filled with a homogenous monolithic porous mass and contain an adequate quantity of acetone or other equally suitable solvent.

| P201 | PACKING INSTRUCTION | P201 |
|---|---|---|

For UN 3167, UN 3168 and UN 3169 the following packagings are authorized:
Compressed gas cylinders and gas receptacles conforming to the construction, testing and filling requirements approved by the competent authority.

For non-toxic gases, combination packagings with hermetically sealed inner packagings of glass or metal with a maximum capacity of 5 litres per package which meet the packing group III performance level.

For toxic gases, combination packagings with hermetically sealed inner packagings of glass or metal with a maximum capacity of 1 litre per package which meet the packing group III performance level.

| P202 | PACKING INSTRUCTION | P202 |
|---|---|---|

For UN3353, Air bag inflators or modules or seat belts pretensioners shall be packed in packagings conforming to the packing group III performance level. The packaging shall be designed and constructed to prevent inadvertent operation during normal conditions of transport. The pressure vessel shall be in accordance with the requirements of the competent authority for the gas(es)contained in the pressure vessel. Air bag inflators or modules or seat belts pretensioners may be carried unpackaged in dedicated handling devices, vehicles or closed transport unit when moved from where they are manufactured to an assembly plant.

| P300 | PACKING INSTRUCTION | P300 |
|---|---|---|

UN 3064, Nitroglycerin, solution in alcohol shall be packed in combination packagings consisting of inner metal cans of not more than 1 litre capacity each and outer wooden boxes (4C1, 4C2, 4D or 4F) containing not more than 5 litres of solution. Metal cans shall be completely surrounded with absorbent cushioning material. Wooden boxes shall be completely lined with suitable material impervious to water and nitroglycerin.

| P301 | PACKING INSTRUCTION | P301 |
|---|---|---|

UN 3165, Aircraft Hydraulic Power Unit Fuel Tanks shall conform to the following:

(a) An aluminium pressure vessel made from tubing and having welded heads. Primary containment of the fuel within this vessel shall consist of a welded aluminium bladder having a maximum internal volume of 46 litres. The outer vessel shall have a minimum design gauge pressure of 1,275 kPa and a minimum burst gauge pressure of 2,755 kPa. Each vessel shall be leak checked during manufacture and before shipment and shall be found leakproof. The complete inner unit shall be securely packed in non-combustible cushioning material, such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42 litres; or

(b) An aluminium pressure vessel. Primary containment of the fuel within this vessel shall consist of a welded vapour tight fuel compartment with an elastomeric bladder having a maximum internal volume of 46 litres. The pressure vessel shall have a minimum design gauge pressure of 5,170 kPa. Each vessel shall be leak-checked during manufacture and before shipment and shall be securely packed in non-combustible cushioning material such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42 litres.

| **P302** | **PACKING INSTRUCTION** | **P302** |
|---|---|---|

UN 3269, Polyester resin kits shall be packed in combination packagings which meet the packing group II or III performance level according to the criteria for class 3, applied to the base material. The base material and the activator (organic peroxide) shall be each separately packed in inner packagings. The components may be placed in the same outer packaging provided they will not interact dangerously in the event of a leakage. The activator shall have a maximum quantity of 125 ml per inner packaging if liquid, and 500 grams per inner packaging if solid.

| **P400** | **PACKING INSTRUCTION** | **P400** |
|---|---|---|

The following packagings are authorized:

(1) Steel gas cylinders and gas receptacles having a minimum design pressure of 1000 kPa conforming to the construction, testing and filling requirements approved by the competent authority. Valves shall be protected with steel valve protection caps or collars or the gas cylinders or receptacles shall be overpacked in strong wood, fibreboard or plastics boxes. Cylinders and gas receptacles shall be secured to prevent movement in the box and shall be packaged and transported so that pressure relief devices remain in the vapour space of the cylinder during normal conditions of handling and transport. Filling shall not be greater than 90% of the capacity of the cylinder.

(2) Boxes (4A, 4B, 4C1, 4C2, 4D, 4F or 4G) drums (1A2, 1B2, 1N2, 1D or 1G) or jerricans (3A2 or 3B2) enclosing hermetically sealed metal cans with inner packagings of glass, earthenware or metal, with a capacity of not more than 1 litre each, having threaded closures with gaskets. Inner packagings shall be cushioned on all sides with dry, absorbent, non-combustible material in a quantity sufficient to absorb the entire contents. Inner packagings shall not be filled to more than 90% of their capacity. Outer packagings shall have a maximum net mass of 125 kg.

(3) Steel, aluminium or metal drums (1A2, 1B2 or 1N2), jerricans (3A2 or 3B2) or boxes (4A or 4B) with a maximum net mass of 150 kg each with hermetically sealed inner metal cans not more than 4 litre capacity each, with threaded closures fitted with gaskets. Inner packagings shall be cushioned on all sides with dry, absorbent, non-combustible material in a quantity sufficient to absorb the entire contents. Each layer of inner packagings shall be separated by a dividing partition in addition to cushioning material. Inner packagings shall not be filled to more than 90% of their capacity.

| **P401** | **PACKING INSTRUCTION** | **P401** |
|---|---|---|

The following packagings are authorized:

(1) Steel gas cylinders and gas receptacles having a minimum design pressure of 4 bar conforming to the construction, testing and filling requirements approved by the competent authority. Valves shall be protected with steel valve protection caps or collars or the gas cylinders or receptacles shall be overpacked in strong wood, fibreboard or plastics boxes. Cylinders and gas receptacles shall be secured to prevent movement in the box and shall be packaged and transported so that pressure relief devices remain in the vapour space of the cylinder during normal conditions of handling and transport. Filling shall not be greater than 90% of the capacity of the cylinder.

| | Inner receptacle | Outer packaging |
|---|---|---|
| (2) Combination packagings with inner packagings of glass metal or plastics which have threaded closures surrounded in inert cushioning and absorbent material in a quantity sufficient to absorb the entire contents. | 1 *l* | 30 kg maximum net mass |

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

| **P402** | **PACKING INSTRUCTION** | **P402** |
|---|---|---|

The following packagings are authorized:

(1) Steel gas cylinders and gas receptacles having a minimum design pressure of 4 bar conforming to the construction, testing and filling requirements approved by the competent authority. Valves shall be protected with steel valve protection caps or collars or the gas cylinders or receptacles shall be overpacked in strong wood, fibreboard or plastics boxes. Cylinders and gas receptacles shall be secured to prevent movement in the box and shall be packaged and transported so that pressure relief devices remain in the vapour space of the cylinder during normal conditions of handling and transport. Filling shall not be greater than 90% of the capacity of the cylinder.

| | Inner receptacle | Outer packaging |
|---|---|---|
| (2) Combination packagings with inner packagings maximum of glass, metals plastics which have threaded closures surrounded in inert cushioning and absorbent material in a quantity sufficient to absorb the entire contents. | 10 kg(glass)<br>15 kg (metal or plastics) | 125 kg net mass |

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

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

| **P403** | **PACKING INSTRUCTION** | **P403** |
|---|---|---|
| The following packagings are authorized: | | |
| **Combination packagings:** | | |
| **Inner packagings**:<br><br>Glass 2 kg<br>Plastic 15 kg<br>Metal 20 kg<br>Inner packagings shall have threaded closures | **Drums** | **Maximum net mass** |
| | Steel: 1A2 | 400 kg |
| | Aluminium: 1B2 | 400 kg |
| | Other metal:1N2 | 400 kg |
| | Plastics: 1H2 | 400 kg |
| | Plywood: 1D | 400 kg |
| | Fibre: 1G | 400 kg |
| | **Boxes** | |
| | Steel: 4A, | 400 kg |
| | Aluminium: 4B | 400 kg |
| | Natural wood: 4C1 | 250 kg |
| | Natural wood with sift proof walls: 4C2 | 250 kg |
| | Plywood: 4D | 250 kg |
| | Reconstituted wood: 4F | 125 kg |
| | Fibreboard: 4G | 125 kg |
| | Expanded plastics: 4H1 | 60 kg |
| | Solid plastics: 4H2 | 250 kg |
| | **Jerricans** | |
| | Steel: 3A2 | 120 kg |
| | Aluminium: 3B2 | 120 kg |
| | Plastics: 3H2 | 120 kg |
| **Single packagings:** | | **Maximum net mass** |
| **Drums:** | | |
| Steel drum: 1A1 | | 250 kg |
| Aluminium drum: 1B1 | | 250 kg |
| Metal drum other than steel, or aluminium: 1N1 | | 250 kg |
| Plastics drum: 1H1 | | 250 kg |
| **Jerricans:** | | |
| Steel: 3A1 | | 120 kg |
| Aluminium: 3B1 | | 120 kg |
| Plastics: 3H1 | | 120 kg |

| | |
|---|---|
| **Composite packagings** | |
| Composite packagings consisting of plastics receptacle in steel or aluminium drums (6HA1 or 6HB1) | 250 kg |
| Composite packagings consisting of plastics receptacle in fibre, plastics or plywood drums (6HG1, 6HH1 or 6HD1) | 75 kg |
| Composite packagings consisting of plastics receptacle in steel, aluminium, wood, plywood, fibreboard or solid plastics boxes (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2). | 75 kg |

| **P403A** | **PACKING INSTRUCTION** | **P403A** |
|---|---|---|

For Pyrophoric solids UN Nos: 1370, 1383, 1854, 1855, 2005, 2008, 2545, 2546, 2846, 2881, 3052, 3200, 3203.

The following are authorized:

1. In combination packagings 1A2, 1B2, 1N2, 1H2, 1D, 4A, 4B, 4C1, 4C2, 4D, 4F or 4H2 outer packagings with metal inner packagings with a capacity of not more than 15kg each. Inner packagings shall be hermetically sealed and have threaded closures.

2. In metal packagings (1A1, 1A2, 1B1, 1N1, 1N2, 3A1, 3A2, 3B1 and 3B2) with a gross mass not exceeding 150kg

3. In composite packagings consisting of plastics receptacle in a steel or aluminium drum (6HA1 or 6HB1) with a gross mass not exceeding 150kg

| **P404** | **PACKING INSTRUCTION** | **P404** |
|---|---|---|

For UN1381 Phosphorus the following packagings are authorized:

(1) UN1381 phosphorus wet:

(a) Combination packagings: 4A, 4B, 4C1, 4C2, 4D or 4F with a maximum net mass of 75kg

(i) with inner hermetically sealed metal cans, with a maximum net mass of 15kg; or
(ii) with glass inner packagings cushioned on all sides with dry, absorbent, non-combustible material in a quantity sufficient to absorb the entire contents with a maximum net mass of 2 kg; or

(b) Drums (1A1, 1A2, 1B1, 1B2, 1N1 or 1N2) with a maximum net mass of 400 kg or Jerricans (3A1 or 3B1) with a maximum net mass of 120kg.

These packagings shall be capable of passing the leakproofness test specified in 6.1.5.4 at the packing group II performance level.

(2) UN1381 phosphorus dry shall be fused and transported in packagings as follows:

(a) Drums (1A2, 1B2 or 1N2) with a maximum net mass of 400 kg; or

(b) In projectiles or hard cased articles when transported without Class 1 components as specified by the competent authority.

| P405 | PACKING INSTRUCTION | P405 |
|---|---|---|

Packagings shall be designed and constructed to prevent the loss of water or alcohol content or the content of the phlegmatizer. Packagings shall be so constructed and closed so as to avoid an explosive over pressure or pressure build-up of more than 300 kPa (3 bar). The type of packaging and maximum permitted quantity per packaging are limited by the provisions of 2.1.3.5. The following packagings are authorized:

(1) Combination packagings with outer packagings consisting of wooden boxes (4C1, 4C2, 4D, or 4F), fibreboard boxes (4G), plastic boxes (4H1 or 4H2), fibreboard or plywood drums (1G, 1D), open head plastic drums or jerricans (1H2 or 3H2) with water resistant inner packagings.

(2) In plastics, plywood or fibreboard drums (1H2, 1D or 1G) or boxes (4A, 4B, 4C1, 4D, 4F, 4C2 4G and 4H2) with a water resistant inner bag, plastics film lining or water resistant coating.

(3) In metal drums (1A1, 1A2, 1B1, 1B2, 1N1 or 1N2), plastics drums (1H1 or 1H2), metal jerricans (3A1, 3A2, 3B1 or 3B2, plastics jerricans (3H1 or 3H2), plastics receptacle in steel or aluminium drums (6HA1 or 6HB1), plastics receptacle in fibre, plastics or plywood drums (6HG1, 6HH1 or 6HD1), plastics receptacle in steel, aluminium, wood, plywood, fibreboard or solid plastics boxes (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2).

**Special packing provisions:**

24. UN 1344, 1348, 1354, 1355, 1356 and 2852 shall not be transported in quantities of more than 500 g per package.
25. UN 1347 shall not be transported in quantities of more than 15 kg per package.
26. For UN 1310, 1320, 1321, 1322, 1344, 1347, 1348, 1349, UN1517 and 3317 packagings shall be lead free.

| P406 | PACKING INSTRUCTION | P406 |
|---|---|---|

UN 1331, 1944, 1945 and 2254, Matches shall be tightly packed in combination packagings comprising securely closed inner packagings to prevent accidental ignition under normal conditions of transport. Inner packagings shall not contain more than 700 strike-anywhere matches. The maximum net mass of the outer packagings shall not exceed 45 kg except for fibreboard boxes which shall not exceed 30 kg. UN 1331, Strike-anywhere matches shall not be packed in the same outer packaging with any other dangerous goods other than safety matches or wax Vesta matches, which shall be packed in separate inner packagings.

| P407 | PACKING INSTRUCTION | P407 |
|---|---|---|

UN 3292, Sodium batteries shall be protected against short circuit and shall be isolated in such a manner as to prevent short circuits. Batteries shall be packed as follows:

Cells shall be placed within outer packagings with sufficient cushioning material to prevent contact between cells and between cells and the internal surfaces of the outer packaging and to ensure that no dangerous movement of the cells within the outer packaging occurs in transport. Packagings shall conform to the packing group II performance level.

Batteries may be carried unpacked or in protective enclosures (e.g. in fully enclosed or wooden slatted crates). The terminals shall not support the weight of other batteries or materials packed with the batteries.

| P408 | PACKING INSTRUCTION | P408 |
|---|---|---|

UN 2956, UN 3242 and UN3251 shall be packed as follows:

(a) a fibre drum (1G) which may be fitted with a liner or coating, maximum contents 50kg
(b) an inner packaging of a single plastics bag in a fibreboard box (4G), maximum contents 50kg
(c) inner plastics packagings each containing a maximum of 5kg within an outer packaging of a fibreboard box (4G) or a fibre drum (1G) maximum contents 25kg

**Additional requirements**

Except when laboratory tests involving heating under confinemment show no violent effect, 3.3.1,special provision SP181, applies

| **P409** | **PACKING INSTRUCTION** | **P409** |
|---|---|---|

The following packagings are authorized:

**Combination packagings:**

| **Inner packagings** | **Outer packagings** | **Packing group (PG) Maximum net mass** | |
|---|---|---|---|
| | | **PG II** | **PG III** |
| Glass 10 kg<br>Plastics [2] 30 kg<br>Metal 40 kg<br>Paper [1,2] 10 kg<br>Fibre [1,2] 10 kg<br>1. These packagings shall not be used when the substances being transported may become liquid during transport.<br>2. Packagings shall be siftproof. | **Drums** | | |
| | Steel: 1A2 | 400 kg | 400 kg |
| | Aluminium: 1B2 | 400 kg | 400 kg |
| | Other metal: 1N2 | 400 kg | 400 kg |
| | Plastics:1H2 | 400 kg | 400 kg |
| | Plywood: 1D | 400 kg | 400 kg |
| | Fibre: 1G[1] | 400 kg | 400 kg |
| | **Boxes** | | |
| | Steel: 4A | 400 kg | 400 kg |
| | Aluminium: 4B | 400 kg | 400 kg |
| | Natural wood: 4C1 | 400 kg | 400 kg |
| | Natural wood with sift proof walls: 4C2 | 400 kg | 400 kg |
| | Plywood: 4D | 400 kg | 400 kg |
| | Reconstituted wood: 4F | 400 kg | 400 kg |
| | Fibreboard: 4G[1] | 400 kg | 400 kg |
| | Expanded plastics: 4H1 | 60 kg | 60 kg |
| | Solid plastics: 4H2 | 400 kg | 400 kg |
| | **Jerricans** | | |
| | Steel: 3A2 | 120 kg | 120 kg |
| | Aluminium: 3B2 | 120 kg | 120 kg |
| | Plastics: 3H2 | 120 kg | 120 kg |

| | | |
|---|---|---|
| **Single packagings:** | | |
| Steel drum: 1A1 or 1A2 | 400 kg | 400 kg |
| Aluminium drum: 1B1 or 1B2 | 400 kg | 400 kg |
| Metal drum other than steel, or aluminium: 1N1 or 1N2 | 400 kg | 400 kg |
| Plastics drum: 1H1 or 1H2 | 400 kg | 400 kg |
| Steel jerrican: 3A1 or 3A2 | 120 kg | 120 kg |
| Aluminium jerrican: 3B1 or 3B2 | 120 kg | 120 kg |
| Plastics jerrican: 3H1 or 3H2 | 120 kg | 120 kg |
| Steel box 4A | 400 kg | 400 kg |
| Aluminium box 4B | 400 kg | 400 kg |
| Natural wood box: 4C1[1] | 400 kg | 400 kg |
| Plywood box: 4D[1] | 400 kg | 400 kg |
| Reconstituted wood box: 4F[1] | 400 kg | 400 kg |
| Natural wood with sift proof walls: 4C2 | 400 kg | 400 kg |
| Fibreboard boxes: 4G[1] | 400 kg | 400 kg |
| Solid plastics: 4H2 | 400 kg | 400 kg |
| **Bags**<br>Bags [5H3 [1,2] ], 5H4 [1,2] , [5L3 [1,2] , 5M2 [1,2] ] | 50 kg | 50 kg |
| **Composite packaging** | | |
| Plastics receptacle in steel, aluminium, plywood, fibre or plastics drum: 6HA1, 6HB1, 6HG1, 6HD1, or 6HH1 | 400 kg | 400 kg |
| Plastics receptacle in steel or aluminium crate or box, wooden box, plywood box, fibreboard box or solid plastics box: 6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2 | 75 kg | 75 kg |
| Glass receptacle in steel, aluminium, plywood or fibre drum: 6PA1, 6PB1, 6PD1 or 6PG1 or in steel, aluminium, wood, plywood or fibreboard box: 6PA2, 6PB2, 6PC, 6PD2, or 6PG2 or in solid or expanded plastics packaging: 6PH1 or 6PH2 | 75 kg | 75 kg |
| **[1]These packagings may not be used when the substances being transported may become liquid during transport.**<br>**[2] These packagings shall only be used for packing group II substances when transported in a closed transport unit.** | | |

| **P410** | **PACKING INSTRUCTION** | **P410** |
|---|---|---|

UN 3270 Nitrocellulose membrane filters shall be packaged as follows:

a) Fibreboard box with a maximum gross mass of 30kg.
b) Other packagings are permitted provided that explosion is not possible by reason of increased internal pressure. Maximum net mass shall not exceed 30kg.

Each single filter sheet shall be packed between sheets of glazed paper. The portion of glazed paper between the filter sheets shall be not less than 65%, by mass.The membrane filters/paper arrangement shall not be liable to propagate a detonation as tested by one of the tests described in the Recommendations on the Transport of Dangerous Goods,Tests and Criteria, Part I, Test series 1(a).

| **P500** | **PACKING INSTRUCTION** | **P500** |
|---|---|---|

For UN 3356, Chemical oxygen generators, packagings shall conform to the packing group II performance level. The generator(s) shall be transported in a package which meets the following requirements when one generator in the package is actuated:

(i) Other generators in the package will not be actuated;

(ii) Packaging material will not ignite; and

(iii) The outside surface temperature of the completed package shall not exceed 100°C.

| **P501** | **PACKING INSTRUCTION** | **P501** |
|---|---|---|

For UN 2015 the following packagings are authorized:

| | Inner packaging capacity | Maximum net mass |
|---|---|---|
| **Combination packagings** | | |
| with inner packagings of glass, plastics or metal in boxes (4A, 4B, 4C1, 4C2, 4D, 4H2) or drums (1A2, 1B2, 1N2, 1H2, 1D) | 5 *l* | 125 kg |
| Combination packagings with inner packagings of plastics or metal each in a plastics bag in a fibreboard box (4G) or fibre drum (1G) | 2 *l* | 50 kg |
| **Single packagings** | | |
| **Drums** | Maximum volume | |
| Steel drum 1A1, Aluminum drum 1B1 | | |
| Metal drum other than steel or aluminium 1N1 | 250 l | |
| Plastics drums 1H1 | | |
| **Jerricans** | | |
| Steel jerricans 3A1 | | |
| Aluminum jerricans 3B1 | | |
| Metal jerricans other than steel or aluminium 3N1 | 60 l | |
| Plastics jerricans 3H1 | | |
| **Composite packagings** | | |
| Plastics receptacle in steel or aluminium drum: 6HA1, 6HB1 | 250l | |
| Plastics receptacle in fibre, plastics or plywood drum: 6HG1, 6HH1, 6HD1 | 250l | |
| Plastics receptacle in steel or aluminium crate or box or Plastic receptacle in wood, plywood, fibreboard or solid plastics box: 6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2 | 60l | |
| Glass receptacle in steel, aluminium, fibre, plywood, solid plastics or expanded plastics drum 6PA1, 6PB1, 6PG1, 6PD1, 6PH1 or 6PH2 or in a steel, aluminium, wood, fibreboard or plywood box: 6PA2, 6PB2, 6PC, 6PG2 or 6PD2 | 60l | |

**Additional requirements**

1. Packagings shall not be filled to more than 90% of their capacity.

[2. Account shall be taken of the provisions of 4.1.1.8]

| **P502** | **PACKING INSTRUCTION** | **P502** |
|---|---|---|
| The following packagings are authorized: | | |
| **Combination packagings:** | | **Maximum net mass** |
| **Inner packagings**: | **Drums** | |
| Glass 5l. | | |
| Metal 5l | Steel: 1A2 | 125 kg |
| Plastic 5l | Aluminium: 1B2 | 125 kg |
| | Other metal:1N2 | 125 kg |
| | Plastics:1H2 | 125 kg |
| | Plywood: 1D | 125 kg |
| | Fibre: 1G | 125 kg |
| | **Boxes** | |
| | Steel: 4A | 125 kg |
| | Aluminium: 4B | 125 kg |
| | Natural wood: 4C1 | 125 kg |
| | Natural wood with sift proof walls: 4C2 | 125 kg |
| | Plywood: 4D | 125 kg |
| | Reconstituted wood: 4F | 125 kg |
| | Fibreboard: 4G | 125 kg |
| | Expanded plastics: 4H1 | 60 kg |
| | Solid plastics: 4H2 | 125 kg |

| **Single packagings:** | |
|---|---|
| **Drums** | Maximum volume |
| Steel drum 1A1, Aluminum drum 1B1 Plastics drums 1H1 | 250 l |
| **Jerricans** | |
| Steel jerricans 3A1 Aluminum jerricans 3B1 Metal jerricans other than steel or aluminium 3N1 Plastics jerricans 3H1 | 60 l |
| **Composite packagings** | |
| Plastics receptacle in steel or aluminium drum: 6HA1, 6HB1 | 250l |
| Plastics receptacle in fibre, plastics or plywood drum: 6HG1, 6HH1, 6HD1 | 250l |
| Plastics receptacle in steel or aluminium crate or box or Plastic receptacle in wood, plywood, fibreboard or solid plastics box: 6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2 | 60l |
| Glass receptacle in steel, aluminium, fibre, plywood, solid plastics or expanded plastics drum 6PA1, 6PB1, 6PG1, 6PD1, 6PH1 or 6PH2 or in a steel, aluminium, wood, fibreboard or plywood box: 6PA2, 6PB2, 6PC, 6PG2 or 6PD2 | 60l |

**Special packing provision**

27. For UN 1873 only glass inner packagings are authorized.

| **P503** | **PACKING INSTRUCTION** | **P503** |
|---|---|---|
| The following packagings are authorized: | | |
| **Combination packagings:** | | **Maximum net mass** |
| **Inner packagings**: | **Drums** | |
| Glass, 5 kg. | Steel: 1A2 | 125kg |
| Metal 5kg | Aluminium: 1B2 | 125kg |
| Plastic 5kg | Other metal: 1N2 | 125kg |
| | Plastics:1H2 | 125kg |
| | Plywood: 1D | 125kg |
| | Fibre: 1G | 125kg |
| | **Boxes** | |
| | Steel: 4A | 125 kg |
| | Aluminium: 4B | 125 kg |
| | Natural wood: 4C1 | 125 kg |
| | Natural wood with sift proof walls: 4C2 | 125 kg |
| | Plywood: 4D | 125 kg |
| | Reconstituted wood: 4F | 125 kg |
| | Fibreboard: 4G | 40 kg |
| | Expanded plastics: 4H1 | 60 kg |
| | Solid plastics: 4H2 | 125 kg |
| **Single packagings:** | | |
| Metal drums (1A1, 1B1 or 1N1) with a maximum net mass of 250 kg.<br>Fibreboard (1G) or plywood drums (1D) fitted with inner liners with a maximum net mass of 200 kg. | | |

| **P504** | **PACKING INSTRUCTION** | **P504** |
|---|---|---|
| The following packagings are authorized: | | |
| **Combination packagings:** | | **Maximum net mass** |
| Glass receptacles with a maximum capacity of 5 litres in outer packagings (1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H2) | | 75 kg |
| Plastic receptacles with a maximum capacity of 30 litres in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H2 outer packagings | | 75 kg |
| Metal receptacles with a maximum capacity of 40 litres in 1G, 4F or 4G outer packagings | | 125 kg |
| Metal receptacles with a maximum capacity of 40 litres in 1A2, 1B2, 1N2, 1H2, 1D, 4A, 4B, 4C1, 4C2, 4D, 4H2 outer packagings | | 225 kg |
| **Single packagings:** | | **Maximum capacity** |
| **Drums** | | |
| Steel non-removable head: 1A1 | | 250 l |
| Aluminium non-removable head: 1B1 | | 250 l |
| Other metal non-removable head: 1N1 | | 250 l |
| Plastics non-removable head: 1H1 | | 250 l |
| **Jerricans** | | |
| Steel jerrican non-removable head: 3A1 | | 60 l |
| Aluminium jerricans non-removable head: 3B1 | | 60 l |
| Plastics jerricans non-removable head: 3H1 | | 60 l |
| **Composite packagings** | | |
| Plastics receptacle in steel or aluminium drum: 6HA1, 6HB1 | | 250 l |
| Plastics receptacle in fibre, plastics or plywood drum: 6HG1, 6HH1, 6HD1 | | 120 l |
| Plastics receptacle in steel or aluminium crate or box or<br>Plastic receptacle in wood, plywood, fibreboard or solid plastics box:<br>6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2 | | 60 l |
| Glass receptacle in steel, aluminium, fibre, plywood, solid plastics<br>or expanded plastics drum: 6PA1, 6PB1, 6PG1, 6PD1, 6PH1 or 6PH2<br>or in a steel, aluminium, wood, fibreboard or plywood box: 6PA2, 6PB2,<br>6PC, 6PG2 or 6PD2 | | 60 l |
| **Additional requirements**<br>[Account shall be taken of the provisions of 4.1.1.8 e.g. UN 2014, and UN [ 2984] may require vents]. | | |
| **Special packing provisions**<br>28 For UN 2014 [and UN 2984] minimum ullage shall be 10%. | | |

| **P600** | **PACKING INSTRUCTION** | **P600** |
|---|---|---|

UN 1700, UN 2016 and UN 2017 shall be individually packaged in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H2 outer packagings with a maximum net mass of 75 kg which meet the packing group II performance level. The articles shall be separated from each other using partitions, dividers, inner packagings or cushioning material to prevent inadvertent discharge during normal conditions of transport.

| **P601** | **PACKING INSTRUCTION** | **P601** |
|---|---|---|

The following packagings are authorized:

(1) Combination packagings consisting of glass inner packagings not exceeding 1 L in capacity packed with absorbent material sufficient to absorb the entire contents and inert cushioning material placed in metal receptacles which are individually packed in 1A2, 1B2, 1N2, 1H2, 1D, 1G 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings with a maximum gross mass of 15 kg. Inner packagings shall not be filled to more than 90% of their capacity. The closure of each inner packaging shall be physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibrationduring transport.

(2) Combination packagings consisting of metal inner packagings not exceeding 5 L in capacity individually packed with absorbent material sufficient to absorb the contents and inert cushioning material in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings with a maximum gross mass of 75 kg. Inner packagings shall not be filled to more than 90% of their capacity. The closure of each inner packaging shall be physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport.

(3) Drums and composite packagings (1A1, 1B1, 1N1, 1H1 or 6HA1) subject to the following conditions:

- (a) The hydraulic pressure test shall be conducted at a pressure of at least 3 bar (gauge pressure); and
- (b) The design and production leakproofness tests shall be conducted at a test pressure of 0..30 bar.
- (c) Drums and composite packagings (1A1, 1B1, 1N1, 1H1 or 6HA1) shall be:
  - (i) packed in 1A2 or 1H2 drums which are tested in accordance with the test requirements for packagings in 6.1.5 as combination packagings as assembled for transport.
  - (ii) the inner drums and composite packagings (1A1, 1B1, 1N1, 1H1 or 6HA1) shall be isolated from the outer drum by the use of inert shock-mitigating cushioning material which surrounds the inner packaging on all sides.
- (d) The capacity of the inner drum shall not exceed 125 litres.
- (e) closures shall be of a screw cap type that are:
  - (i) physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport; and
  - (ii) provided with a cap seal.

(4) Gas cylinders and gas receptacles with a minimum test pressure of 10 bar (gauge pressure) conforming to the provisions of P200. No cylinder may be equipped with any pressure relief device. Gas cylinders and gas receptacles shall have their valves protected.

| P602 | PACKING INSTRUCTION | P602 |
|---|---|---|

The following packages are authorised:

(1) Combination packagings consisting of glass inner packagings packed with absorbent material sufficient to absorb the entire contents and inert cushioning material placed in metal receptacles which are individually packed in 1A2, 1B2, 1N2, 1H2, 1D, 1G 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings with a maximum gross mass of 50 kg. Inner packagings shall not be filled to more than 90% of their capacity. The closure of each inner packaging shall be physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibrationduring transport. Inner packagings shall not exceed 1 L in capacity.

(2) Combination packagings consisting of metal inner packagings individually packed with absorbent material sufficient to absorb the contents and inert cushioning material in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings with a maximum gross mass of 75 kg. Inner packagings shall not be filled to more than 90% of their capacity. The closure of each inner packaging shall be physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport. Inner packagings shall not exceed 5 L in capacity.

(3) Drums and composite packagings are authorized subject to the following conditions:

(a) 1A1, 1B1, 1N1, 1H1 drums or 6HA1 composite packagings are subject to the following requirements:

(i) the hydraulic pressure test shall be conducted at a pressure of at least 3 bar (gauge pressure); and
(ii) the design and production leakproofness tests shall be conducted at a test pressure of 0..30 bar.

(b) closures shall be of a screw cap type that are:

(i) physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport; and
(ii) provided with a cap seal.

(4) Gas cylinders and gas receptacles with a minimum test pressure of 10 bar (gauge pressure) conforming to the provisions of P200. No cylinder may be equipped with any pressure relief device. Gas cylinders and gas receptacles shall have their valves protected.

**P620** **PACKING INSTRUCTION** **P620**

For UN 2814 and UN 2900, Infectious substances, packagings shall be approved in accordance with the provisions of Chapter 6.3 include:

(a) Inner packagings comprising:

(i) watertight primary receptacle(s);
(ii) a watertight secondary packaging;
(iii) an absorbent material in sufficient quantity to absorb the entire contents placed between the primary receptacle(s) and the secondary packaging; if multiple primary receptacles are placed in a single secondary packaging, they shall be individually wrapped so as to prevent contact between them;

(b) An outer packaging of adequate strength for its capacity, mass and intended use. The smallest external dimension shall be at least 100 mm.

Inner packagings containing infectious substances shall not be consolidated with inner packagings containing unrelated types of goods. Complete packages may be overpacked in accordance with the provisions of 1.2.1 and 5.1.2: such an overpack may contain dry ice.

Other than for exceptional consignments, e.g. whole organs which require special packaging, infectious substances shall be packed in accordance with the following provisions.

(a) Lyophilized substances:
Primary receptacles shall be flame-sealed glass ampoules or rubber-stoppered glass vials fitted with metal seals;

(b) Liquid or solid substances:
(i) 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 reinforced with adhesive tape;
(ii) 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;
(iii) 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.

Whatever the intended temperature of the consignment, the primary receptacle or the secondary packaging shall be capable of withstanding without leakage an internal pressure producing a pressure differential of not less than 95 kPa and temperatures in the range -40 °C to +55 °C.

| P 621 | PACKING INSTRUCTION | P 621 |
|---|---|---|

Rigid, leakproof packagings in accordance with the requirements of Chapter 6.1 for solids, at the Packing Group II performance level, shall be used provided there is sufficient absorbent material to absorb the entire amount of liquid present and the packaging is capable of retaining liquids.

Packages containing larger quantities of liquid shall be carried in rigid packagings in accordance with the requirements of Chapter 6.1 at the Packing Group II performance level for liquids.

Packagings intended to contain sharp objects such as broken glass and needles shall be resistant to puncture and retain liquids under the performance test conditions in Chapter 6.1.

| P800 | PACKING INSTRUCTION | P800 |
|---|---|---|

For UN 2809, Mercury and UN 2803, Gallium , the following packages are authorized:

1. Cylinders in accordance with P200 or
2. Steel flasks or bottles with threaded closures with a capacity not exceeding 2.5l or
3. Combination packagings which conform to the following requirements:

Inner packagings shall comprise glass, metal or rigid plastics intended to contain liquids with a maximum net mass of 15 kg each. The inner packagings shall be packed with sufficient cushioning material to prevent breakage. Either the inner packagings or the outer packagings shall have inner liners or bags of strong leakproof and puncture-resistant material impervious to the contents and completely surrounding the contents to prevent it from escaping from the package irrespective of its position or orientation.

The following outer packagings and maximum net masses are authorized:

| **Outer packaging** | **Maximum net mass** |
|---|---|
| Steel: 1A2 | 400 kg |
| Other metal:1N2 | 400 kg |
| Plastics:1H2 | 400 kg |
| Plywood: 1D | 400 kg |
| Fibre: 1G | 400 kg |
| **Boxes** | |
| Steel: 4A | 400 kg |
| Natural wood: 4C1 | 250 kg |
| Natural wood with sift proof walls: 4C2 | 250 kg |
| Plywood: 4D | 250 kg |
| Reconstituted wood: 4F | 125 kg |
| Fibreboard: 4G | 125 kg |
| Expanded plastics: 4H1 | 60 kg |

| | |
|---|---|
| Solid plastics: 4H2 | 125 kg |

**Additional requirements**
When it is necessary to transport Gallium at low temperatures in order to maintain it in a completely solid state, the above packagings may be overpacked in a strong, water-resistant outer packaging which contains dry ice or other means of refrigeration. If a refrigerant is used, all of the above materials used in the packaging of gallium shall be chemically and physically resistant to the refrigerant and shall have impact resistance at the low temperatures of the refrigerant employed. If dry ice is used, the outer packaging shall permit the release of carbon dioxide gas.

| **P801** | **PACKING INSTRUCTION** | **P801** |
|---|---|---|

UN2794, UN2795 and UN3028 - batteries. This packing instruction applies to new and used batteries. The following packagings are authorized:

(a) Rigid outer packagings which meet the packing group III performance level
(b) Wooden slatted crates
(c) Pallets
(d) Used storage batteries may be transported loose in stainless steel or plastics battery boxes capable of containing any free liquid.

**Special requirements**

(i) Batteries shall be protected against short circuits.
(ii) Batteries stacked shall be adequately secured in tiers separated by a layer of non conductive material.
(iii) Battery terminals shall not support the weight of other superimposed elements.
(iv) Batteries shall be packaged or secured to prevent inadvertent movement.

**Additional requirements**
[ For UN 2794 and UN 2795 batteries as prepared for transport by sea shall be capable of passing a tilt test at an angle of 45° with no spillage of liquid]

| **P802** | **PACKING INSTRUCTION** | **P802** |
|---|---|---|

The following packagings are authorized:

a) Combination packagings consisting of glass or plastic inner packagings with a capacity of not more than 10 litres in 1A2, 1B2, 1N2, 1H2, 1D, 4A, 4B, 4C1, 4C2, 4D, 4F, or 4H2 outer packagings with a maximum net mass of 75 kg.

b) Combination packagings consisting of metal inner packagings with a maximum capacity of 40 litres in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings with a maximum net mass of 125 kg.

c) Glass receptacle in steel, aluminium, plywood or solid plastics drum: 6PA1, 6PB1, 6PD1, or 6PH2 or in a steel, aluminium, wood or plywood box: 6PA2, 6PB2, 6PC or 6PD2 with a maximum capacity of 60 litres.

d) Austenitic steel drums (1A1) with a maximum capacity of 250 litres.

e) Gas cylinders conforming to the construction, testing and filling requirements approved by the competent authority.

| **P803** | **PACKING INSTRUCTION** | **P803** |
|---|---|---|

For UN 2028, articles shall be individually packaged in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G, or 4H2 outer packagings with a maximum net mass of 75 kg. The articles shall be separated from each other using partitions, dividers, inner packagings or cushioning material to prevent inadvertent discharge during normal conditions of transport.

| **P804** | **PACKING INSTRUCTION** | **P804** |
|---|---|---|

For UN 1744, Bromine, the following packagings are authorized:

(1) Combination packagings consisting of glass inner packagings not exceeding 1 L in capacity packed with absorbent material sufficient to absorb the entire contents and inert cushioning material placed in metal receptacles which are individually packed in 1A2, 1B2, 1N2, 1H2, 1D, 1G 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings with a maximum gross mass of 15 kg. Inner packagings shall not be filled to more than 90% of their capacity. The closure of each inner packaging shall be physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibrationduring transport.

(2) Combination packagings consisting of metal inner packagings or polyvinylidene flouride (PVDF) inner packagings not exceeding 5 L in capacity individually packed with absorbent material sufficient to absorb the contents and inert cushioning material in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings with a maximum gross mass of 75 kg. Inner packagings shall not be filled to more than 90% of their capacity. The closure of each inner packaging shall be physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport.

(3) Drums and composite packagings (1A1, 1B1, 1N1, 1H1 or 6HA1) subject to the following conditions:

(a) the hydraulic pressure test shall be conducted at a pressure of at least 3 bar (gauge pressure); and
(b) the design and production leakproofness tests shall be conducted at a test pressure of 0..30 bar.
(c) Drums and composite packagings (1A1, 1B1, 1N1, 1H1 or 6HA1) shall be:
(i) packed in 1A2 or 1H2 drums which are tested in accordance with the test requirements for packagings in 6.1.5 as combination packagings as assembled for transport.
(ii) the inner drums and composite packagings (1A1, 1B1, 1N1, 1H1 or 6HA1) shall be isolated from the outer drum by the use of inert shock-mitigating cushioning material which surrounds the inner packaging on all sides.
(d) The capacity of the inner drum shall not exceed 125 litres.
(e) closures shall be of a screw cap type that are:
(i) physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport; and
(ii) provided with a cap seal.

(4) Gas cylinders and gas receptacles with a minimum test pressure of 10 bar (gauge pressure) conforming to the provisions of P200. No cylinder may be equipped with any pressure relief device. Gas cylinders and gas receptacles shall have their valves protected.

| **P900** | **PACKING INSTRUCTION** | **P900** |
|---|---|---|

UN2216, fish meal ( fish scrap) stabilized, containing at least 5 % but not more than 12 % moisture content, shall be packed in the following packagings:

Packagings according to P002 may be used or

Bags (5H1, 5H2, 5H3, 5H4, 5L1, 5L2, 5L3, 5M1 or 5M2) with a maximum net mass of 50 kg;

Fish meal may be transported unpackaged when it is packed in closed transport units and the free air space has been restricted to a minimum.

| **P901** | **PACKING INSTRUCTION** | **P901** |
|---|---|---|

UN 3316. Each packaging shall conform to the performance level consistent with the packing group assigned to the kit as a whole ( see 3.3.1 special provision 251). Dangerous goods in kits shall be packed in inner packagings which shall not exceed either 250 ml or 250 g and shall be protected from other materials in the kit. The total quantity of dangerous goods in an outer package shall not exceed 10 kg.

| **P902** | **PACKING INSTRUCTION** | **P902** |
|---|---|---|

UN3268. Each packaging shall conform to special provision 235 (see 3.3.1) and shall conform to the packing group III performance level. The packaging shall be designed and constructed to prevent movement of the articles and inadvertent discharge during normal conditions of transport.

Air bag inflators or modules or seat belts pretensioners may be carried unpackaged in dedicated handling devices, vehicles, containers or wagons when moved from where they are manufactured to an assembly plant.

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| **P903** | **PACKING INSTRUCTION** | **P903** |
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UN 3090 and UN 3091 each packaging shall conform to the packing group II performance level. Batteries shall be protected against short circuit.

When lithium cells and batteries are packed with equipment, they shall be packed in inner fibreboard packagings that meet the requirements for packing group II. When lithium cells and batteries included in Class 9 are contained in equipment, the equipment shall be packed in strong outer packagings in such a manner as to prevent accidental operation during transport.

| **P904** | **PACKING INSTRUCTION** | **P904** |
|---|---|---|

UN3245 Packagings need not conform to the packaging test requirements of Part 6. Packagings shall conform to the following:

(a) an inner packaging comprising:
  (i) a watertight primary receptacle(s);
  (ii) a watertight secondary packaging which is leakproof;
  (iii) absorbent material in sufficient quantity to absorb the entire contents placed between the primary receptacle(s) and the secondary packaging; if several primary receptacles are placed in a single secondary packaging, they shall be individually wrapped so as to prevent contact between them.

(b) an outer packaging of adequate strength for its capacity, mass and intended use, and with a minimum external dimension of 100mm.

Packagings according to P001 or P002 may be used.

| **P905** | **PACKING INSTRUCTION** | **P905** |
|---|---|---|

UN 3072 and UN2990 packagings need not conform to the packaging test requirements of Part 6. When the life saving appliances are constructed to incorporate or are contained in rigid outer weatherproof casings (such as for lifeboats), they may be transported unpackaged. All dangerous substances and articles contained as equipment within the appliances shall be secured to prevent inadvertent movement and in addition:

(a) Signal devices of Class 1 shall be packed in plastics or fibreboard inner packagings;
(b) Gases (Class 2.2) shall be contained in cylinders as specified by the competent authority, which may be connected to the appliance;
(c) Electric storage batteries (Class 8) and litium batteries (Class 9) shall be disconnected or electrically isolated and secured to prevent any spillage of liquid; and
(d) Small quantities of other dangerous substances (for example in Classes 3, 4.1 and 5.2) shall be packed in strong inner packagings.

Preparation for transport and packaging shall include provisions to prevent any accidental inflation of the appliance.

| **P906** | **PACKING INSTRUCTION** | **P906** |
|---|---|---|

For UN 2315, UN 3151 and UN 3152 the following packagings are authorized;

1. Liquids and solids containing or contaminated with PCBs shall be packaged in accordance with P001 or P002, as appropriate.

2. Transformers and condensers and other devices may be transported in leakproof packagings which are capable of containing, in addition to the devices, at least 1.25 times the volume of the liquid PCBs present in them. There shall be sufficient absorbent material in the packagings to absorb at least 1.1 times the volume of liquid which is contained in the devices. In general, transformers and condensers shall be carried in leakproof metal packagings which are capable of holding, in addition to the transformers and condensers, at least 1.25 times the volume of the liquid present in them.

3. Notwithstanding the above, liquids and solids not packaged in accordance with P001 and P002 and unpackaged transformers and condensers shall be transported in cargo transport units fitted with a leakproof metal tray to a height of at least 800mm, containing sufficient inert absorbent material to absorb at least 1.1 times the volume of any free liquid.

Adequate provisions shall be taken to seal the transformers and condensers to prevent leakage during normal conditions of transport.

**Packing Instructions: Special packing provisions**

| | |
|---|---|
| P001 | 1 For UN 1133, UN1210, UN1263 and UN1866, packaging tests are not necessary for substances of packing groups II and III in quantities of 5 litres or less per metal or plastics packaging when:<br>(a) In palletized loads, a pallet box or unit load device, e.g. individual packagings placed or stacked and secured by strapping, shrink or stretch-wrapping or other suitable means to a pallet. For sea transport, the palletized loads, pallet boxes or unit load devices shall be firmly packed and secured in closed cargo transport units.<br>(b) As an inner packaging of a combination packaging with a maximum net mass of 40 kg. |
| P001 | 2 For UN 3065 and UN1170 wooden barrels (2C1 and 2C2) may be used. |
| P001 | 3 For UN 1261, removable head single packagings are not allowed. |
| P001 | 4 For UN 1774, packagings shall meet the packing group II performance level. |
| P001 | 5 For UN 1204 packagings shall be so constructed that explosion is not possible by reason of increased internal pressure. Gas cylinders and receptacles shall not be used for these substances. |
| P001/ P002 | 6 For UN 1851, UN 3248 and UN3249 the maximum net quantity per package shall be 5 *l* or 5kg. |
| P002 | 7 For UN 2000, celluloid in sheets may also be transported unpacked on pallets, wrapped in plastic film and secured by appropriate means, such as steel bands, as full load in closed transport units. Each pallet shall not exceed 1000 kg gross mass. |
| P002 | 8 For UN 2002, packagings shall be so constructed that explosion is not possible by reason of increased internal pressure. Gas cylinders and receptacles shall not be used for these substances. |
| P002 | 9 For UN 3175, UN3243 and UN3244 packagings shall be a design type that has passed a leakproofness test at the packing group II performance level. |
| [P001] | [10 For sea transport only UN 1791 PGII the packaging shall be vented] |
| P002 | 11 For UN 1309, and UN1362, 5H1, 5L1 and 5M1 bags are allowed if they are overpacked in plastic bags or are wrapped in shrink or stretch wrap on pallets. |
| P002 | 12 For UN 1361, UN2213 and UN3077, 5H1, 5L1 and 5M1 bags are allowed when transported in closed transport units. |
| P002 | 13 For articles of UN 2870 only, combination packagings meeting the packing group I performance level shall be used. |
| P002 | 14 For UN 2211, UN2698 and UN 3314 packagings are not required to meet the packaging tests of Chapter 6.1 |
| P002 | 15 For UN 1324 and UN2623 packagings shall meet the packing group III performance level. |
| P003 | 16 For UN 2800 batteries shall be protected from short circuit within the packagings |
| P003 | 17 For UN 1950 and UN 2037 packagings shall not exceed 55kg net mass for fibreboard or 125kg net mass for other packagings. |
| P003 | 18 UN 1845 Carbon dioxide, solid (dry ice) shall be packed in packagings designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packagings. |

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|---|---|
| P003 | 19 UN 1327 may be transported in bales. |
| P002/ P003 | 20 UN1363, 1386, 1408, 2217 and 2793 may be carried in any siftproof, tearproof receptacles. |
| P052 | 21 For certain self-reactive substances of types B or C, UN 3221, UN 3222, UN3223, UN3224, UN3231, UN3232, UN3233 and UN3234 a smaller packaging than that allowed by packing methods OP5 or OP6 respectively shall be used (see 4.1.5 and 2.4.2.3.2.4). |
| P052 | 22 UN 3241, 2-Bromo-2-nitropropane-1, 3-diol, shall be packed in accordance with packing method OP6. During transport, it shall be protected from direct sunshine and stored (or kept) in a cool and well-ventilated place, away from all sources of heat. |
| P200 | 23 For UN 1001 cylinders shall be filled with a homogenous monolithic porous mass and contain an adequate quantity of acetone or other equally suitable solvent. |
| P405 | 24 UN 1344, UN1348, UN1354, UN1355, UN1356 and UN2852 shall not be transported in quantities of more than 500 g per package. |
| P405 | 25 UN 1347 shall not be transported in quantities of more than 15 kg per package. |
| P405 | 26 For UN 1310, UN1320, UN1321, UN1322, UN1344, UN1347, UN1348, UN1349 UN1517 and UN3317 packagings shall be lead free. |
| P502 | 27 For UN 1873 only glass inner packagings are authorized. |
| P504/[P001] | 28 For UN 2014 and [UN2984] minimum ullage shall be 10%. |
| P802 | 29 For UN 1790 hydrofluoric acid and UN2031 the permissible period of use for plastic packagings shall be two years from the date of manufacture. |
| P002 | XA For UN 2471 paper or fibre inner packagings are not permitted |
| P001 | XX For UN 1131 hermetically sealed packagings shall be used. |
| P003 | XB UN 2857 may be transported unpackaged, in crates or in appropriate overpacks |
| P002 | XC For UN 2590 5 M1 bags may be used when transported in closed transport units or as shrink wrapped or stretch wrapped unit loads |
| P002 | [XD For UN 2969 as whole beans 5H1, 5L1 and 5M1 bags are permitted] |

**Annex**

**SPECIAL PROVISIONS**

***Note**: Unless otherwise identified these special provisions are currently in Chapter 3.3 of the UN Model Regulation. Some or part of these are proposed to be incorporated into the packing instructions consistent with the guiding principles for the development of packing instructions adopted by the Sub-Committee. The requirements unrelated to packaging will be retained in Chapter 3.3. The following is a proposed list of the special provisions currently in the Model regulation along with proposed amendments and additional provisions which are necessary to conform to the guiding principles adopted by the Sub-Committee.*

15,16, 18 *Special provisions (SPs) 15, 16 and 18 are not addressed because even though they specify minimum quantities per package they are directly related to classification. It is proposed that these SPs remain in Chapter 3.3 without amendment.*

25 ~~Nitroglycerin solution in alcohol may be transported under this entry only when the solution is packed in metal cans of not more than 1 litre capacity each, overpacked in a wooden box containing not more than 5 litres. Metal cans shall be completely surrounded with absorbent cushioning material. Wooden boxes shall be completely lined with a suitable material impervious to water and nitroglycerin.~~ *This SP is proposed to be incorporated as P300 (see Annex 1).*

29 This substance is exempt from labelling ~~and packaging tests,~~ but shall be marked with the appropriate class or division and the packing group. *SP 29 should remain in Chapter 3.3. The deleted text should be included in the appropriate packing instructions (i.e. P003, P900, etc.).*

*Delete SP76 against UN2006*

80 ~~Packagings shall be so constructed that explosion is not possible by reason of increased internal pressure.~~ *This SP currently applies to nitrocellulose entries; UN 2555, 2556, 2557 and 3270. This SP is proposed to be incorporated in P405.*

114 ~~This substance may be carried in quantities of not more than 500 grams per package.~~ *This SP only applies to Dipicryl sulphide, wetted, UN 2852. This requirement should more appropriately be placed in a packing instruction according to the agreed upon guidelines. This SP is proposed to be incorporated in P405 as special packing provision P31 (see Annex 1).*

117 Subject to these Regulations only when transported by sea. [**Fish meal or fish scrap shall not be transported if the temperature at the time of loading exceeds 35°C or 5°C above the ambient temperature, whichever is higher. Fish scrap or fish meal shall contain at least 100 ppm of anti-oxidant (ethoxyquin) at the time of shipment.**] *The latter two sentences where taken from the IMDG Code. It is proposed that they be added to SP 117.*

~~123 For air transport, the packagings shall meet Packing Group I requirements.~~ *This is proposed for deletion because it is proposed to be incorporated in P800 for Gallium and Mercury.*

132 ~~Unless otherwise approved by the competent authority, packaging shall be a fibre drum which may be lined, the maximum contents of which shall not exceed 50 kg.~~ During the course of transport, this substance shall be protected from direct sunshine and stored (or kept) in a cool and well ventilated place, away from all sources of heat. *SP 132 should be retained in Chapter 3.3. The strikeout text is proposed as P408. This applies to UN 2956 and 3251.*

DELETE 133

DELETE SP 170 AND 171

~~187 Except for transport by the air mode, packaging tests are not necessary for substances of Packing Groups II and III in quantities of 5 litres or less per metal or plastics packaging~~

~~(a) In palletized loads, e.g. individual packagings placed or stacked and secured by strapping, shrink or stretch-wrapping or other suitable means to a pallet; or~~

~~(b) As an inner packaging of a combination packaging with a maximum total gross mass of 40 kg.~~

*This SP is proposed for deletion because it is proposed to be incorporated in P001, as a special packing provision P1. This applies to UN 1133, Adhesives, UN 1210, Printing Ink, UN 1263, Paint and UN 1866 Resin solution (see Annex 1).*

201 Lighters and lighter refills shall comply with the provisions of the country in which they were filled. They shall be provided with protection against inadvertent discharge. The liquid portion of the gas shall not exceed 85% of the capacity of the receptacle at 15 °C. The receptacles, including the closures, shall be capable of withstanding an internal pressure of twice the pressure of the liquefied petroleum gas at 55 °C. The valve mechanisms and ignition devices shall be securely sealed, taped or otherwise fastened or designed to prevent operation or leakage of the contents during transport. ~~The lighters or lighter refills shall be tightly packed to prevent inadvertent operation of the release devices.~~ Lighters shall not contain more than 10 g of liquefied petroleum gas. Lighter refills shall not contain more than 65 g of liquefied petroleum gas. *This SP should be amended by deleting the penultimate sentence. The SP should be retained in Chapter 3.3. The deleted sentence is proposed to be incorporated into packing instruction P003, as a special packing provision P 21.*

209 The gas shall be at a pressure corresponding to ambient atmospheric pressure at the time the containment system is closed and this shall not exceed 105 kPa absolute. ~~The gas shall be contained in hermetically sealed glass or metal inner packagings and with a maximum net quantity per package of 5 litres or, in the case of a toxic gas, a maximum net quantity per package of 1 litre.~~ *This SP should be amended by deleting the last sentence. The SP should be retained in Chapter 3.3. The deleted text is proposed for incorporation in packing instruction P201. This applies to UN 3167, 3168 and 3169 (Gas samples).*

~~214 For certain self-reactive substances of types B or C, a smaller packaging than that allowed by packing methods OP5 or OP6 respectively shall be used (see 4.1.5 and 2.4.2.3.2.4).~~ *This SP is proposed to be deleted from Chapter 3.3 and incorporated as P25 in P052. This applies to a number of Type B and C self-reactive substances, UN 3221, 3222, 3223, 3224, 3231, 3232, 3233 and 3234 (see Annex 1).*

215 This entry only applies to the technically pure substance or to formulations derived from it having an SADT higher than 75 /C and therefore does not apply to formulations which are self-reactive substances. (For self-reactive substances, see 2.4.2.3.2.4).

~~The packing method shall be one of the following:~~

~~(a) A fibre drum, which may be lined, of maximum contents 50 kg; or~~

~~(b) An inner packaging of a single plastics bag in a fibreboard box, of maximum contents 50 kg; or~~

~~(c) Inner packagings of plastics bottles, jars, bags or boxes, of maximum contents 5 kg each, within an outer packaging of a fibreboard box or a fibre drum of maximum contents 25 kg.~~

~~For packing methods (a) and (b), the requirements of Special Provision 181 shall be applied to formulations showing a violent effect in laboratory tests involving heating under confinement.~~

Except where packaged according to packing instruction P408(c), the requirements of special provision 181 shall be applied to formulations showing a violent effect in laboratory tests involving heating under confinement.

*In SP 216, SP 217 and SP 218 the sentence "Each packaging shall correspond to a design type that has passed a leakproofness test at the Packing Group II performance level." would be deleted. The remainder of the SPs should be retained in Chapter 3.3. The deleted text is proposed to be incorporated as a particular packing provision or exception in P002, P 11 (see Annex 1). This applies to solids containing flammable liquids (UN 3175), toxic liquids (UN 3243) and corrosive liquids (UN 3244).*

219 ~~Substances transported under this entry shall be packaged in accordance with 2.6.3.3.4.~~ Genetically modified micro-organisms which are infectious shall be transported as UN 2814 or UN 2900. *The first sentence of this SP is proposed to be incorporated in P904 as a packing instruction for* genetically modified micro-organisms, *UN 3245. The reference to 2.6.3.3.4 is not correct since this paragraph does not exist. The Sub-Committee should consider whether the second sentence of SP 219 should be retained in Chapter 3.3 since 2.6.3.1.4(a) also states "Genetically modified micro-organisms which meet the definition of an infectious substance given above shall be classified in Division 6.2 and assigned to UN 2814 or to UN 2900" .*

221 Substances included under this entry shall not be of Packing Group I ~~and shall have a maximum net quantity per package of 5 litres or 5 kg~~. *This SP applies to Medicines (UN 1851, 3248 and 3249) should be retained in Chapter 3.3 without amendment since the quantity per package is a condition of classification and use of the medicines entries.*

229 ~~To be transported in strong outer packagings.~~ *This special provision applies to UN 1057, 1044, 1950, 2037 and 3150. It is proposed that this SP be deleted since it is proposed to be incorporated in P003.*

230 *In SP 230 paragraph (g) should be deleted. This text would be incorporated in packing instruction P903*

~~231 When lithium cells and batteries included in Class 9 are packed with equipment, they shall be packed in inner fibreboard packagings that meet the requirements for Packing Group II. When lithium cells and batteries included in Class 9 are contained in equipment, the equipment shall be packed in strong outer packagings in such a manner as to prevent accidental operation during transport.~~ *This SP would be incorporated in packing instruction P903*

233 ~~These substances shall be packaged in accordance with standards specified by the competent authority of the country of origin.~~ *This SP applies to Elevated temperature solid, n.o.s., UN 3258 only. This SP is proposed to be deleted as P099 (competent authority packing instruction) is proposed to be assigned to this entry.*

235 This entry applies to articles which may be classified in Class 1 in accordance with 2.1.1.1, 2.1.1.2 and 2.1.1.3, which are used as life-saving vehicle air bags or seat-belts, when transported as component parts and when these articles as presented for transport have been tested in accordance with Test series 6 (c) of Part I of the Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, with no explosion

of the device, no fragmentation of device casings, and no projection hazard or thermal effect which would significantly hinder fire-fighting or other emergency response efforts in the immediate vicinity. If the air bag inflator unit satisfactorily passes the series 6(c) test, it is not necessary to repeat the test on the air bag module itself. ~~Such air bag inflators or modules or seat-belt pretensioners may be transported unpackaged in dedicated handling devices or transport units when transported from where they are manufactured to an assembly plant.~~ Air bags or seat-belts installed in vehicles or in completed vehicle components such as steering columns, door panels, seats, etc. are not subject to these Regulations. *This SP should be retained in Chapter 3.3. The text proposed to be deleted would be incorporated in packing instruction P902.*

236 Polyester resin kits consist of two components: a base material (Class 3, Packing Group II or III) and an activator (organic peroxide), ~~each separately packed in an inner packaging~~. The organic peroxide shall be type D, E or F, not requiring temperature control, ~~and be limited to a quantity of 125 ml per inner packaging if liquid, and 500 g if solid. The components may be placed in the same outer packaging provided they will not interact dangerously in the event of leakage.~~ Packing group shall be II or III, according to the criteria for Class 3, applied to the base material. The quantity limit shown in Column 7 of the Dangerous Goods List applies to the base material. *It is proposed that this SP be retained in Chapter 3.3 and that the packaging provisions shown in strike out be included in P302.*

237 The nitrogen content of the nitrocellulose shall not exceed 11.5%. ~~Each single filter sheet shall be packed between sheets of glazed paper. The portion of glazed paper between the filter sheets shall be not less than 65%, by mass. The membrane filters/paper arrangement shall not be liable to propagate a detonation as tested by one of the tests described in the Recommendations on the Transport of Dangerous Goods, Tests and Criteria, Part I, Test series 1(a).~~
*Text incorporated into P410*

238 *In SP 238 the last sentence should be deleted since this is proposed to be incorporated in P801.*

239 Except for air transport, batteries or cells shall not contain dangerous goods other than sodium, sulphur and/or polysulphides. Batteries or cells shall not be offered for transport at a temperature such that liquid elemental sodium is present in the battery or cell unless approved and under the conditions established by the competent authority.

Cells shall consist of vapour tight metal casings which fully enclose the dangerous goods and which are so constructed and closed as to prevent the release of the dangerous goods under normal conditions of transport. ~~Cells shall be placed in suitable outer packagings with sufficient cushioning material to prevent contact between cells and between cells and the internal surfaces of the outer packaging, and to ensure that no dangerous movement of the cells within the outer packaging occurs in transport. Packagings shall be tested and marked according to the provisions applicable to Packing Group II solids.~~

Batteries shall consist of cells secured within and fully enclosed by a metal casing so constructed and closed as to prevent the release of the dangerous goods under normal conditions of transport. ~~Batteries may be offered for transport and transported unpacked or in protective enclosures (e.g. in fully enclosed or wooden slatted crates) that are not subject to the packaging testing provisions of these Regulations.~~

Batteries installed in vehicles (UN 3171) are not subject to these Regulations. *The SP should be retained in Chapter 3.3. It only applies to UN 3292. This SP should be amended by deleting the second paragraph except for the first sentence and the last sentence of the last paragraph. The text proposed to be deleted is proposed to be incorporated in packing instruction P407.*

246 This substance shall be packed in accordance with packing method OP6 (see applicable packing instruction). During transport, it shall be protected from direct sunshine and stored (or kept) in a cool and well-

ventilated place, away from all sources of heat. *This SP only applies to 2-Bromo-2-nitropropane-1,3-diol, UN 3231. Although this SP addresses a packaging requirements it is proposed that it be retained in Chapter 3.3 especially since it only deals with one substance.*

~~248 Substances in Division 1.5D may be transported in metal, flexible, rigid plastics and composite intermediate bulk containers (IBCs) that meet the applicable requirements of Chapter 6.5 at the Packing Group II level of performance. Flexible IBCs may only be used for solid substances.~~

*SP 248 should be deleted and incorporated in packing instruction 117.*

251 The entry CHEMICAL KIT or FIRST AID KIT is intended to apply to boxes, cases etc. containing small quantities of various dangerous goods which are used for medical, analytical or testing purposes. Such kits may not contain dangerous goods listed in 3.4.1.

Components shall not react dangerously (see 4.1.1.6). ~~Dangerous goods in kits shall be packed in inner packagings which shall not exceed either 250 ml or 250 g and shall be protected from other materials in the kit.~~ The total quantity of dangerous goods in any one kit shall not exceed either 1 l or 1 kg. ~~The maximum total quantity of dangerous goods in any one outer package shall not exceed 10 kg.~~ The packing group assigned to the kit as a whole shall be the most stringent packing group assigned to any individual substance in the kit.

~~Kits shall be packed in packagings which meet the requirements appropriate to the packing group assigned to the kit as a whole.~~

Kits which are carried on board vehicles for first-aid or operating purposes are not subject to these Regulations. *The requirements proposed for deletion would be incorporated in packing instruction P901.*

280 *In this SP the words "The pressure vessel shall be in compliance with the requirements for the gases, contained in the pressure vessel." would be deleted and incorporated in P202.*

284 An oxygen generator, chemical, containing oxidizing substances shall meet the following conditions:

(a) The generator when containing an explosive actuating device shall only be transported under this entry when excluded from Class 1 in accordance with paragraph 2.2.1.3 of these Model Regulations;

(b) ~~In addition to the requirements of Packing Group II applicable to the package,~~ the generator, without its packaging, shall be capable of withstanding a 1.8 m drop test onto a rigid, non-resilient, flat and horizontal surface, in the position most likely to cause damage, without loss of its contents and without actuation;

(c) When a generator is equipped with an actuating device, it shall have at least two positive means of preventing unintentional actuation; and

~~(d) The generator(s) shall be transported in a package which will meet the following requirements when one generator in the package is actuated:~~

~~(i) other generators in the package will not be actuated;~~

~~(ii) packaging material will not ignite; and~~

~~(iii) the outside surface temperature of the completed package shall not exceed 100 °C.~~

*Paragraph (d) should be deleted since the text is incorporated in P500.*

**New special provisions proposed to be added in Chapter 3.3:**

A new SP would be added in Chapter 3.3 for UN1331, UN1944, UN1945 and UN2254 as follows:

XXX The following definitions apply to matches:

(1) Fusee matches are matches the heads of which are prepared with a friction-sensitive igniter composition and a pyrotechnic composition which burns with little or no flame, but with intense heat.

(2) Safety matches are matches combined with or attached to the box, book or card that can be ignited by friction only on a prepared surface.

(3) Strike anywhere matches are matches that can be ignited by friction on a solid surface.

(4) Wax Vesta matches are matches that can be ignited by friction either on a prepared surface or on a solid surface.

A new SP would be added in Chapter 3.3 for UN 1944 and 1945 as follows:

XXX Safety matches and wax “Vesta” matches in outer packagings not exceeding 25 kg net mass are not subject to any other requirement (except marking) of this Model Regulation when packaged in accordance with packing instruction P406.

A new SP should be added in Chapter 3.3 as follows:

XXX Batteries need not be individually marked and labelled if the pallet bears the appropriate mark and label. *This would apply to UN 2794, 2795 and 3028.*

A New SP should be added in Chapter 3.3 for UN2990 and UN3072 as follows:

XXX These articles may contain:
(1) Division 2.2 compressed gases.
(2) Signal devices (Class 1) which may include smoke and illumination signal flares; signal devices must be packed in plastic or fibreboard inner packagings.
(3) Electric storage batteries.
(4) First aid kits.
(5) Strike anywhere matches.

A New SP should be added in Chapter 3.3 for UN 1845 as follows:

XXX For each shipment by air exceeding 2.3 kg per package, advance arrangements shall be made between the shipper and each carrier. Not more than 200 kg of solid carbon dioxide may be transported in any one cargo compartment or bin on any aircraft except by specific and special written arrangement between the shipper and the aircraft operator.

Transport units containing solid carbon dioxide, when transported on board ocean vessels, shall be conspicuously marked on two sides "WARNING $CO_2$ SOLID (DRY ICE)." Other packagings containing solid carbon dioxide, when transported on board ocean vessels, shall be marked "CARBON DIOXIDE, SOLID-DO NOT STOW BELOW DECKS."

Carbon dioxide, solid (dry ice) is excepted from the shipping paper requirements if the package is marked "Carbon dioxide, solid" or "Dry ice" and is marked with an indication that the substance being refrigerated is used for diagnostic or treatment purposes (e.g., frozen medical specimens). *This is taken from the ICAO TI, PI 904 and the IMDG Code (see page 9025).*

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