ANNEX A

GENERAL PROVISIONS AND PROVISIONS CONCERNING DANGEROUS SUBSTANCES AND ARTICLES

(cont'd)

PART 3

Dangerous goods list, special provisions and exemptions related to dangerous goods packed in limited quantities

(cont'd)

CHAPTER 3.3

SPECIAL PROVISIONS APPLICABLE TO CERTAIN ARTICLES OR SUBSTANCES

3.3.1 When Column (6) of Table A of Chapter 3.2 indicates that a special provision is relevant to a substance or article, the meaning and requirements of that special provision are as set forth below.

15 For small quantities of not more than 500 g per package, this substance, with not less than 10% water, by mass, may also be classified in Class 4.1, subject to packing instruction P406 of 4.1.4.1.

16 Samples of new or existing explosive substances or articles may be carried as directed by the competent authorities (see 2.2.1.1.3) for purposes including: testing, classification, research and development, quality control, or as a commercial sample. Explosive samples which are not wetted or desensitized shall be limited to 10 kg in small packages as specified by the competent authorities. Explosive samples which are wetted or desensitized shall be limited to 25 kg.

18 For quantities of not more than 11.5 kg per package, this substance, with not less than 10% water, by mass, may also be classified in Class 4.1, subject to packing instruction P406 of 4.1.4.1.

23 Even though this substance has a flammability hazard, it only exhibits such hazard under extreme fire conditions in confined areas.

32 This substance is not subject to the requirements of ADR when in any other form.

36 This substance is to be classified under UN No. 1373 if it contains more than 5% animal or vegetable oil.

37 This substance is not subject to the requirements of ADR when coated.

38 This substance is not subject to the requirements of ADR when it contains not more than 0.1% calcium carbide.

39 This substance is not subject to the requirements of ADR when it contains less than 30% or not less than 90% silicon.

43 When offered for carriage as pesticides, these substances shall be carried under the relevant pesticide entry and in accordance with the relevant pesticide provisions (see 2.2.61.1.10 to 2.2.61.1.11.2).

45 Antimony sulphides and oxides which contain not more than 0.5% of arsenic calculated on the total mass are not subject to the requirements of ADR.

47 Ferricyanides and ferrocyanides are not subject to the requirements of ADR.

48 The carriage of this substance, when it contains more than 20% hydrocyanic acid, is prohibited.

59 These substances are not subject to the requirements of ADR when they contain not more than 50% magnesium.

60 If the concentration is more than 72%, the carriage of this substance is prohibited.

61 The technical name which shall supplement the proper shipping name shall be the ISO common name (see also ISO 1750:1981 "*Pesticides and other agrochemicals - common names*", as amended), other name listed in the WHO "*Recommended Classification of Pesticides by Hazard and Guidelines to Classification*" or the name of the active substance (see also 3.1.2.6.1.1).

62 This substance is not subject to the requirements of ADR when it contains not more than 4% sodium hydroxide.

65 Hydrogen peroxide aqueous solutions with less than 8% hydrogen peroxide are not subject to the requirements of ADR.

103 The carriage of ammonium nitrites and mixtures of an inorganic nitrite with an ammonium salt is prohibited.

105 Nitrocellulose meeting the descriptions of UN No. 2556 or UN No. 2557 may be classified in Class 4.1.

107 The consignment is not subject to the requirements of ADR if the consignor declares that it has no self-heating properties.

113 The carriage of chemically unstable mixtures is prohibited.

119 Refrigerating machines include machines or other appliances which have been designed for the specific purpose of keeping food or other items at a low temperature in an internal compartment, and air conditioning units. Refrigerating machines are not subject to the requirements of ADR if containing less than 12 kg of gas in Class 2, group A or O according to 2.2.2.1.3, or if containing less than 12 *l* ammonia solution (UN No. 2672).

122 The subsidiary risks, control and emergency temperatures if any, and the UN number (generic entry) for each of the currently assigned organic peroxide formulations are given in 2.2.52.4.

127 Other inert material or inert material mixture may be used, provided this inert material has identical phlegmatizing properties.

131 The phlegmatized substance shall be significantly less sensitive than dry PETN.

135 The dihydrated sodium salt of dichloroisocyanuric acid is not subject to the requirements of ADR.

138 p-Bromobenzyl cyanide is not subject to the requirements of ADR.

141 Products which have undergone sufficient heat treatment so that they present no hazard during carriage are not subject to the requirements of ADR.

142 Solvent extracted soya bean meal containing not more than 1.5% oil and 11% moisture, which is substantially free of flammable solvent, is not subject to the requirements of ADR.

144 An aqueous solution containing not more than 24% alcohol by volume is not subject to the requirements of ADR.

145 Alcoholic beverages of packing group III, when carried in receptacles of 250 litres or less, are not subject to the requirements of ADR.

152 The classification of this substance will vary with particle size and packaging, but borderlines have not been experimentally determined. Appropriate classifications shall be made in accordance with 2.2.1.

153 This entry applies only if it is demonstrated, on the basis of tests, that the substances when in contact with water are not combustible nor show a tendency to auto-ignition and that the mixture of gases evolved is not flammable.

162 Mixtures with a flash-point of not more than 61 °C shall bear a label conforming to model No. 3.

163 A substance mentioned by name in Table A of Chapter 3.2 shall not be carried under this entry. Substances carried under this entry may contain 20% or less nitrocellulose provided the nitrocellulose contains not more than 12.6% nitrogen (by dry mass).

168 Asbestos which is immersed or fixed in a natural or artificial binder (such as cement, plastics, asphalt, resins or mineral ore) in such a way that no escape of hazardous quantities of respirable asbestos fibres can occur during carriage is not subject to the requirements of ADR. Manufactured articles containing asbestos and not meeting this provision are nevertheless not subject to the requirements of ADR when packed so that no escape of hazardous quantities of respirable asbestos fibres can occur during carriage.

169 Phthalic anhydride in the solid state and tetrahydrophthalic anhydrides, with not more than 0.05% maleic anhydride, are not subject to the requirements of ADR. Phthalic anhydride molten at a temperature above its flash-point, with not more than 0.05% maleic anhydride, shall be classified under UN No. 3256.

172 For radioactive material with a subsidiary risk :

(a) The packages shall be labelled with a label corresponding to each subsidiary risk exhibited by the material; corresponding placards shall be affixed to vehicles or containers in accordance with the relevant provisions of 5.3.1;

(b) The radioactive material shall be allocated to packing groups I, II or III, as and if appropriate, by application of the grouping criteria provided in Part 2 corresponding to the nature of the predominant subsidiary risk.

The description required in 5.4.1.2.5.1 (e) shall include a description of these subsidiary risks (e.g. "Subsidiary risk: 3, 6.1"), the name of the constituents which most predominantly contribute to this (these) subsidiary risk(s), and where applicable, the packing group.

177 Barium sulphate is not subject to the requirements of ADR.

178 This designation shall be used only when no other appropriate designation exists in Table A of Chapter 3.2, and only with the approval of the competent authority of the country of origin (see 2.2.1.1.3).

181 Packages containing this type of substance shall bear a label conforming to model No. 1 unless the competent authority of the country of origin has permitted this label to be dispensed with for the specific packaging employed because test data have proved that the substance in this packaging does not exhibit explosive behaviour (see 5.2.2.1.9).

182 The group of alkali metals includes lithium, sodium, potassium, rubidium and caesium.

183 The group of alkaline earth metals includes magnesium, calcium, strontium and barium.

186 In determining the ammonium nitrate content, all nitrate ions for which a molecular equivalent of ammonium ions is present in the mixture shall be calculated as ammonium nitrate.

188 Lithium cells and batteries offered for carriage are not subject to the requirements of ADR if they meet the following provisions:

(a) For a lithium metal or lithium alloy cell with a liquid cathode, the lithium content is not more than 0.5 g, for a lithium metal or lithium alloy cell with a solid cathode, the lithium content is not more than 1 g, and for a lithium-ion cell, the equivalent lithium content is not more than 1.5 g;

(b) For a lithium metal or lithium alloy battery with liquid cathodes, the aggregate lithium content is not more than 1 g, for a lithium metal or lithium alloy battery with solid cathodes, the aggregate lithium content is not more than 2 g, and for a lithium-ion battery, the aggregate equivalent lithium content is not more than 8 g;

(c) Each cell or battery containing a liquid cathode is hermetically sealed;

(d) Cells are separated so as to prevent short circuits;

(e) Batteries are separated so as to prevent short circuits and are packed in strong packagings, except when installed in electronic devices; and

(f) If, when fully charged, the aggregate lithium content of the anodes in a liquid cathode battery is more than 0.5 g, or of the aggregate lithium content of the anodes in a solid cathode battery is more than 1 g, it does not contain a liquid or gas which is considered dangerous unless the liquid or gas, if free, would be completely absorbed or neutralized by other materials in the battery.

Lithium cells and lithium batteries are also not subject to the requirements of ADR if they meet the following provisions:

(g) The lithium content of the anode of each cell, when fully charged, is not more than 5 g;

(h) The aggregate lithium content of the anodes of each battery, when fully charged, is not more than 25 g;

(i) Each cell or battery is of the type proved to be non-dangerous by testing in accordance with tests in the *Manual of Tests and Criteria*, Part III, sub-section 38.3; such testing shall be carried out on each type prior to the initial carriage of that type; and

(j) Cells and batteries are designed or packed in such a way as to prevent short circuits under conditions normally encountered during carriage.

As used above and elsewhere in ADR, "lithium content" means the mass of lithium in the anode of a lithium metal or lithium alloy cell, except in the case of a lithium-ion

cell the "equivalent lithium content" in grams is calculated to be 0.3 times the rated capacity in ampere-hours.

190 Aerosol dispensers shall be provided with protection against inadvertent discharge. Aerosols with a capacity not exceeding 50 ml containing only non-toxic constituents are not subject to the requirements of ADR.

191 Receptacles, small, with a capacity not exceeding 50 ml, containing only non-toxic constituents are not subject to the requirements of ADR.

194 The control and emergency temperatures, if any, and the UN number (generic entry) for each of the currently assigned self-reactive substances are given in 2.2.41.4.

196 This formulation shall fulfil the criteria given in paragraph 20.4.2 (g) of Part II of the *Manual of Tests and Criteria*, except that a diluent of type A is not required for desensitization. Formulations not meeting these criteria shall be carried under the provisions of Class 5.2, (see 2.2.52.4).

198 Nitrocellulose solutions containing not more than 20% nitrocellulose may be carried as paint or printing ink, as applicable (see UN Nos. 1210, 1263 and 3066).

199 Lead compounds which, when mixed in a ratio of 1:1000 with 0.07M hydrochloric acid and stirred for one hour at a temperature of 23 °C ± 2 °C, exhibit a solubility of 5% or less are considered insoluble. See ISO 3711:1990 *"Lead chromate pigments and lead chromate - molybdate pigments - Specifications and methods of test"*.

203 This entry shall not be used for polychlorinated biphenyls, UN No. 2315.

204 Articles containing smoke-producing substance(s) corrosive according to the criteria for Class 8 shall be labelled with a label conforming to model No. 8.

205 This entry shall not be used for UN No. 3155 PENTACHLOROPHENOL.

207 Polymeric beads and moulding compounds may be made from polystyrene, poly(methyl methacrylate) or other polymeric material.

208 The commercial grade of calcium nitrate fertilizer, when consisting mainly of a double salt (calcium nitrate and ammonium nitrate) containing not more than 10% ammonium nitrate and at least 12% water of crystallization, is not subject to the requirements of ADR.

210 Toxins from plant, animal or bacterial sources which contain infectious substances, or toxins that are contained in infectious substances, shall be classified in Class 6.2.

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 2.2.41.4).

216 Mixtures of solids which are not subject to the requirements of ADR and flammable liquids may be carried under this entry without first applying the classification criteria of Class 4.1, provided there is no free liquid visible at the time the substance is loaded or at the time the packaging, vehicle or container is closed.

217 Mixtures of solids which are not subject to the requirements of ADR and toxic liquids may be carried under this entry without first applying the classification criteria of Class 6.1, provided there is no free liquid visible at the time the substance is loaded or at the time the packaging, vehicle or container is closed. This entry shall not be used for solids containing a packing group I liquid.

218 Mixtures of solids which are not subject to the requirements of ADR and corrosive liquids may be carried under this entry without first applying the classification criteria of Class 8, provided there is no free liquid visible at the time the substance is loaded or at the time the packaging, vehicle or container is closed.

219 Genetically modified micro-organisms which are infectious shall be carried as UN Nos. 2814 or 2900.

220 Only the technical name of the flammable liquid component of this solution or mixture shall be shown in parentheses immediately following the proper shipping name.

221 Substances included under this entry shall not be of packing group I.

222 Where the term "water-reactive" is used to describe a substance in ADR, it means a substance which in contact with water emits flammable gas.

224 Unless it can be demonstrated by testing that the sensitivity of the substance in its frozen state is no greater than in its liquid state, the substance shall remain liquid during normal transport conditions. It shall not freeze at temperatures above -15 °C.

225 Fire extinguishers under this entry may include installed actuating cartridges (cartridges, power device of classification code 1.4C or 1.4S), without changing the classification of Class 2, group A or O according to 2.2.2.1.3 provided the total quantity of deflagrating (propellant) explosives does not exceed 3.2 g per extinguishing unit.

226 Formulations of this substance containing not less than 30% non-volatile, non-flammable phlegmatizer are not subject to the requirements of ADR.

227 This substance may be carried under provisions other than those of Class 1 only if it is so packed that the percentage of water will not fall below that stated at any time during carriage. When phlegmatized with water and inorganic inert material the content of urea nitrate may not exceed 75% by mass and the mixture shall not be capable of being detonated by the Series 1, type (a), test in the *Manual of Tests and Criteria*, Part 1.

228 Mixtures not meeting the criteria for flammable gases (see 2.2.2.1.5) shall be carried under UN No. 3163.

230 This entry applies to cells and batteries containing lithium in any form, including lithium polymer and lithium ion cells and batteries.

Lithium cells and batteries may be carried under this entry if they meet the following provisions:

(a) Each cell or battery type has been determined to meet the criteria for assignment to Class 9 on the basis of tests carried out in accordance with the *Manual of Tests and Criteria*, Part III, sub-section 38.3;

(b) Each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under normal conditions of carriage;

(c) Each cell and battery is equipped with an effective means of preventing external short circuits;

(d) Each battery containing cells or series of cells connected in parallel is equipped with effective means as necessary to prevent dangerous reverse current flow (e.g. diodes, fuses, etc.).

235 This entry applies to articles which may be classified in Class 1 in accordance with 2.2.1.1 which are used as life-saving vehicle air bags or seat-belts, when carried as component parts and when these articles as presented for carriage have been tested in accordance with Test series 6 (c) of Section 16 of Part I of the *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.

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

237 The membrane filters, including paper separators, coating or backing materials, etc., that are present in carriage, shall not be liable to propagate a detonation as tested by one of the tests described in the *Manual of Tests and Criteria*, Part I, Test series 1 (a).

In addition the competent authority may determine, on the basis of the results of suitable burning rate tests taking account of the standard tests in the *Manual of Tests and Criteria*, Part III, sub-section 33.2.1, that nitrocellulose membrane filters in the form in which they are to be carried are not subject to the requirements applicable to flammable solids in Class 4.1.

238 (a) Batteries can be considered as non-spillable provided that they are capable of withstanding the vibration and pressure differential tests given below, without leakage of battery fluid.

Vibration test: The battery is rigidly clamped to the platform of a vibration machine and a simple harmonic motion having an amplitude of 0.8 mm (1.6 mm maximum total excursion) is applied. The frequency is varied at the rate of 1 Hz/min between the limits of 10 Hz and 55 Hz. The entire range of frequencies and return is traversed in 95 ± 5 minutes for each mounting position (direction of vibration) of the battery. The battery is tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for equal time periods.

Pressure differential test: Following the vibration test, the battery is stored for six hours at 24 °C ± 4 °C while subjected to a pressure differential of at least 88 kPa. The battery is tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for at least six hours in each position.

(b) Non-spillable batteries are not subject to the requirements of ADR if, at a temperature of 55 °C, the electrolyte will not flow from a ruptured or cracked case and there is no free liquid to flow and if, as packaged for carriage, the terminals are protected from short circuit.

239 Batteries or cells shall not contain dangerous substances other than sodium, sulphur and/or polysulphides. Batteries or cells shall not be offered for carriage 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 of the country of origin. If the country of origin is not a Contracting Party to ADR, the approval and conditions of carriage shall be recognized by the competent authority of the first country Contracting Party to ADR reached by the consignment.

Cells shall consist of hermetically sealed metal casings which fully enclose the dangerous substances and which are so constructed and closed as to prevent the release of the dangerous substances under normal conditions of carriage.

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 substances under normal conditions of carriage.

241 The formulation shall be prepared so that it remains homogeneous and does not separate during carriage. Formulations with low nitrocellulose contents and not showing dangerous properties when tested for their liability to detonate, deflagrate or explode when heated under defined confinement by tests of Test series 1 (a), 2 (b) and 2 (c) respectively in the *Manual of Tests and Criteria*, Part I and not being a flammable solid when tested in accordance with test No. 1 in the *Manual of Tests and Criteria*, Part III, sub-section 33.2.1.4 (chips, if necessary, crushed and sieved to a particle size of less than 1.25 mm) are not subject to the requirements of ADR.

244 This entry includes e.g. aluminium dross, aluminium skimmings, spent cathodes, spent potliner, and aluminium salt slags.

247 Alcoholic beverages containing more than 24% alcohol but not more than 70% by volume, when carried as part of the manufacturing process, may be carried in wooden casks with a capacity of not more than 500 litres deviating from the requirements of Chapter 6.1, on the following conditions:

(a) The casks shall be checked and tightened before filling;

(b) Sufficient ullage (not less than 3%) shall be left to allow for the expansion of the liquid;

(c) The casks shall be carried with the bungholes pointing upwards;
(d) The casks shall be carried in containers meeting the requirements of the CSC. Each cask shall be secured in custom-made cradles and be wedged by appropriate means to prevent it from being displaced in any way during carriage.

249 Ferrocerium, stabilized against corrosion, with a minimum iron content of 10% is not subject to the requirements of ADR.

250 This entry may only be used for samples of chemicals taken for analysis in connection with the implementation of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction. The carriage of substances under this entry shall be in accordance with the chain of

custody and security procedures specified by the Organisation for the Prohibition of Chemical Weapons.

The chemical sample may only be carried providing prior approval has been granted by the competent authority or the Director General of the Organisation for the Prohibition of Chemical Weapons and providing the sample complies with the following provisions:

(a) It shall be packed according to packing instruction 623 in the ICAO Technical Instructions (see S-3-8 of the Supplement); and

(b) During carriage, a copy of the document of approval for transport, showing the quantity limitations and the packing provisions shall be attached to the transport document.

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 for which the code "LQ0" has been indicated in Column (7) of Table A of Chapter 3.2.

Components shall not react dangerously (see "dangerous reaction" in 1.2.1). The total quantity of dangerous goods in any one kit shall not exceed either 1 *l* or 1 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 which are carried on board vehicles for first-aid or operating purposes are not subject to the requirements of ADR.

252 Provided the ammonium nitrate remains in solution under all conditions of carriage, aqueous solutions of ammonium nitrate, with not more than 0.2% combustible material, in a concentration not exceeding 80%, are not subject to the requirements of ADR.

266 This substance, when containing less alcohol, water or phlegmatizer than specified, shall not be carried unless specifically authorized by the competent authority (see 2.2.1.1).

267 Any explosives, blasting, type C containing chlorates shall be segregated from explosives containing ammonium nitrate or other ammonium salts.

268 The word "AGENT" may be used instead of "EXPLOSIVE" when approved by the competent authority (see 2.2.1.1).

270 Aqueous solutions of Class 5.1 inorganic solid nitrate substances are considered as not meeting the criteria of Class 5.1 if the concentration of the substances in solution at the minimum temperature encountered during carriage is not greater than 80% of the saturation limit.

271 Lactose or glucose or similar materials, may be used as a phlegmatizer provided that the substance contains not less than 90%, by mass, of phlegmatizer. The competent authority may authorize these mixtures to be classified in Class 4.1 on the basis of a test Series 6(c) of Section 16 of Part I of the *Manual of Tests and Criteria* on at least three packages as prepared for carriage. Mixtures containing at least 98%, by mass, of phlegmatizer are not subject to the requirements of ADR. Packages containing mixtures with not less than 90%, by mass, of phlegmatizer need not bear a label conforming to model No. 6.1.

272 This substance shall not be carried under the provisions of Class 4.1 unless specifically authorized by the competent authority (see UN No. 0143).

273 Maneb and maneb preparations stabilized against self-heating need not be classified in Class 4.2 when it can be demonstrated by testing that a cubic volume of 1 m^3 of substance does not self-ignite and that the temperature at the centre of the sample does not exceed 200 °C, when the sample is maintained at a temperature of not less than 75 °C ± 2 °C for a period of 24 hours.

274 The provisions of 3.1.2.6.1 apply.

278 These substances shall not be classified and carried unless authorized by the competent authority on the basis of results from Series 2 tests and a Series 6(c) test of Part I of the *Manual of Tests and Criteria* on packages as prepared for carriage (see 2.2.1.1). The competent authority shall assign the packing group on the basis of 2.2.3 criteria and the package type used for the Series 6(c) test.

279 The substance is assigned to this classification or packing group based on human experience rather than the strict application of classification criteria set out in ADR.

280 This entry applies to articles which are used as life saving vehicle air bag inflators or air bag modules or seat-belt pretensioners, containing a gas or a mixture of compressed gases classified under Class 2, group A or O according to 2.2.2.1.3, and with or without small quantities of pyrotechnic material. For units with pyrotechnic material, initiated explosive effects shall be contained within the pressure vessel such that the unit may be excluded from Class 1 in accordance with the NOTE under 2.2.1.1.1 (b), in conjunction with 16.6.1.4.7 (a)(ii) of the *Manual of Tests and Criteria*, Part I. In addition, units shall be designed or packaged for carriage so that when engulfed in a fire there will be no fragmentation of the pressure vessel or projection hazard. This shall be determined by analysis.

282 Suspensions with a flash-point of not more than 61 °C, shall bear a label conforming to model No. 3.

283 Articles, containing gas, intended to function as shock absorbers, including impact energy-absorbing devices, or pneumatic springs are not subject to the requirements of ADR provided:

(a) Each article has a gas space capacity not exceeding 1.6 litres and a charge pressure not exceeding 280 bar where the product of the capacity (litres) and charge pressure (bars) does not exceed 80 (i.e. 0.5 litres gas space and 160 bar charge pressure, 1 litre gas space and 80 bar charge pressure, 1.6 litres gas space and 50 bar charge pressure, 0.28 litres gas space and 280 bar charge pressure);

(b) Each article has a minimum burst pressure of 4 times the charge pressure at 20 °C for products not exceeding 0.5 litres gas space capacity and 5 times charge pressure for products greater than 0.5 litres gas space capacity;

(c) Each article is manufactured from material which will not fragment upon rupture;

(d) Each article is manufactured in accordance with a quality assurance standard acceptable to the competent authority; and

(e) The design type has been subjected to a fire test demonstrating that the article relieves its pressure by means of a fire degradable seal or other pressure relief

device, such that the article will not fragment and that the article does not rocket.

See also 1.1.3.2 (d) for equipment used for the operation of the vehicle.

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 carried under this entry when excluded from Class 1 in accordance with the NOTE under paragraph 2.2.1.1.1 (b);

(b) 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.

286 Nitrocellulose membrane filters covered by this entry, each with a mass not exceeding 0.5 g, are not subject to the requirements of ADR when contained individually in an article or a sealed packet.

287 New, uncycled and uncharged lithium ion cells and batteries are not subject to the requirements of ADR:

(a) if the electrolyte does not meet the definition of any class in ADR; or

(b) if the electrolyte meets the definition of a class in ADR, it will not flow from a ruptured or cracked case and there is no free liquid to flow.

288 These substances shall not be classified and carried unless authorized by the competent authority on the basis of results from Series 2 tests and a Series 6(c) test of Part I of the *Manual of tests and Criteria* on packages as prepared for carriage (see 2.2.1.1).

289 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 the requirements of ADR.

290 When this material meets the definitions and criteria of other classes as defined in Part 2, it shall be classified in accordance with the predominant subsidiary risk. Such material shall be declared under the proper shipping name and UN number appropriate for the material in that predominant Class, with the addition of the name applicable to this material according to Column (2) of Table A of Chapter 3.2, and shall be carried in accordance with the provisions applicable to that UN number. In addition, all other requirements specified in 2.2.7.9.1 shall apply, except 5.2.1.7.2 and 5.4.1.2.5.1 (a).

291 Flammable liquefied gases shall be contained within refrigerating machine components. These components shall be designed and tested to at least three times the working pressure of the machinery. The refrigerating machines shall be designed and constructed to contain the liquefied gas and preclude the risk of bursting or cracking of the pressure retaining components during normal conditions of carriage. Refrigerating machines are not subject to the requirements of ADR if containing less than 12 kg of gas.

292 Only mixtures with not more than 23.5% oxygen may be carried under this entry. A label conforming to model No. 5.1 is not required for any concentrations within this limit.

293 The following definitions apply to matches:

(a) 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;

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

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

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

295 Batteries need not be individually marked and labelled if the pallet bears the appropriate mark and label.

296 These articles may contain:

(a) Class 2 compressed gases group A or O, according to 2.2.2.1.3;

(b) Signal devices (Class 1) which may include smoke and illumination signal flares;

(c) Electric storage batteries;

(d) First aid kits;

(e) Strike anywhere matches.

297-499 *(Reserved)*

500 UN No. 3064 nitroglycerin, solution in alcohol with more than 1% but not more than 5% nitroglycerin, packed in accordance with packing instruction P300 of 4.1.4.1, is a substance of Class 3.

501 For naphthalene, molten, see UN No. 2304.

502 UN No. 2006 plastics, nitrocellulose-based, self-heating, n.o.s., and 2002 celluloid scrap are substances of Class 4.2.

503 For phosphorus, white or yellow, molten, see UN No. 2447.

504 UN No. 1847 potassium sulphide, hydrated with not less than 30% water of crystallization, UN No. 1849 sodium sulphide, hydrated with not less than 30% water of crystallization and UN No. 2949 sodium hydrosulphide with not less than 25% water of crystallization are substances of Class 8.

505 UN No. 2004 magnesium diamide is a substance of Class 4.2.

506 Alkaline earth metals and alkaline earth metal alloys in pyrophoric form are substances of Class 4.2.

UN No. 1869 magnesium or magnesium alloys containing more than 50% magnesium as pellets, turnings or ribbons, are substances of Class 4.1.

507 UN No. 3048 aluminium phosphide pesticides, with additives inhibiting the emission of toxic flammable gases are substances of Class 6.1.

508 UN No. 1871 titanium hydride and UN No. 1437 zirconium hydride are substances of Class 4.1. UN No. 2870 aluminium borohydride is a substance of Class 4.2.

509 UN No. 1908 chlorite solution is a substance of Class 8.

510 UN No. 1755 chromic acid solution is a substance of Class 8.

511 UN No. 1625 mercuric nitrate, UN No. 1627 mercurous nitrate and UN No. 2727 thallium nitrate are substances of Class 6.1. Thorium nitrate, solid, uranyl nitrate hexahydrate solution and uranyl nitrate, solid are substances of Class 7.

512 UN No. 1730 antimony pentachloride, liquid, UN No. 1731 antimony pentachloride solution, UN No. 1732 antimony pentafluoride and UN No. 1733 antimony trichloride are substances of Class 8.

513 UN No. 1571 barium azide, wetted, is a substance of Class 4.1. UN No. 1445 barium chlorate, UN No. 1446 barium nitrate, UN No. 1447 barium perchlorate, UN No. 1448 barium permanganate and UN No. 1449 barium peroxide are substances of Class 5.1.

514 UN No. 2464 beryllium nitrate is a substance of Class 5.1.

515 UN No. 1581 chloropicrin and methyl bromide mixture and UN No. 1582 chloropicrin and methyl chloride mixture are substances of Class 2.

516 UN No. 1912 methyl chloride and methylene chloride mixture is a substance of Class 2.

517 UN No. 1690 sodium fluoride, UN No. 1812 potassium fluoride, UN No. 2505 ammonium fluoride, UN No. 2674 sodium fluorosilicate and UN No. 2856 fluorosilicates, n.o.s. are substances of Class 6.1.

518 UN No. 1463 chromium trioxide, anhydrous (chromic acid, solid) is a substance of Class 5.1.

519 UN No. 1048 hydrogen bromide, anhydrous, is a substance of Class 2.

520 UN No. 1050 hydrogen chloride, anhydrous, is a substance of Class 2.

521 Solid chlorites and hypochlorites are substances of Class 5.1.

522 UN No. 1873 perchloric acid aqueous solution with more than 50% but not more than 72% pure acid, by mass are substances of Class 5.1. Perchloric acid solutions containing more than 72% pure acid, by mass, or mixtures of perchloric acid with any liquid other than water, are not to be accepted for carriage.

523 UN No. 1382 anhydrous potassium sulphide and UN No. 1385 anhydrous sodium sulphide and their hydrates with less than 30% water of crystallization, and

UN No. 2318 sodium hydrosulphide with less than 25% water of crystallization are substances of Class 4.2.

524 UN No. 2858 finished zirconium products of a thickness of 18 :m or more are substances of Class 4.1.

525 Solutions of inorganic cyanides with a total cyanide ion content of more than 30% shall be classified in packing group I, solutions with a total cyanide ion content of more than 3% and not more than 30% in packing group II and solutions with a cyanide ion content of more than 0.3% and not more than 3% in packing group III.

526 UN No. 2000 celluloid is assigned to Class 4.1.

527 Organometallic compounds and their solutions, not spontaneously flammable, but which, in contact with water, emit flammable gases, are substances of Class 4.3, UN No. 3207. Flammable solutions containing organometallic compounds which are not spontaneously flammable and which, in contact with water, do not emit flammable gases, are substances of Class 3.

528 UN No. 1353 fibres or fabrics impregnated with weakly nitrated cellulose, non-self heating are articles of Class 4.1.

529 UN No. 0135 mercury fulminate, wetted with not less than 20% water, or mixture of alcohol and water, by mass, is a substance of Class 1. Mercurous chloride (calomel) is a substance of Class 9 (UN No. 3077).

530 UN No. 3293 hydrazine, aqueous solution with not more than 37% hydrazine, by mass, is a substance of Class 6.1.

531 Mixtures having a flash-point below 23 °C and containing more than 55% nitrocellulose, whatever its nitrogen content or containing not more than 55% nitrocellulose with a nitrogen content above 12.6% (by dry mass), are substances of Class 1 (see UN Nos. 0340 or 0342) or of Class 4.1.

532 UN No. 2672 ammonia solution containing not less than 10% but not more than 35% ammonia is a substance of Class 8.

533 UN No. 1198 formaldehyde solutions, flammable are substances of Class 3. Formaldehyde solutions, non-flammable, with less than 25% formaldehyde are not subject to the requirements of ADR.

534 While in some climatic conditions, petrol (gasoline) may have a vapour pressure at 50 °C of more than 110 kPa (1.10 bar) but not more than 150 kPa (1.50 bar) it is to continue to be considered as a substance having a vapour pressure at 50 °C of not more than 110 kPa (1.10 bar).

535 UN No. 1469 lead nitrate and UN No. 1470 lead perchlorate are substances of Class 5.1.

536 For naphthalene, solid, see UN No. 1334.

537 UN No. 2869 titanium trichloride mixture, not pyrophoric, is a substance of Class 8.

538 For sulphur (in the solid state), see UN No. 1350.

539 Solutions of isocyanates having a flash-point of not less than 23 °C are substances of Class 6.1.

540 UN No. 1326 hafnium powder, wetted, UN No. 1352 titanium powder, wetted or UN No. 1358 zirconium powder, wetted, with not less than 25% water, are substances of Class 4.1.

541 Nitrocellulose mixtures with a water content, alcohol content or plasticizer content lower than the stated limits are substances of Class 1.

542 Talc containing tremolite and/or actinolite is covered by this entry.

543 UN No. 1005 ammonia, anhydrous, UN No. 3318 ammonia solution with more than 50% ammonia and UN No. 2073 ammonia solution, with more than 35% but not more than 50% ammonia, are substances of Class 2. Ammonia solutions with not more than 10% ammonia are not subject to the requirements of ADR.

544 UN No. 1032 dimethylamine, anhydrous, UN No. 1036 ethylamine, UN No. 1061 methylamine, anhydrous and UN No. 1083 trimethylamine, anhydrous, are substances of Class 2.

545 UN No. 0401 dipicryl sulphide, wetted with less than 10% water by mass is a substance of Class 1.

546 UN No. 2009 zirconium, dry, finished sheets, strip or coiled wire, in thicknesses of less than 18 :m, is a substance of Class 4.2. Zirconium, dry, finished sheets, strip or coiled wire, in thicknesses of 254 :m or more, is not subject to the requirements of ADR.

547 UN No. 2210 maneb or UN No. 2210 maneb preparations in self-heating form are substances of Class 4.2.

548 Chlorosilanes which, in contact with water, emit flammable gases, are substances of Class 4.3.

549 Chlorosilanes having a flash-point of less than 23 °C and which, in contact with water, do not emit flammable gases are substances of Class 3. Chlorosilanes having a flash-point equal to or greater than 23 °C and which, in contact with water, do not emit flammable gases are substances of Class 8.

550 UN No. 1333 cerium in slabs, rods or ingots is a substance of Class 4.1.

551 Solutions of these isocyanates having a flash-point below 23 °C are substances of Class 3.

552 Metals and metal alloys in powdered or other flammable form, liable to spontaneous combustion, are substances of Class 4.2. Metals and metal alloys in powdered or other flammable form which, in contact with water, emit flammable gases are substances of Class 4.3.

553 This mixture of hydrogen peroxide and peroxyacetic acid shall, in laboratory testing (see *Manual of Tests and Criteria*, Part II, section 20), neither detonate in the cavitated state nor deflagrate at all and shall show no effect when heated under confinement nor any explosive power. The formulation shall be thermally stable (self-accelerating decomposition temperature 60 °C or higher for a 50 kg package), and a liquid compatible with peroxyacetic acid shall be used for desensitization. Formulations not

meeting these criteria are to be regarded as substances of Class 5.2 (see *Manual of Tests and Criteria*, Part II, paragraph 20.4.3(g)).

554 Metal hydrides which, in contact with water, emit flammable gases are substances of Class 4.3. UN No. 2870 aluminium borohydride or UN No. 2870 aluminium borohydride in devices is a substance of Class 4.2.

555 Dust and powder of metals in non-spontaneously combustible form, non-toxic which nevertheless, in contact with water, emit flammable gases, are substances of Class 4.3.

556 Organometallic compounds and their solutions which ignite spontaneously are substances of Class 4.2. Flammable solutions with organometallic compounds in concentrations which, in contact with water, neither emit flammable gases in dangerous quantities nor ignite spontaneously are substances of Class 3.

557 Dust and powder of metals in pyrophoric form are substances of Class 4.2.

558 Metals and metal alloys in pyrophoric form are substances of Class 4.2. Metals and metal alloys which, in contact with water, do not emit flammable gases and are not pyrophoric or self-heating, but which are easily ignited, are substances of Class 4.1.

559 Mixtures of a hypochlorite with an ammonium salt are not to be accepted for carriage. UN No. 1791 hypochlorite solution is a substance of Class 8.

560 UN No. 3257 elevated temperature liquid, n.o.s., at or above 100 °C and, for a substance with a flash-point, below its flash-point (including molten metals and molten salts) is a substance of Class 9.

561 Chloroformates having predominantly corrosive properties are substances of Class 8.

562 Spontaneously combustible organometallic compounds are substances of Class 4.2. Water-reactive organometallic compounds, flammable, are substances of Class 4.3.

563 UN No. 1905 selenic acid is a substance of Class 8.

564 UN No. 2443 vanadium oxytrichloride, UN No. 2444 vanadium tetrachloride and UN No. 2475 vanadium trichloride are substances of Class 8.

565 Unspecified wastes resulting from medical/veterinary treatment of humans/animals or from biological research, and which are unlikely to contain substances of Class 6.2 shall be assigned to this entry. Decontaminated clinical wastes or wastes resulting from biological research which previously contained infectious substances are not subject to the requirements of Class 6.2.

566 UN No. 2030 hydrazine hydrate and UN No. 2030 hydrazine aqueous solution, with more than 37% and not more than 64% hydrazine, by mass, are substances of Class 8.

567 Mixtures containing more than 21% oxygen by volume shall be classified as oxidizing.

568 Barium azide with a water content lower than the stated limit is a substance of Class 1, UN No. 0224.

569-579 *(Reserved)*

580 Tank-vehicles, specialized vehicles and specially equipped vehicles for carriage in bulk shall bear on both sides and at the rear the mark referred to in 5.3.3.

Tank-containers, portable tanks, special containers and specially equipped containers for carriage in bulk shall bear this mark on both sides and at each end.

581 This entry covers mixtures of methylacetylene and propadiene with hydrocarbons, which as

Mixture P1, contain not more than 63% methylacetylene and propadiene by volume and not more than 24% propane and propylene by volume, the percentage of C_4-saturated hydrocarbons being not less than 14% by volume; and as

Mixture P2, contain not more than 48% methylacetylene and propadiene by volume and not more than 50% propane and propylene by volume, the percentage of C_4-saturated hydrocarbons being not less than 5% by volume,

as well as mixtures of propadiene with 1 to 4% methylacetylene.

When relevant, in order to meet the requirements for the transport document (5.4.1.1), the term "Mixture P1" or "Mixture P2" may be used as technical name.

582 This entry covers, inter alia , mixtures of gases indicated by the letter R ..., which as

Mixture F1, have a vapour pressure at 70° C not exceeding 1.3 MPa (13 bar) and a density at 50 °C not lower than that of dichlorofluoromethane (1.30 kg/l);

Mixture F2, have a vapour pressure at 70 °C not exceeding 1.9 MPa (19 bar) and a density at 50 °C not lower than that of dichloridifluoromethane (1.21 kg/l);

Mixture F3, have a vapour pressure at 70 °C not exceeding 3 MPa (30 bar) and a density at 50 °C not lower than that of chlorodifluoromethane (1.09 kg/l).

NOTE: *Trichlorofluoromethane (refrigerant gas R 11), 1,1,2-trichloro-1,2,2-trifluoroethane (refrigerant gas R 113), 1,1,1-trichloro-2,2,2-trifluoroethane (refrigerant gas R 113a), 1-chloro-1,2,2-trifluoroethane (refrigerant gas R 133) and 1-chloro-1,1,2-trifluoroethane (refrigerant gas R 133 b) are not substances of Class 2. They may, however, enter into the composition of mixtures F 1 to F 3.*

When relevant, in order to meet the requirements for the transport document (5.4.1.1), the term "Mixture F1", "Mixture F2" or "Mixture F3" may be used as technical name.

583 This entry covers, inter alia , mixtures which as

Mixture A, have a vapour pressure at 70 °C not exceeding 1.1 MPa (11 bar) and a density at 50 °C not lower than 0.525 kg/l;

Mixture A01, have a vapour pressure at 70 °C not exceeding 1.6 MPa (16 bar) and a relative density at 50 °C not lower than 0.516 kg/l;

Mixture A02, have a vapour pressure at 70 °C not exceeding 1.6 MPa (16 bar) and a relative density at 50 °C not lower than 0.505 kg/l;

Mixture A0, have a vapour pressure at 70 °C not exceeding 1.6 MPa (16 bar) and a density at 50 °C not lower than 0.495 kg/l;

Mixture A1, have a vapour pressure at 70 °C not exceeding 2.1 MPa (21 bar) and a density at 50 °C not lower than 0.485 kg/l;

Mixture B1, have a vapour pressure at 70 °C not exceeding 2.6 MPa (26 bar) and a relative density at 50 °C not lower than 0.474 kg/l;

Mixture B2, have a vapour pressure at 70 °C not exceeding 2.6 MPa (26 bar) and a relative density at 50 °C not lower than 0.463 kg/l;

Mixture B, have a vapour pressure at 70 °C not exceeding 2.6 MPa (26 bar) and a density at 50 °C not lower than 0.450 kg/l;

Mixture C, have a vapour pressure at 70 °C not exceeding 3.1 MPa (31 bar) and a relative density at 50 °C not lower than 0.440 kg/l;

When relevant, in order to meet the requirements for the transport document (5.4.1.1), the following terms may be used as technical name:

- "Mixture A" or "Butane";
- "Mixture A01" or "Butane";
- "Mixture A02" or "Butane";
- "Mixture A0" or "Butane";
- "Mixture A1";
- "Mixture B1";
- "Mixture B2";
- "Mixture B";
- "Mixture C" or "Propane".

For carriage in tanks, the trade names "butane" or "propane" may be used only as a complement.

584 This gas is not subject to the requirements of ADR when:

- it is in the gaseous state;
- it contains not more than 0.5% air;
- it is contained in metal capsules (sodors, sparklets) free from defects which may impair their strength;
- the leakproofness of the closure of the capsule is ensured;
- a capsule contains not more than 25 g of this gas;
- a capsule contains not more than 0.75 g of this gas per cm^3 of capacity.

585 Cinnabar is not subject to the requirements of ADR.

586 Hafnium, titanium and zirconium powders shall contain a visible excess of water. Hafnium, titanium and zirconium powders, wetted, mechanically produced, of a particle size of 53 :m and over, or chemically produced, of a particle size of 840 :m and over, are not subject to the requirements of ADR.

587 Barium stearate and barium titanate are not subject to the requirements of ADR.

588 Solid hydrated forms of aluminium bromide and aluminium chloride are not subject to the requirements of ADR.

589 Calcium hypochlorite mixtures, dry, containing not more than 10% available chlorine are not subject to the requirements of ADR.

590 Ferric chloride hexahydrate is not subject to the requirements of ADR.

591 Lead sulphate with not more than 3% free acid is not subject to the requirements of ADR.

592 Uncleaned empty packagings (including empty IBCs and large packagings), empty tank-vehicles, empty demountable tanks, empty portable tanks, empty tank-containers and empty small containers which have contained this substance are not subject to the requirements of ADR.

593 This gas, intended for the cooling of e.g. medical or biological specimens, if contained in double wall receptacles which comply with the provisions of packing instruction P203 (11) of 4.1.4.1 is not subject to the requirements of ADR.

594 The following articles, manufactured and filled according to the regulations of the manufacturing State and packaged in strong outer packagings, are not subject to the requirements of ADR:

- UN No. 1044 fire extinguishers provided with protection against inadvertent discharge;

- UN No. 3164 articles, pressurized pneumatic or hydraulic, designed to withstand stresses greater than the internal gas pressure by virtue of transmission of force, intrinsic strength or construction.

595 Mixtures with a PCB or PCT content of not more than 50 mg/kg are not subject to the requirements of ADR.

596 Cadmium pigments, such as cadmium sulphides, cadmium sulphoselenides and cadmium salts of higher fatty acids (e.g. cadmium stearate), are not subject to the requirements of ADR.

597 Acetic acid solutions with not more than 10% pure acid by mass, are not subject to the requirements of ADR.

598 The following are not subject to the requirements of ADR:

(a) New storage batteries when:

- they are secured in such a way that they cannot slip, fall or be damaged;

- they are provided with carrying devices, unless they are suitably stacked, e.g. on pallets;

- there are no dangerous traces of alkalis or acids on the outside;

- they are protected against short circuits.

(b) Used storage batteries when:

- their cases are undamaged;
- they are secured in such a way that they cannot leak, slip, fall or be damaged, e.g. by stacking on pallets;
- there are no dangerous traces of alkalis or acids on the outside of the articles;
- they are protected against short circuits.

"Used storage batteries" means storage batteries carried for recycling at the end of their normal service life.

599 Manufactured articles or instruments containing not more than 1 kg of mercury are not subject to the requirements of ADR.

600 Vanadium pentoxide, fused and solidified, is not subject to the requirements of ADR.

601 Pharmaceutical products ready for use, e.g. cosmetics, drugs and medicines, which are substances manufactured and packed in packagings of a type intended for retail sale or distribution for personal or household consumption are not subject to the requirements of ADR.

602 Phosphorus sulphides which are not free from yellow and white phosphorus are not to be accepted for carriage.

603 Anhydrous hydrogen cyanide not meeting the description for UN No. 1051 or UN No. 1614 is not to be accepted for carriage. Hydrogen cyanide (hydrocyanic acid) containing less than 3% water is stable, if the pH-value is 2.5 ± 0.5 and the liquid is clear and colourless.

604 Ammonium bromate and its aqueous solutions and mixtures of a bromate with an ammonium salt are not to be accepted for carriage.

605 Ammonium chlorate and its aqueous solutions and mixtures of a chlorate with an ammonium salt are not to be accepted for carriage.

606 Ammonium chlorite and its aqueous solutions and mixtures of a chlorite with an ammonium salt are not to be accepted for carriage.

607 Mixtures of potassium nitrate and sodium nitrite with an ammonium salt are not to be accepted for carriage.

608 Ammonium permanganate and its aqueous solutions and mixtures of a permanganate with an ammonium salt are not to be accepted for carriage.

609 Tetranitromethane not free from combustible impurities is not to be accepted for carriage.

610 The carriage of this substance, when it contains more than 45% hydrogen cyanide is prohibited.

611 Ammonium nitrate containing more than 0.2% combustible substances (including any organic substance calculated as carbon) is not to be accepted for carriage unless it is a constituent of a substance or article of Class 1.

612 *(Reserved)*

613 Chloric acid solution containing more than 10% chloric acid and mixtures of chloric acid with any liquid other than water is not to be accepted for carriage.

614 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) in concentrations considered highly toxic according to the criteria in 2.2.61.1 is not to be accepted for carriage.

615 *(Reserved)*

616 Substances containing more than 40% liquid nitric esters shall satisfy the exudation test specified in 2.3.1.

617 In addition to the type of explosive, the commercial name of the particular explosive shall be marked on the package and shall be specified in the transport document.

618 In receptacles containing 1,2-butadiene, the oxygen concentration in the gaseous phase shall not exceed 50 ml/m^3.

619-622 *(Reserved)*

623 UN No. 1829 sulphur trioxide shall be inhibited. Sulphur trioxide, 99.95% pure or above, may be carried without inhibitor in tanks provided that its temperature is maintained at or above 32.5 °C. For the carriage of this substance without inhibitor in tanks at a minimum temperature of 32.5 °C, the specification "**Transport under minimum temperature of the product of 32.5 °C**" shall appear in the transport document.

624 Fertilizers having an ammonium nitrate content or a content in combustible substances exceeding the values shown are not to be accepted for carriage except under the conditions applicable to Class 1.

Fertilizers having an ammonium nitrate content below the limit values indicated are not subject to the requirements of ADR.

Ammonium nitrate fertilizers, uniform non-segregating mixtures of nitrogen/phosphate or nitrogen/potash types or complete fertilizers of nitrogen/phosphate/potash type whose molecular excess of nitrate ions over ammonium ions (calculated as potassium nitrate) is less than 10% are not subject to the requirements of ADR provided that:

(a) their ammonium nitrate content is not more than 70% and their total content of combustible material is not more than 0.4%, or

(b) their ammonium nitrate content is not more than 45% irrespective of their content of combustible material.

625 Packages containing these articles shall be clearly marked as follows:
"**UN 1950 AEROSOLS**"

626-627 *(Reserved)*

628 Uniform non-segregating mixtures of ammonium nitrate with added matter which is inorganic and chemically inert towards ammonium nitrate, with not less than 90% ammonium nitrate and not more than 0.2% combustible material (including organic

material calculated as carbon), or with more than 70% but less than 90% ammonium nitrate and not more than 0.4% total combustible material.

629 Uniform non-segregating mixtures of ammonium nitrate with calcium carbonate and/or dolomite, with more than 80% but less than 90% ammonium nitrate and not more than 0.4% total combustible material.

630 Uniform non-segregating mixtures of ammonium nitrate and ammonium sulphate, with more than 45% but not more than 70% ammonium nitrate and not more than 0.4% total combustible material.

631 Uniform non-segregating mixtures of nitrogen/phosphate or nitrogen/potash types or complete fertilizers of nitrogen/phosphate/potash type, with more than 70% but less than 90% ammonium nitrate and not more than 0.4% total combustible material.

632 Considered to be spontaneously flammable (pyrophoric).

633 Packages and small containers containing this substance shall bear the following marking: "**Keep away from any source of ignition**". This marking shall be in an official language of the forwarding country, and also, if that language is not English, French or German, in English, French or German, unless any agreements concluded between the countries concerned in the transport operation provide otherwise.

634 Packages containing substances carried in refrigerated liquid nitrogen shall, in addition, bear a label conforming to model No. 2.2.

635 Packages containing these articles need not bear a label conforming to model No. 9 unless the article is fully enclosed by packaging, crates or other means that prevent the ready identification of the article.

636 (a) With the approval of the competent authority of the country of origin, the quantity of lithium or lithium alloy in each cell may be raised to 60 g and a package may contain up to 2500 g of lithium or lithium alloy; the competent authority shall determine the conditions of carriage as well as the type and duration of the test. If the country of origin is not a Contracting Party to ADR, the approval shall be recognized by the competent authority of the first country Contracting Party to ADR reached by the consignment. In such a case, a copy of the approval with the conditions of carriage shall be attached to the transport document. This approval shall be drawn up in an official language of the forwarding country and also, if that language is not English, French or German, in English, French or German, unless any agreements concluded between the countries concerned in the transport operation provide otherwise.

(b) Cells contained in equipment shall not be capable of being discharged during carriage to the extent that the open circuit voltage falls below 2 volts or two thirds of the voltage of the undischarged cell, whichever is the lower.

(c) Packages containing used cells or batteries in unmarked packagings shall bear the inscription: "**Used lithium cells**".

(d) Articles which do not meet the requirements of this special provision and/or special provisions 188, 230, 287 as appropriate are not to be accepted for carriage.

637 Genetically modified micro-organisms are those which are not dangerous for humans and animals, but which could alter animals, plants, microbiological substances and

ecosystems in such a way as cannot occur naturally. Genetically modified micro-organisms which have received a consent for deliberate release into the environment [1] are not subject to the requirements of Class 9. Live vertebrate or invertebrate animals shall not be used to carry these substances classified under this UN number unless the substance can be carried in no other way. For the carriage of easily perishable substances under this UN number appropriate information shall be given, e.g.: "**Cool at +2 °/+4 °C**" or "**Carry in frozen state**" or "**Do not freeze**".

638 Substances related to self-reactive substances (see 2.2.41.1.19).

639 See 2.2.2.3, classification code 2F, UN No. 1965, Note 2.

640 The physical and technical characteristics mentioned in Column (2) of Table A of Chapter 3.2, which were intended to establish different conditions of carriage for the same packing group, shall also be mentioned additionally in the transport document.

641 Sulphur is not subject to the requirements of ADR when it has been formed to specific shape (e.g. pellets, granules, pastilles or flakes).

642 Except as authorized under 1.1.4.2, this entry of the UN Model Regulations shall not be used for the carriage of fertilizer ammoniating solutions with free ammonia.

643 Stone or aggregate asphalt mixture is not subject to the requirements for Class 9.

644 This substance is admitted for carriage provided that:

- The pH is between 5 and 7 measured in an aqueous solution of 10% of the substance carried;

- The solution does not contain more than 0.2% combustible material or chlorine compounds in quantities such that the chlorine level exceeds 0.02%.

[1] *See in particular Part C of Directive 90/220/EEC (Official Journal of the European Communities, No. L 117 of 8 May 1990, pp. 18-20), which sets out the authorization procedures for the European Community.*

CHAPTER 3.4

EXEMPTIONS RELATED TO DANGEROUS GOODS PACKED IN LIMITED QUANTITIES

3.4.1 Packagings used in accordance with 3.4.3 to 3.4.6 below, need only to conform to the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

3.4.2 When the code "LQ0" is shown in Column (7) of Table A in Chapter 3.2 for a given substance or article, that substance or article is not exempted from any of the applicable provisions of Annexes A and B when it is packed in limited quantities, unless otherwise specified in these Annexes.

3.4.3 Unless otherwise provided in this Chapter, when one of the codes "LQ1" or "LQ2" is shown in Column (7) of Table A in Chapter 3.2 for a given substance or article, the provisions of other Chapters of ADR do not apply to the carriage of that substance or article, provided:

(a) The provisions of 3.4.5 (a) to (c) are observed; with respect to these provisions, articles are considered to be inner packagings;

(b) Inner packagings meet the conditions of 6.2.1.2 when "LQ1" is shown, and the conditions of 6.2.1.2, 6.2.4.1 and 6.2.4.2 when "LQ2" is shown.

3.4.4 Unless otherwise provided in this Chapter, when one of the codes "LQ3", "LQ20", "LQ21" or "LQ29" is shown in Column (7) of Table A in Chapter 3.2 for a given substance, the provisions of other Chapters of ADR do not apply to the carriage of that substance, provided:

(a) The substance is carried in combination packagings, the following outer packagings being allowed:

- steel or aluminium drums with removable head;
- steel or aluminium jerricans with removable head;
- plywood or fibre drums;
- plastics drums or jerricans with removable head;
- boxes of natural wood, plywood, reconstituted wood, fibreboard, plastics, steel or aluminium;

(b) The maximum quantity per inner packaging and per package, prescribed for the relevant code in the second and third column of the table in 3.4.6, are not exceeded;

(c) Each package is clearly and durably marked with :

(i) the UN number of the goods contained therein, as given in Column (1) of Table A in Chapter 3.2, preceded by the letters "UN";

(ii) in the case of different goods with different UN numbers within a single package:

- the UN numbers of the goods contained therein, preceded by the letters "UN", or

- the letters "LQ" [1].

These markings shall be displayed within a diamond-shaped area surrounded by a line that measures at least 100 mm x 100 mm. If the size of the package so requires, the dimensions may be reduced, provided the markings remain clearly visible.

3.4.5 Unless otherwise provided in this Chapter, when one of the codes "LQ4" to "LQ19" and "LQ22" to "LQ28" is shown in Column (7) of Table A in Chapter 3.2 for a given substance, the provisions of other Chapters of ADR do not apply to the carriage of that substance, provided:

(a) The substance is carried:

- in combination packagings, corresponding to the prescriptions of 3.4.4 (a), or

- in metal or plastics inner packagings which are not liable to break or be easily punctured, placed in shrink-wrapped or stretch-wrapped trays;

(b) The maximum quantity per inner packaging and per package, prescribed for the relevant code in the table in 3.4.6 (in the second and third column in the case of combination packagings, and in the fourth and fifth column in the case of shrink-wrapped or stretch-wrapped trays), are not exceeded;

(c) Each package is clearly and durably marked as indicated in 3.4.4 (c).

[1] *The letters "LQ" are an abbreviation of the English words "Limited Quantities".*

3.4.6 Table

Code	Combination packagings		Inner packagings placed in shrink-wrapped or stretch-wrapped trays	
	Inner packaging Maximum contents	**Package Maximum gross mass (kg) / contents (*l*)**	**Inner packaging Maximum contents**	**Package Maximum gross mass (kg) / contents (*l*)**
LQ0	No exemption under the conditions of 3.4.2.			
LQ1	120 ml	30 kg	120 ml	20 kg
LQ2	1 *l*	30 kg	1 *l*	20 kg
LQ3 [a]	500 ml	1 *l*	Not allowed	Not allowed
LQ4	3 *l*	12 *l*	1 *l*	12 *l* and 20 kg
LQ5	5 *l*	-	1 *l*	20 kg
LQ6 [a]	5 *l*	20 *l*	1 *l*	20 *l* and 20 kg
LQ7 [a]	5 *l*	45 *l*	5 *l*	20 kg
LQ8	3 kg	12 kg	500 g	12 kg
LQ9	6 kg	24 kg	3 kg	20 kg
LQ10	500 ml	30 kg	500 ml	20 kg
LQ11 [b]	500 g	30 kg	500 g	20 kg
LQ12	1 kg	30 kg	1 kg	20 kg
LQ13	1 *l*	30 kg	1 *l*	20 kg
LQ14 [b]	25 ml	30 kg	25 ml	20 kg
LQ15 [b]	100 g	30 kg	100 g	20 kg
LQ16 [b]	125 ml	30 kg	125 ml	20 kg
LQ17	500 ml	2 *l*	100 ml	2 *l*
LQ18	1 kg	4 kg	500 g	4 kg
LQ19	3 *l*	12 *l*	1 *l*	12 *l* and 20 kg
LQ20	100 ml	400 ml	Not allowed	Not allowed
LQ21	500 g	2 kg	Not allowed	Not allowed
LQ22	1 *l*	4 *l*	500 ml	4 *l* and 20 kg
LQ23	3 kg	12 kg	1 kg	12 kg
LQ24	6 kg	24 kg	2 kg	20 kg
LQ25	1 kg	4 kg	1 kg	20 kg
LQ26	500 ml	2 *l*	500 ml	2 *l*
LQ27	6 kg	24 kg	6 kg	20 kg
LQ28	3 *l*	12 *l*	3 *l*	12 *l* and 20 kg
LQ29	500 ml (per apparatus) if packed in leakproof packagings and conforming to 3.4.4 (c) only	2 *l* if packed in leakproof packagings and conforming to 3.4.4 (c) only	Not allowed	Not allowed

[a] *In the case of homogenous mixtures of Class 3 containing water, the quantities specified relate only to the substance of Class 3 contained in those mixtures.*

[b] *For Class 5.2 these quantities of substances may be packed together with other articles or substances, provided they will not interact dangerously in the event of leakage.*

PART 4

Packing and tank provisions

CHAPTER 4.1

USE OF PACKAGINGS, INCLUDING INTERMEDIATE BULK CONTAINERS (IBCs) AND LARGE PACKAGINGS

Introductory notes

NOTE 1: Packing groups

Dangerous substances of all classes other than those of Classes 1, 2, 5.2, 6.2 and 7 and than the self-reactive substances of Class 4.1 have for packing purposes been assigned to three packing groups in accordance with the degree of danger they present, i.e.:

Packing group I: *Substances presenting high danger;*
Packing group II: *Substances presenting medium danger ; and*
Packing group III: *Substances presenting low danger.*

The packing group to which a substance is assigned is indicated in Table A of Chapter 3.2.

NOTE 2: Explosives, self-reactive substances and organic peroxides

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

4.1.1 General provisions for the packing of dangerous goods, other than goods of Classes 2, 6.2 or 7, in packagings, including IBCs and large packagings

***NOTE**: Some of these general provisions may apply to the packing of goods of Class 2, 6.2 and 7. Refer to sections 4.1.6 (Class 2), 4.1.8 (Class 6.2), 4.1.9 (Class 7) and to the applicable packing instruction in Section 4.1.4.*

4.1.1.1 Dangerous goods shall be packed in good quality packagings, including IBCs and large packagings, which shall be strong enough to withstand the shocks and loadings normally encountered during carriage, including trans-shipment between transport units and/or warehouses as well as any removal from a pallet or overpack for subsequent manual or mechanical handling. Packagings, including IBCs and large packagings, shall be constructed and closed so as to prevent any loss of contents when prepared for transport which might be caused under normal conditions of transport, by vibration, or by changes in temperature, humidity or pressure (resulting from altitude, for example). No dangerous residue shall adhere to the outside of packagings, IBCs and large packagings during carriage. These provisions apply, as appropriate, to new, reused, reconditioned or remanufactured packagings and to new and reused IBCs and large packagings.

4.1.1.2 Parts of packagings, including IBCs and large packagings, which are in direct contact with dangerous goods:

(a) shall not be affected or significantly weakened by those dangerous goods; and

(b) shall not cause a dangerous effect e.g. catalysing a reaction or reacting with the dangerous goods.

Where necessary, they shall be provided with a suitable inner coating or treatment.

4.1.1.3 Unless provided elsewhere in ADR, each packaging, including IBCs and large packagings, except inner packagings, shall conform to a design type successfully tested in accordance with the requirements of 6.1.5, 6.5.4 or 6.6.5, respectively. The packagings for which the test is not required are mentioned under 6.1.1.3.

4.1.1.4 When filling packagings, including IBCs and large packagings, with liquids, sufficient ullage (outage) shall be left to ensure that neither leakage nor permanent distortion of the packaging occurs as a result of an expansion of the liquid caused by temperatures likely to occur during transport. Unless specific requirements are prescribed, liquids shall not completely fill a packaging at a temperature of 55 °C. However, sufficient ullage shall be left in an IBC to ensure that at the mean bulk temperature of 50 °C it is not filled to more than 98% of its water capacity. For a filling temperature of 15 °C, the maximum degree of filling shall be determined as follows, unless otherwise provided, either:

(a)

Boiling point (initial boiling point) of the substance in °C	<60	$60 <100	$100 <200	$200 <300	$300
Degree of filling as a percentage of the capacity of the packaging	90	92	94	96	98

or

(b) degree of filling $= \frac{98}{1 + \alpha\,(50 - t_F)}$ % of the capacity of the packaging.

In this formula " represents the mean coefficient of cubic expansion of the liquid substance between 15 °C and 50 °C; that is to say, for a maximum rise in temperature of 35 °C,

α is calculated according to the formula: $\alpha = \frac{d_{15} - d_{50}}{35 \times d_{50}}$

d_{15} and d_{50} being the relative densities [1] of the liquid at 15 °C and 50 °C and t_F the mean temperature of the liquid at the time of filling.

4.1.1.4.1 For air transport, packagings intended to contain liquids shall also be capable of withstanding a pressure differential without leakage as specified in the international regulations for air transport.

4.1.1.5 Inner packagings shall be packed in an outer packaging in such a way that, under normal conditions of carriage, they cannot break, be punctured or leak their contents into the outer packaging. Inner packagings that are liable to break or be punctured easily, such as those made of glass, porcelain or stoneware or of certain plastics materials, etc., shall be secured in outer packagings with suitable cushioning material. Any leakage of the contents shall not substantially impair the protective properties of the cushioning material or of the outer packaging.

4.1.1.6 Dangerous goods shall not be packed together in the same outer packaging or in large packagings, with dangerous or other goods if they react dangerously with each other and cause:

(a) combustion or evolution of considerable heat;

[1] *Relative density (d) is considered to be synonymous with specific gravity (SG) and will be used throughout this Chapter.*

(b) evolution of flammable, asphyxiant, oxidizing or toxic gases;

(c) the formation of corrosive substances; or

(d) the formation of unstable substances.

NOTE: *For mixed packing special provisions, see 4.1.10.*

4.1.1.7 The closures of packagings containing wetted or diluted substances shall be such that the percentage of liquid (water, solvent or phlegmatizer) does not fall below the prescribed limits during transport.

4.1.1.7.1 Where two or more closure systems are fitted in series on an IBC, that nearest to the substance being carried shall be closed first.

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 cause), the packaging may be fitted with a vent, provided that the gas emitted will not cause danger on account of its toxicity, its flammability, the quantity released, etc. A venting device shall be fitted if dangerous overpressure may develop due to normal decomposition of substances. The vent shall be so designed that, when the packaging 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.

4.1.1.9 New, remanufactured or reused packagings, including IBCs and large packagings, or reconditioned packagings and repaired IBCs shall be capable of passing the tests prescribed in 6.1.5, 6.5.4 or 6.6.5, respectively. Before being filled and handed over for carriage, every packaging, including IBCs and large packagings, shall be inspected to ensure that it is free from corrosion, contamination or other damage and every IBC shall be inspected with regard to the proper functioning of any service equipment. Any packaging which shows signs of reduced strength as compared with the approved design type shall no longer be used or shall be so reconditioned, that it is able to withstand the design type tests. Any IBC which shows signs of reduced strength as compared with the tested design type shall no longer be used or shall be so repaired that it is able to withstand the design type tests.

4.1.1.10 Liquids shall be filled only into packagings, including IBCs, which have an appropriate resistance to the internal pressure that may develop under normal conditions of carriage. Packagings and IBCs marked with the hydraulic test pressure prescribed in 6.1.3.1 (d) and 6.5.2.2.1, respectively shall be filled only with a liquid having a vapour pressure:

(a) such that the total gauge pressure in the packaging or IBC (i.e. the vapour pressure of the filling substance plus the partial pressure of air or other inert gases, less 100 kPa) at 55 °C, determined on the basis of a maximum degree of filling in accordance with 4.1.1.4 and a filling temperature of 15 °C, will not exceed two-thirds of the marked test pressure; or

(b) at 50 °C less than four-sevenths of the sum of the marked test pressure plus 100 kPa; or

(c) at 55 °C less than two-thirds of the sum of the marked test pressure plus 100 kPa.

Metal IBCs intended for the carriage of liquids shall not be used to carry liquids having a vapour pressure of more than 110kPa (1.1 bar) at 50 °C or 130kPa (1.3 bar) at 55 °C.

EXAMPLES OF REQUIRED MARKED TEST PRESSURES FOR PACKAGINGS,

INCLUDING IBCs, CALCULATED AS IN 4.1.1.10 (c)

UN No	Name	Class	Packing group	V_{p55} (kPa)	$V_{p55} \times 1.5$ (kPa)	$(V_{p55} \times 1.5)$ minus 100 (kPa)	Required minimum test pressure gauge under 6.1.5.5.4.(c) (kPa)	Minimum test pressure (gauge) to be marked on the packaging (kPa)
2056	Tetrahydrofuran	3	II	70	105	5	100	100
2247	n-Decane	3	III	1.4	2.1	-97.9	100	100
1593	Dichloromethane	6.1	III	164	246	146	146	150
1155	Diethyl ether	3	I	199	299	199	199	250

NOTE 1*: For pure liquids the vapour pressure at 55 °C (V_{p55}) can often be obtained from scientific tables.*

NOTE 2: *The table refers to the use of 4.1.1.10 (c) only, which means that the marked test pressure shall exceed 1.5 times the vapour pressure at 55 °C less 100 kPa. When, for example, the test pressure for n-decane is determined according to 6.1.5.5.4 (a), the minimum marked test pressure may be lower.*

NOTE 3*: For diethyl ether the required minimum test pressure under 6.1.5.5.5 is 250 kPa.*

4.1.1.11 Empty packagings, including IBCs and large packagings, that have contained a dangerous substance are subject to the same requirements as those for a filled packaging, unless adequate measures have been taken to nullify any hazard.

4.1.1.l2 Every packagings, including IBCs, intended to contain liquids shall successfully undergo a suitable leakproofness test, and be capable of meeting the appropriate test level indicated in 6.1.5.4.3 or 6.5.4.7 for the various types of IBCs:

(a) before it is first used for carriage;

(b) after remanufacturing or reconditioning of any packaging, before it is re-used for carriage;

(c) after the repair of any IBC, before it is re-used for carriage.

For this test the packaging, or IBC, need not have its closures fitted. The inner receptacle of a composite packaging or IBC may be tested without the outer packaging, provided the test results are not affected. This test is not required for:

- inner packagings of combination packagings or large packagings;

- inner receptacles of composite packagings (glass, porcelain or stoneware) marked with the symbol "RID/ADR" in accordance with 6.1.3.1 (a) (ii);

- light gauge metal packagings marked with the symbol "RID/ADR" in accordance with 6.1.3.1 (a) (ii).

4.1.1.13 Packagings, including IBCs, used for solids which may become liquid at temperatures likely to be encountered during carriage shall also be capable of containing the substance in the liquid state.

4.1.1.14 Packagings, including IBCs, used for powdery or granular substances shall be sift-proof or shall be provided with a liner.

4.1.1.15 For plastics drums and jerricans, rigid plastics IBCs and composite IBCs with plastics inner receptacles, unless otherwise approved by the competent authority, the period of use permitted for the carriage of dangerous substances shall be five years from the date of manufacture of the receptacles, except where a shorter period of use is prescribed because of the nature of the substance to be carried.

4.1.1.16 Packagings marked in accordance with 6.1.3 but which were approved in a State which is not a Contracting Party to ADR may nevertheless be used for carriage under ADR.

4.1.1.17 ***Use of salvage packagings***

4.1.1.17.1 Damaged, defective or leaking packages, or dangerous goods that have spilled or leaked may be carried in salvage packagings mentioned in 6.1.5.1.11. This does not prevent the use of bigger size packagings of appropriate type and performance level under the conditions of 4.1.1.17.2.

4.1.1.17.2 Appropriate measures shall be taken to prevent excessive movement of the damaged or leaking packages within a salvage packaging. When the salvage packaging contains liquids, sufficient inert absorbent material shall be added to eliminate the presence of free liquid.

4.1.2 Additional general provisions for the use of IBCs

4.1.2.1 When IBCs are used for the carriage of liquids with a flash-point of 61 °C (closed cup) or lower, or of powders liable to dust explosion, measures shall be taken to prevent a dangerous electrostatic discharge.

4.1.2.2 The periodic testing and inspection requirements for IBCs are provided in Chapter 6.5. An IBC shall not be filled and offered for carriage after the date of expiry of the last periodic test required by 6.5.4.14.3, or the date of expiry of the last periodic inspection required by 6.5.1.6.4. However, an IBC filled prior to the date of expiry of the last periodic test or inspection may be carried for a period not to exceed three months beyond the date of expiry of the last periodic test or inspection. In addition, an IBC may be carried after the date of expiry of the last periodic test or inspection:

(a) after emptying but before cleaning, for purposes of performing the required test or inspection prior to refilling; and

(b) unless otherwise approved by the competent authority, for a period not to exceed six months beyond the date of expiry of the last periodic test or inspection in order to allow the return of dangerous goods or residues for proper disposal or recycling.

Note*: For the particulars in the transport document, see 5.4.1.1.11.*

4.1.2.3 IBCs of type 31HZ2 shall be filled to at least 80% of the volume of the outer casing and always be carried in closed vehicles or containers.

4.1.3 General provisions concerning packing instructions

4.1.3.1 Packing instructions applicable to dangerous goods of Classes 1 to 9 are specified in Section 4.1.4. They are subdivided in three sub-sections depending on the type of packagings to which they apply:

Sub-section 4.1.4.1 for packagings other than IBCs and large packagings; these packing instructions are designated by an alphanumeric code starting with the letter "P" or "R" for packagings specific to RID and ADR;

Sub-section 4.1.4.2 for IBCs; these are designated by an alphanumeric code starting with the letters "IBCs";

Sub-section 4.1.4.3 for large packagings; these are designated by an alphanumeric code starting with the letters "LP".

Generally, packing instructions specify that the general provisions of 4.1.1, 4.1.2 or 4.1.3, as appropriate, are applicable. They may also require compliance with the special provisions of Sections 4.1.5, 4.1.6, 4.1.7, 4.1.8 or 4.1.9 when appropriate. Special packing provisions may also be specified in the packing instruction for individual substances or articles. They are also designated by an alphanumeric code comprising the letters:

"PP" for packagings other than IBCs and large packagings, or "RR" for special provisions specific to RID and ADR;

"B" for IBCs;

"L" for large packagings.

Unless otherwise specified, each packaging shall conform to the applicable requirements of Part 6. Generally packing instructions do not provide guidance on compatibility and the user shall not select a packaging without checking that the substance is compatible with the packaging material selected (e.g. glass receptacles are unsuitable for most fluorides). Where glass receptacles are permitted in the packing instructions porcelain, earthenware and stoneware packagings are also allowed.

4.1.3.2 Column (8) of Table A of Chapter 3.2 shows for each article or substance the packing instruction(s) that shall be used. Columns (9a) and (9b) indicate the special packing provisions and the mixed packing provisions (see 4.1.10) applicable to specific substances or articles.

4.1.3.3 Each packing instruction shows, where applicable, the acceptable single and combination packagings. For combination packagings, the acceptable outer packagings, inner packagings and when applicable the maximum quantity permitted in each inner or outer packaging, are shown. Maximum net mass and maximum capacity are as defined in 1.2.1.

4.1.3.4 The following packagings shall not be used when the substances being carried are liable to become liquid during carriage:

Packagings

Drums:	1D and 1G
Boxes:	4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2
Bags:	5L1, 5L2, 5L3, 5H1, 5H2, 5H3, 5H4, 5M1 and 5M2
Composite packagings:	6HC, 6HD2, 6HG1, 6HG2, 6HD1, 6PC, 6PD1, 6PD2, 6PG1, 6PG2 and 6PH1

IBCs

For substances of packing group I: All types of IBC
For substances of packing groups II and III:

Wooden:	11C, 11D and 11F
Fibreboard:	11G
Flexible:	13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 and 13M2
Composite:	11HZ2, 21HZ2 and 31HZ2

For the purposes of this paragraph, substances and mixtures of substances having a melting point equal to or less than 45 °C shall be treated as solids liable to become liquid during transport.

4.1.3.5 Where the packing instructions in this Chapter authorize the use of a particular type of outer packaging in a combination packaging (e.g. 4G), packagings bearing the same packaging identification code followed by the letters "V", "U" or "W" marked in accordance with the requirements of Part 6 (e.g. 4GV, 4GU or 4GW) may also be used under the same conditions and limitations applicable to the use of that type of outer packaging according to the relevant packing instructions. For example, a combination packaging marked with the packaging code "4GV" may be used whenever a combination packaging marked "4G" is authorized, provided the requirements in the relevant packing instruction regarding types of inner packagings and quantity limitations are respected.

4.1.3.6 Gas cylinders and gas receptacles approved by the competent authority are authorized for the transport of any liquid or solid substance assigned to packing instruction P001 or P002 unless otherwise indicated in the packing instruction or by a special provision in Column (9a) of Table A of Chapter 3.2. The capacity of gas cylinders shall not exceed 450 litres. The capacity for gas receptacles shall not exceed 1000 litres.

4.1.3.7 Packagings or IBCs not specifically authorized in the applicable packing instruction shall not be used for the carriage of a substance or article unless specifically allowed under a temporary derogation agreed between Contracting Parties in accordance with 1.5.1.

4.1.4 List of packing instructions

***NOTE**: Although the following packing instructions use the same numbering system as used in the IMDG Code and the UN Model Regulations, readers should be aware that some of the details may be different in the case of ADR.*

4.1.4.1 ***Packing instructions concerning the use of packagings (except IBCs and large packagings)***

P001	**PACKING INSTRUCTION (LIQUIDS)**			**P001**
The following packagings are authorized provided the general provisions of **4.1.1** and **4.1.3** are met:				
Combination packagings:		**Maximum capacity/Net mass (see 4.1.3.3.)**		
Inner packagings	**Outer packagings**	**Packing group I**	**Packing group II**	**Packing group III**
Glass 10 *l* Plastics 30 *l* Metal 40 *l*	**Drums**			
	steel (1A2)	250 kg	400 kg	400 kg
	aluminium (1B2)	250 kg	400 kg	400 kg
	metal other than steel or aluminium (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* [a]	450 *l*	450 *l*
aluminium, non-removable head (1B1)		250 *l*	450 *l*	450 *l*
aluminium, removable head (1B2)		250 *l* [a]	450 *l*	450 *l*
metal other than steel or aluminium, non-removable head (1N1)		250 *l*	450 *l*	450 *l*
metal other than steel or aluminium, removable head (1N2)		250 *l* [a]	450 *l*	450 *l*
plastics, non-removable head (1H1)		250 *l*	450 *l*	450 *l*
plastics, removable head (1H2)		250 *l* [a]	450 *l*	450 *l*
Jerricans				
steel, non-removable head (3A1)		60 *l*	60 *l*	60 *l*
steel, removable head (3A2)		60 *l* [a]	60 *l*	60 *l*
aluminium, non-removable head (3B1)		60 *l*	60 *l*	60 *l*
aluminium, removable head (3B2)		60 *l* [a]	60 *l*	60 *l*
plastics, non-removable head (3H1)		60 *l*	60 *l*	60 *l*
plastics, removable head (3H2)		60 *l* [a]	60 *l*	60 *l*

[a] *Only substances with a viscosity of more than 2 680 mm^2/s are authorized.*

P001 PACKING INSTRUCTION (LIQUIDS) (cont'd) P001			
Single packagings (cont'd)	**Maximum capacity/Net mass (see 4.1.3.3.)**		
Composite packagings	**Packing group I**	**Packing group II**	**Packing group III**
plastics receptacle with outer steel or aluminium drum (6HA1, 6HB1)	250 *l*	250 *l*	250 *l*
plastics receptacle with outer fibre, plastics or plywood drum (6HG1, 6HH1, 6HD1)	120 *l*	250 *l*	250 *l*
plastics receptacle with outer steel or aluminium crate or box or plastics receptacle with outer wooden, plywood, fibreboard or solid plastics box (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2)	60 *l*	60 *l*	60 *l*
glass receptacle with outer steel, aluminium, fibreboard, plywood, solid plastics or expanded plastics drum (6PA1, 6PB1, 6PG1, 6PD1, 6PH1 or 6PH2) or with outer steel or aluminium crate or box or with outer wooden or fibreboard box or with outer wickerwork hamper (6PA2, 6PB2, 6PC, 6PG2 or 6PD2)	60 *l*	60 *l*	60 *l*

Additional requirement:
For substances of Class 3, packing group III, which give off small quantities of carbon dioxide or nitrogen, the packagings shall be vented.

Special packing provisions:

PP1 For UN Nos. 1133, 1210, 1263 and 1866, substances of packing groups II and III may be carried in quantities of 5 litres or less per packaging in metal or plastics packagings which are not required to meet the performance tests of Chapter 6.1, provided that such packagings are carried:

(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; or

(b) as inner packagings of combination packagings with a maximum net mass of 40 kg.

PP2 For UN Nos. 3065 and 1170, wooden barrels (2C1 and 2C2) may be used.

PP4 For UN No. 1774, packagings shall meet the packing group II performance level.

PP5 For UN No. 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.

PP6 For UN Nos. 1851 and 3248, the maximum net quantity per package shall be 5 *l*.

PP10 For UN No. 1791, packing group II, the packaging shall be vented.

PP31 For UN No. 1131, packagings shall be hermetically sealed.

PP33 For UN No. 1308, packing groups I and II, only combination packagings with a maximum gross mass of 75 kg allowed.

Special packing provisions specific to RID and ADR

RR1 For UN No. 1790 with not more than 85% hydrofluoric acid and UN No. 2031 containing more than 55% pure acid, the permissible period of use for plastics drums and jerricans used as single packagings shall be two years from the date of manufacture.

RR2 For UN No. 1261, removable head packagings are not permitted.

P002	PACKING INSTRUCTION (SOLIDS)	P002

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

Combination packagings:		**Maximum net mass (see 4.1.3.3)**		
Inner packagings	**Outer packagings**	**Packing group I**	**Packing group II**	**Packing group III**
	Drums			
Glass 10 kg	steel (1A2)	400 kg	400 kg	400 kg
Plastics [a] 50 kg	aluminium (1B2)	400 kg	400 kg	400 kg
Metal 50 kg	metal, other than steel	400 kg	400 kg	400 kg
Paper [a, b, c] 50 kg	or aluminium (1N2)			
Fibre [a, b, c] 50 kg	plastics (1H2)	400 kg	400 kg	400 kg
	plywood (1D)	400 kg	400 kg	400 kg
[a] *These inner packagings shall be sift-proof.*	fibre (1G)	400 kg	400 kg	400 kg
	Boxes			
	steel (4A)	400 kg	400 kg	400 kg
[b] *These inner packagings shall not be used when the substances being carried may become liquid during carriage (see 4.1.3.4).*	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
[c] *These inner packagings shall not be used for substances of packing group I.*	**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 (1A1 or 1A2 [d])		400 kg	400 kg	400 kg
aluminium (1B1 or 1B2 [d])		400 kg	400 kg	400 kg
metal, other than steel or aluminium (1N1 or 1N2 [d])		400 kg	400 kg	400 kg
plastics (1H1 or 1H2 [d])		400 kg	400 kg	400 kg
fibre (1G) [e]		400 kg	400 kg	400 kg
plywood (1D) [e]		400 kg	400 kg	400 kg
Jerricans				
steel (3A1 or 3A2 [d])		120 kg	120 kg	120 kg
aluminium (3B1 or 3B2 [d])		120 kg	120 kg	120 kg
plastics (3H1 or 3H2 [d])		120 kg	120 kg	120 kg

[d] *These packagings shall not be used for substances of packing group I that may become liquid during carriage (see 4.1.3.4).*

[e] *These packagings shall not be used when substances being carried may become liquid during carriage (see 4.1.3.4).*

P002	PACKING INSTRUCTION (SOLIDS) (cont'd)		P002
	Maximum net mass (see 4.1.3.3.)		
Single packagings (cont'd):	**Packing group I**	**Packing group II**	**Packing group III**
Boxes			
steel (4A) [e]	Not allowed	400 kg	400 kg
aluminium (4B) [e]	Not allowed	400 kg	400 kg
natural wood (4C1) [e]	Not allowed	400 kg	400 kg
plywood (4D) [e]	Not allowed	400 kg	400 kg
reconstituted wood (4F) [e]	Not allowed	400 kg	400 kg
natural wood with sift-proof walls (4C2) [e]	Not allowed	400 kg	400 kg
fibreboard (4G) [e]	Not allowed	400 kg	400 kg
solid plastics (4H2) [e]	Not allowed	400 kg	400 kg
Bags			
bags (5H3, 5H4, 5L3, 5M2) [e]	Not allowed	50 kg	50 kg
Composite packagings			
plastics receptacle with outer steel, aluminium, plywood, fibre or plastics drum (6HA1, 6HB1, 6HG1 [e], 6HD1 [e], or 6HH1)	400 kg	400 kg	400 kg
plastics receptacle with outer steel or aluminium crate or box, wooden box, plywood box, fibreboard box or solid plastics box (6HA2, 6HB2, 6HC, 6HD2 [e], 6HG2 [e] or 6HH2)	75 kg	75 kg	75 kg
glass receptacle with outer steel, aluminium plywood or fibre drum (6PA1, 6PB1, 6PD1 [e] or 6PG1 [e]) or with outer steel or aluminium crate or box or with outer wooden, or fibreboard box or with outer wickerwork hamper (6PA2, 6PB2, 6PC, 6PD2 [e], or 6PG2 [e]) or with outer solid plastics or expanded plastics packaging (6PH2 or 6PH1 [e])	75 kg	75 kg	75 kg

[e] *These packagings shall not be used when the substances being carried may become liquid during carriage (see 4.1.3.4).*

Special packing provisions:

PP6 For UN No. 3249, the maximum net mass per package shall be 5 kg.

PP7 For UN No. 2000, celluloid 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 vehicles or containers. Each pallet shall not exceed 1000 kg.

PP8 For UN No. 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.

PP9 For UN Nos. 3175, 3243 and 3244, packagings shall conform to a design type that has passed a leakproofness test at the packing group II performance level.

PP11 For UN No. 1309, packing group III, and UN No. 1362, 5H1, 5L1 and 5M1 bags are allowed if they are overpacked in plastic bags or are wrapped in shrink or stretch wrap on pallets.

PP12 For UN Nos. 1361, 2213 and UN No. 3077, 5H1, 5L1 and 5M1 bags are allowed when carried in closed vehicles or containers.

PP13 For articles classified under UN No. 2870, only combination packagings meeting the packing group I performance level are authorized.

PP14 For UN Nos. 2211, 2698 and 3314, packagings are not required to meet the performance tests in Chapter 6.1.

PP15 For UN Nos. 1324 and 2623, packagings shall meet the packing group III performance level.

PP20 For UN No. 2217, any sift-proof, tearproof receptacle may be used.

PP30 For UN No. 2471, paper or fibre inner packagings are not permitted.

PP34 For UN No. 2969 (as whole beans), 5H1, 5L1 and 5M1 bags are permitted.

PP37 For UN Nos. 2590 and 2212, 5M1 bags are permitted. Packages shall be carried in closed vehicles or containers or as stretch or shrink-wrapped unit loads.

PP38 For UN No. 1309, packing group II, bags are permitted only in closed vehicles or containers.

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, 4.1.1.4, 4.1.1.8** and **4.1.3** 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 packaging shall be designed and constructed to prevent inadvertent discharge of articles during normal conditions of carriage.

Special packing provisions:

PP16 For UN No. 2800, batteries shall be protected from short circuits and shall be securely packed in strong outer packagings.

NOTE 1*: Non-spillable batteries which are an integral part of, and necessary for, the operation of mechanical or electronic equipment shall be securely fastened in the battery holder on the equipment and protected in such a manner as to prevent damage and short circuits.*

NOTE 2: *For used batteries (UN No. 2800), see P801a.*

PP19 For UN Nos. 1364 and 1365, carriage as bales is authorized.

PP20 For UN Nos. 1363, 1386, 1408 and 2793 any sift-proof, tearproof receptacle may be used.

PP32 UN Nos. 2857 and 3358 may be carried unpackaged, in crates or in appropriate overpacks.

P099	PACKING INSTRUCTION	P099

Only packagings which are approved by the competent authority may be used.

P101	PACKING INSTRUCTION	P101

Only packagings which are approved by the competent authority of the country of origin may be used. If the country of origin is not a Contracting Party to the ADR, the packaging shall be approved by the competent authority of the first country Contracting Party to ADR reached by the consignment. The State's distinguishing sign for motor vehicles in international traffic of the country for which the authority acts, shall be marked on the transport documents as follows:

"**Packaging approved by the competent authority of...**" (see 5.4.1.2.1 (e))

P110(a)	PACKING INSTRUCTION	P110(a)

RESERVED

NOTE*: This packing instruction in the UN Model Regulations is not admitted for carriage under ADR.*

P110(b)	PACKING INSTRUCTION	P110(b)
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements	**Intermediate packagings and arrangements**	**Outer packagings and arrangements**
Receptacles metal wood rubber, conductive plastics, conductive **Bags** rubber, conductive plastics, conductive	**Dividing partitions** metal wood plastics fibreboard	**Boxes** natural wood, sift-proof wall (4C2) plywood (4D) reconstituted wood (4F)
Special packing provision: **PP42** For UN Nos. 0074, 0113, 0114, 0129, 0130, 0135 and 0224, the following conditions shall be met: (a) Inner packagings shall not contain more than 50 g of explosive substance (quantity corresponding to dry substance); (b) Compartments between dividing partitions shall not contain more than one inner packaging, firmly fitted; and (c) The outer packaging may be partitioned into up to 25 compartments.		

P111	PACKING INSTRUCTION	P111
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements	**Intermediate packagings and arrangements**	**Outer packagings and arrangements**
Bags paper, waterproofed plastics textile, rubberized **Sheets** plastics textile, rubberized	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, expanded (4H1) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibreboard (1G) plastics, removable head (1H2)
Special packing provision: **PP43** For UN No. 0159, inner packagings are not required when metal (1A2 or 1B2) or plastics (1H2) drums are used as outer packagings.		

P112(a)	PACKING INSTRUCTION (Solid wetted, 1.1D)	P112(a)

The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:

Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags paper, multiwall, water resistant plastics textile textile, rubberized woven plastics **Receptacles** metal plastics	**Bags** plastics textile, plastic coated or lined **Receptacles** metal plastics	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, expanded (4H1) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)

Additional requirement:

Intermediate packagings are not required if leakproof removable head drums are used as the outer packaging.

Special packing provisions:

PP26 For UN Nos. 0004, 0076, 0078, 0154, 0219 and 0394, packagings shall be lead free.

PP45 For UN Nos. 0072 and 0226, intermediate packagings are not required.

P112(b)	PACKING INSTRUCTION (Solid dry, other than powder 1.1D)	P112(b)

The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:

Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags paper, kraft paper, multiwall, water resistant plastics textile textile, rubberized woven plastics	**Bags** (for UN No. 0150 only) plastics textile, plastic coated or lined	**Bags** woven plastics, sift-proof (5H2) woven plastics, water-resistant (5H3) plastics, film (5H4) textile, sift-proof (5L2) textile, water resistant (5L3) paper, multiwall, water resistant (5M2) **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, expanded (4H1) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)

Special packing provisions:

PP26 For UN Nos. 0004, 0076, 0078, 0154, 0216, 0219 and 0386, packagings shall be lead free.

PP46 For UN Nos. 0209, bags, sift-proof (5H2) are recommended for flake or prilled TNT in the dry state and a maximum net mass of 30 kg.

PP47 For UN Nos. 0222 and 0223, inner packagings are not required when the outer packaging is a bag.

P112(c)	PACKING INSTRUCTION (Solid dry powder 1.1D)	P112(c)

The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:

Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags paper, multiwall, water resistant plastics woven plastics **Receptacles** fibreboard metal plastics wood	**Bags** paper, multiwall, water resistant with inner lining plastics **Receptacles** metal plastics	**Boxes** steel (4A) natural wood, ordinary (4C1) natural wood, sift-proof (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G)

Additional requirements:

1. Inner packagings are not required if drums are used as the outer packaging.

2. The packaging shall be sift-proof.

Special packing provisions:

PP26 For UN Nos. 0004, 0076, 0078, 0154, 0216, 0219 and 0386, packagings shall be lead free.

PP46 For UN No. 0209, bags, sift-proof (5H2) are recommended for flake or prilled TNT in the dry state and a maximum net mass of 30 kg.

PP48 For UN No. 0504, metal packagings shall not be used.

P113	PACKING INSTRUCTION	P113
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements **Bags** paper plastics textile, rubberized **Receptacles** fibreboard metal plastics wood	**Intermediate packagings and arrangements** Not necessary	**Outer packagings and arrangements** **Boxes** steel (4A) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G)
Additional requirement: The packaging shall be sift-proof.		
Special packing provisions: **PP49** For UN Nos. 0094 and 0305, no more than 50 g of substance shall be packed in an inner packaging. **PP50** For UN No. 0027, inner packagings are not necessary when drums are used as outer packagings. **PP51** For UN No. 0028, paper kraft or waxed paper sheets may be used as inner packagings.		

P114(a)	PACKING INSTRUCTION (Solid wetted)	P114(a)

The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:

Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags plastics textile woven plastics **Receptacles** metal plastics	**Bags** plastics textile, plastic coated or lined **Receptacles** metal plastics	**Boxes** steel (4A) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibre (1G) plastics, removable head (1H2)

Additional require ment:

Intermediate packagings are not required if leakproof removable head drums are used as outer packagings.

Special packing provisions:

PP26 For UN Nos. 0077, 0132, 0234, 0235 and 0236, packagings shall be lead free.

PP43 For UN No. 0342, inner packagings are not required when metal (1A2 or 1B2) or plastics (1H2) drums are used as outer packagings.

P114(b)	PACKING INSTRUCTION (Solid dry)	P114(b)

The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:

Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags paper, kraft plastics textile, sift-proof woven plastics, sift-proof **Receptacles** fibreboard metal paper plastics woven plastics, sift-proof	Not necessary	**Boxes** natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibre (1G) plastics, removable head (1H2)

Special packing provisions:

PP26 For UN Nos. 0077, 0132, 0234, 0235 and 0236, packagings shall be lead free.

PP50 For UN Nos. 0160 and 0161, inner packagings are not required if drums are used as outer packagings.

PP52 For UN Nos. 0160 and 0161, when metal drums (1A2 or 1B2) are used as outer packagings, metal packagings shall be so constructed that the risk of explosion, by reason of increased internal pressure from internal or external causes is prevented.

P115	PACKING INSTRUCTION	P115

The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:

Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Receptacles plastics	**Bags** plastics in metal receptacles **Drums** metal	**Box**es natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibre (1G)

Special packing provisions:

PP45 For UN No. 0144, intermediate packagings are not required.

PP53 For UN Nos. 0075, 0143, 0495 and 0497, when boxes are used as outer packagings, inner packagings shall have taped screw cap closures and be not more than 5 litres capacity each. Inner packagings shall be surrounded with non-combustible absorbent cushioning materials. The amount of absorbent cushioning material shall be sufficient to absorb the liquid contents. Metal receptacles shall be cushioned from each other. Net mass of propellant is limited to 30 kg for each package when outer packagings are boxes.

PP54 For UN Nos. 0075, 0143, 0495 and 0497, when drums are used as outer packagings and when intermediate packagings are drums, they shall be surrounded with non-combustible cushioning material in a quantity sufficient to absorb the liquid contents. A composite packaging consisting of a plastics receptacle in a metal drum may be used instead of the inner and intermediate packagings. The net volume of propellant in each package shall not exceed 120 litres.

PP55 For UN No. 0144, absorbent cushioning material shall be inserted.

PP56 For UN No. 0144, metal receptacles may be used as inner packagings.

PP57 For UN Nos. 0075, 0143, 0495 and 0497, bags shall be used as intermediate packagings when boxes are used as outer packagings.

PP58 For UN Nos. 0075, 0143, 0495 and 0497, drums shall be used as intermediate packagings when drums are used as outer packagings.

PP59 For UN No. 0144, fibreboard boxes (4G) may be used as outer packagings.

PP60 For UN No. 0144, aluminium drums, removable head (1B2) shall not be used.

P116	PACKING INSTRUCTION	P116

The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:

Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags paper, water and oil resistant plastics textile, plastic coated or lined woven plastics, sift-proof **Receptacles** fibreboard, water resistant metal plastics wood, sift-proof **Sheets** paper, water resistant paper, waxed plastics	Not necessary	**Bags** woven plastics (5H1) paper, multiwall, water resistant (5M2) plastics, film (5H4) textile, sift-proof (5L2) textile, water resistant (5L3) **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2) **Jerricans** steel, removable head (3A2) plastics, removable head (3H2)

Special packing provisions:

PP61 For UN Nos. 0082, 0241, 0331 and 0332, inner packagings are not required if leakproof removable head drums are used as outer packagings.

PP62 For UN Nos. 0082, 0241, 0331 and 0332, inner packagings are not required when the explosive is contained in a material impervious to liquid.

PP63 For UN No. 0081, inner packagings are not required when contained in rigid plastic which is impervious to nitric esters.

PP64 For UN No. 0331, inner packagings are not required when bags (5H2), (5H3) or (5H4) are used as outer packagings.

PP65 For UN Nos. 0082, 0241, 0331 and 0332, bags (5H2 or 5H3) may be used as outer packagings.

PP66 For UN No. 0081, bags shall not be used as outer packagings.

P130	PACKING INSTRUCTION	P130
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements	**Intermediate packagings and arrangements**	**Outer packagings and arrangements**
Not necessary	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, expanded (4H1) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)

Special packing provision:

PP67 The following applies to UN Nos. 0006, 0009, 0010, 0015, 0016, 0018, 0019, 0034, 0035, 0038, 0039, 0048, 0056, 0137, 0138, 0168, 0169, 0171, 0181, 0182, 0183, 0186, 0221, 0243, 0244, 0245, 0246, 0254, 0280, 0281, 0286, 0287, 0297, 0299, 0300, 0301, 0303, 0321, 0328, 0329, 0344, 0345, 0346, 0347, 0362, 0363, 0370, 0412, 0424, 0425, 0434, 0435, 0436, 0437, 0438, 0451, 0488 and 0502: Large and robust explosives articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems shall be protected against stimuli encountered during normal conditions of carriage. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for carriage unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling devices.

P131	PACKING INSTRUCTION	P131
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements	**Intermediate packagings and arrangements**	**Outer packagings and arrangements**
Bags paper plastics **Receptacles** fibreboard metal plastics wood **Reels**	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)
Special packing provision: **PP68** For UN Nos. 0029, 0267 and 0455, bags and reels shall not be used as inner packagings.		

P132(a)	PACKING INSTRUCTION	P132(a)
(Articles consisting of closed metal, plastics or fibreboard casings that contain a detonating explosive, or consisting of plastics-bonded detonating explosives)		
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements	**Intermediate packagings and arrangements**	**Outer packagings and arrangements**
Not necessary	Not necessary	**Boxes** steel (4A) aluminium (4B) wood, natural, ordinary (4C1) wood, natural, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2)

P132(b)	PACKING INSTRUCTION	P132(b)
(Articles without closed casings)		
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements	**Intermediate packagings and arrangements**	**Outer packagings and arrangements**
Receptacles fibreboard metal plastics **Sheets** paper plastics	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2)

P133	PACKING INSTRUCTION	P133
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements	**Intermediate packagings and arrangements**	**Outer packagings and arrangements**
Receptacles fibreboard metal plastics wood **Trays, fitted with dividing partitions** fibreboard plastics wood	**Receptacles** fibreboard metal plastics wood	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2)
Additional requirement: Receptacles are only required as intermediate packagings when the inner packagings are trays.		
Special packing provision: **PP69** For UN Nos. 0043, 0212, 0225, 0268 and 0306, trays shall not be used as inner packagings.		

P134	PACKING INSTRUCTION	P134
The following packagings are authorized, provided the general packing provisions **of 4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements	**Intermediate packagings and arrangements**	**Outer packagings and arrangements**
Bags water resistant **Receptacles** fibreboard metal plastics wood **Sheets** fibreboard, corrugated **Tubes** fibreboard	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, expanded (4H1) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2)

P135	PACKING INSTRUCTION	P135
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements	**Intermediate packagings and arrangements**	**Outer packagings and arrangements**
Bags paper plastics **Receptacles** fibreboard metal plastics wood **Sheets** paper plastics	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, expanded (4H1) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)

P136	PACKING INSTRUCTION	P136
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements	**Intermediate packagings and arrangements**	**Outer packagings and arrangements**
Bags plastics textile Boxes fibreboard plastics wood **Dividing partitions in the outer packagings**	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)

P137	PACKING INSTRUCTION	P137
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements **Bags** plastics **Boxes** fibreboard **Tubes** fibreboard metal plastics **Dividing partitions in the outer packagings**	**Intermediate packagings and arrangements** Not necessary	**Outer packagings and arrangements** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibre (1G) plastics, removable head (1H2)
Special packing provision: **PP70** For UN Nos. 0059, 0439, 0440 and 0441, when the shaped charges are packed singly, the conical cavity shall face downwards and the package marked "THIS SIDE UP". When the shaped charges are packed in pairs, the conical cavities shall face inwards to minimize the jetting effect in the event of accidental initiation.		

P138	PACKING INSTRUCTION	P138
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements **Bags** plastics	**Intermediate packagings and arrangements** Not necessary	**Outer packagings and arrangements** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2)
Additional requirement: If the ends of the articles are sealed, inner packagings are not necessary.		

P139	PACKING INSTRUCTION	P139
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements **Bags** plastics **Receptacles** fibreboard metal plastics wood **Reels** **Sheets** paper plastics	**Intermediate packagings and arrangements** Not necessary	**Outer packagings and arrangements** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibre (1G) plastics, removable head (1H2)

Special packing provisions:

PP71 For UN Nos. 0065, 0102, 0104, 0289 and 0290, the ends of the detonating cord shall be sealed, for example, by a plug firmly fixed so that the explosive cannot escape. The ends of flexible detonating cord shall be fastened securely.

PP72 For UN Nos. 0065 and 0289, inner packagings are not required when they are in coils.

P140	PACKING INSTRUCTION	P140
The following packagings are authorized, provided the general packing provisions **of 4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements **Bags** plastics **Reels** **Sheets** paper, kraft plastics	**Intermediate packagings and arrangements** Not necessary	**Outer packagings and arrangements** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G)
Special packing provisions: **PP73** For UN No. 0105, no inner packagings are required if the ends are sealed. **PP74** For UN No. 0101, the packaging shall be sift-proof except when the fuse is covered by a paper tube and both ends of the tube are covered with removable caps. **PP75** For UN No. 0101, steel or aluminium boxes or drums shall not be used.		

P141	PACKING INSTRUCTION	P141
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements	**Intermediate packagings and arrangements**	**Outer packagings and arrangements**
Receptacles fibreboard metal plastics wood **Trays, fitted with dividing partitions** plastics wood **Dividing partitions in the outer packagings**	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)

P142	PACKING INSTRUCTION	P142
The following packagings are authorized, provided the general packing provisions **of 4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements	**Intermediate packagings and arrangements**	**Outer packagings and arrangements**
Bags paper plastics **Receptacles** fibreboard metal plastics wood **Sheets** paper **Trays, fitted with dividing partitions** plastics	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)

P143	PACKING INSTRUCTION	P143
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements **Bags** paper, kraft plastics textile textile, rubberized **Receptacles** fibreboard metal plastics **Trays, fitted with dividing partitions** plastics wood	**Intermediate packagings and arrangements** Not necessary	**Outer packagings and arrangements** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibre (1G) plastics, removable head (1H2)
Additional requirement: Instead of the above inner and outer packagings, composite packagings (6HH2) (plastics receptacle with outer solid plastics box) may be used.		
Special packing provision: **PP76** For UN Nos. 0271, 0272, 0415 and 0491, when metal packagings are used, metal packagings shall be so constructed that the risk of explosion, by reason of increase in internal pressure from internal or external causes is prevented.		

P144	PACKING INSTRUCTION	P144
The following packagings are authorized, provided the general packing provisions of **4.1.1, 4.1.3** and special packing provisions of **4.1.5** are met:		
Inner packagings and arrangements **Receptacles** fibreboard metal plastics **Dividing partitions in the outer packagings**	**Intermediate packagings and arrangements** Not necessary	**Outer packagings and arrangements** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary with metal liner (4C1) plywood (4D) with metal liner reconstituted wood (4F) with metal liner plastics, expanded (4H1)
Special packing provision: **PP77** For UN Nos. 0248 and 0249, packagings shall be protected against the ingress of water. When water-activated contrivances are transported unpackaged, they shall be provided with at least two independent protective features which prevent the ingress of water.		

Type of packagings: Cylinder, tubes, pressure drums and bundles of cylinders

Cylinder, tubes, pressure drums and bundles of cylinders are authorised provided the special packing provisions of **4.1.6** and the provisions listed below under A, B, C and D are met:

A. General

(1) Receptacles shall be so closed and leakproof as to prevent escape of the gases;

B. Test pressure and filling ratios

(2) The minimum test pressure required for is 1 MPa (10 bar);

(3) For compressed gases having a critical temperature below -50 °C the internal pressure (test pressure) to be applied in the hydraulic pressure test shall be at least one and one-half times the filling pressure at 15 °C;

(4) For compressed gases having a critical temperature of -50 °C or above and for liquefied gases having a critical temperature below 70 °C, the degree of filling shall be such that the internal pressure at 65 °C does not exceed the test pressure of the receptacles;

For gases and gas mixtures with insufficient data, the maximum filling degree (FD) shall be determined as follows:

$$FD = 8.5 \times 10^{-4} \times d_g \times P_e$$

where FD = maximum filling degree (in $kg.l^{-1}$)
dg = gas density (at 15 °C, 1 bar)(in kg/m^3)
Pe = minimum test pressure (in bar)

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

$$FD = \frac{P_e \times MM \times 10^{-3}}{R \times 338}$$

where FD = maximum filling degree (in $kg \cdot l^{-1}$)
Pe = minimum test pressure (in bar)
MM = molecular mass (in $g.mol^{-1}$)
R = $8{,}31451 \times 10^{-2}$ $bar \cdot l \cdot mol^{-1} \cdot K^{-1}$ (gas constant)

(For gas mixtures the average molecular mass is to be taken, taking into account the concentrations of the various components);

(5) For liquefied gases having a critical temperature of 70 °C or above, the maximum mass of contents per litre of capacity (degree of filling) equals 0.95 times the density of the liquid phase at 50 °C (in kg/l); in addition, the vapour phase shall not disappear below 60 °C. The test pressure will be at least equal to the vapour pressure of the liquid at 70 °C, minus 100 kPa (1 bar).

For pure gases with insufficient data the maximum filling degree shall be determined as follows:

$$FD = (0.0032 \times BP - 0.24) \times d_1$$

where FD = maximum filling degree (in $kg \cdot l^{-1}$)
BP = boiling point (in Kelvin)
d_1 = density of the liquid at boiling point (in $kg \cdot l^{-1}$)

(6) For UN No. 1001 acetylene, dissolved, once equilibrium has been achieved at 15 °C, the filling pressure shall not exceed the value prescribed by the competent authority for the porous mass. The quantity of solvent and the quantity of acetylene shall likewise correspond to the figures specified in the approval;

(7) Other test pressure and degree of filling may be used provided they satisfy the general requirements outlined in the previous paragraphs of this section B;

C. Periodic inspections

(8) Refillable receptacles shall be subjected to periodic inspections in accordance with the provisions of 6.2.1.6.

(9) If special requirements for certain substances do not appear in the table below, periodic inspections shall be carried out:

(a) Every 3 years in the case of receptacles intended for the carriage of gases of classification codes 1TC, 1TFC, 1TOC, 2TC, 2TFC and 2TOC;
(b) Every 5 years in the case of receptacles intended for the carriage of gases of classification codes 1T, 1TF, 1TO, 2T, 2TF and 2TO and gases of classification codes 4A, 4F and 4C;
(c) Every 10 years in the case of receptacles intended for the carriage of gases of classification codes 1A, 1O, 1F, 2A, 2O and 2F.

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

D. Table

(10) The following table:

- identifies what types of receptacles are authorised for what gases;
- identifies the test pressure, degree of filling and limitation of capacity for the different gases, as well as restrictions concerning toxic gases with a LC_{50} less than 200 ppm;
- refers to additional requirements that are product specific.

(11) Keys for the column "receptacles"

(1) Cylinders;
(2) Tubes;
(3) Pressure drums;
(5) Bundles of cylinders.

(12) Keys for the column "Special requirements":

a: Aluminium alloys not allowed in contact with gas.
b: Valves made of copper are not accepted.
c: Metal parts in contact with the contents shall not contain more than 70% copper.
d: No receptacle may contain more than 5 kg of the substance.
e: The valve outlets shall be fitted with plugs or cap-nuts ensuring gas-tightness.
f: The necessary steps to prevent dangerous reactions (e.g. polymerisation, decomposition...) during carriage shall be taken. If necessary, stabilisation or addition of an inhibitor is required.
g: The use of test pressures other than those indicated are allowed provided the provisions of P200 (4) are followed.
h: If a monolithic material is used as a porous mass, the interval between inspections may be extended to 10 years.
i: Maximum filling according to the figures specified in the approval.
j: The test pressure and degree of filling shall be calculated in accordance with the provisions of P200 (3), (4) or (5).

k: The interval between tests may be extended to 10 years when receptacles are made of aluminium alloys.

l: Each cylinder in a frame (bundle) shall be fitted with an individual valve that shall be closed during carriage.

m: The interval between inspections for steel cylinders may be extended to 15 years:

(a) with the agreement of the competent authority (authorities) of the country (countries) where the periodic inspection and the carriage take place; and

(b) in accordance with the requirements of a technical code or a standard recognised by the competent authority, or standard EN 1440:1996 "Transportable refillable welded cylinders for liquefied petroleum gas (LPG) - Periodic requalification".

n:(1) allowed for carriage in capsules under the following conditions:

(a) The mass of gas shall not exceed 150 g per capsule;

(b) The capsules shall be free from faults liable to impair the strength;

(c) The leakproofness of the closure shall be ensured by an additional device (cap, crown, seal, binding, etc.) capable of preventing any leakage of the closure during carriage;

(d) The capsules shall be placed in an outer packaging of sufficient strength. A package shall not weigh more than 75 kg.

(2) not allowed for carriage in capsules:

(a) methylsilane or mixtures thereof, assigned to UN No. 3161;

(b) dimethylsilane, trimethylsilane or mixtures thereof, assigned to UN No. 3309;

(c) mixtures of UN No. 1589 cyanogen chloride, UN No. 2188 arsine, UN No. 2189 dichlorosilane, UN No. 2202 hydrogen selenide.

z: In the case of receptacles for the carriage of gases under a N.O.S entry, the following requirements shall be taken into account as applicable:

(1) The materials of which the receptacles and their closures are made shall not be liable to attack by the contents or form harmful or dangerous compounds therewith;

(2) The special requirements of each component shall be taken into account when selecting and filling the receptacles;

(3) The test pressure and degree of filling is to be calculated in accordance with the requirements of P200 (3), (4) or (5);

(4) Toxic gases and gas mixtures with a LC50 less than 200 ppm are not allowed for transport in tubes and pressure drums;

(5) The valves of receptacles for toxic gases and gas mixtures with a LC50 less than 200 ppm or of pyrophoric gases or flammable mixtures of gases containing more than 1% of pyrophoric compounds shall be fitted with gas tight plugs or cap-nuts. When these receptacles are manifolded in a bundle, each of them shall be fitted with an individual valve that shall be closed during carriage;

(6) The necessary steps to prevent dangerous reactions (i.e. polymerisation, decomposition) during carriage shall be taken. If necessary, stabilisation or addition of an inhibitor is required;

(7) Other criteria may be used for filling of welded steel cylinders intended for the carriage of substances of UN No. 1965:

(a) with the agreement of the competent authorities of the countries where the transport is carried out; and

(b) in compliance with the provisions of a national code or standard recognised by the competent authorities or standard EN 1439:1996 "Transportable refillable steel cylinders for liquefied petroleum Gases (LPG) - Procedures for checking before, during and after refilling)".

When the criteria for filling are different from those in P200(5), the transport document shall include the statement "Carriage in accordance with packing instruction P200, special requirement z" and the indication of the reference temperature used for the calculation of the filling factor.

E. Reference to standards

(13) The applicable requirements of this packing instruction are considered to have been complied with if the following standards, as relevant, are applied:

Applicable requirements	Reference	Title of document
P200 (6)	EN 1801: 1998	Transportable gas cylinders - Filling conditions for single acetylene cylinders (including list of permissible porous masses)
P200 (6)	EN 12755: 2000	Transportable gas cylinders - Filling conditions for acetylene bundles

P200	PACKING INSTRUCTION (cont'd)							P200
UN No.	NAME AND DESCRIPTION	CLASSIFI-CATION CODE	PACKING	TEST			FILLING	SPECIAL
			TYPE OF RECEPTACLE	PRESSURE (T.P.)		PERIOD (years)[a]	MAX. FILL. DEGREE kg/l or MAX. FILL. PRESSURE MPa	REQUIRE-MENTS
				X FILL. PRESS.	MPa			
1001	ACETYLENE, DISSOLVED	4F	(1),(5)		6.0	5		c, h, i
1002	AIR, COMPRESSED	1A	(1),(2),(3),(5)	1.5		10	2/3 T.P.	
1005	AMMONIA, ANHYDROUS	2TC	(1),(2),(3),(5)		3.3	5	0.53	b, n
1006	ARGON, COMPRESSED	1A	(1),(2),(3),(5)	1.5		10	2/3 T.P.	
1008	BORON TRIFLUORIDE, COMPRESSED	1TC	(1),(2),(3),(5)		22.5	3	0.715	g
			(1),(2),(3),(5)		30.0		0.86	g
1009	BROMOTRIFLUOROMETHANE (REFRIGERANT GAS R13B1)	2A	(1),(2),(3),(5)		4.2	10	1.13	g, n
			(1),(2),(3),(5)		12.0	10	1.44	g, n
			(1),(2),(3),(5)		25.0	10	1.60	g, n
1010	1,2-BUTADIENE, INHIBITED, or	2F	(1),(2),(3),(5)		1.0	10	0.59	f, n
	1,3-BUTADIENE, INHIBITED, or							
	MIXTURES OF 1,3-BUTADIENE AND HYDROCARBONS, INHIBITED		(1),(2),(3),(5)		1.0	10	0.55	f, n
			(1),(2),(3),(5)		1.0	10	0.55	f, n
1011	BUTANE	2F	(1),(2),(3),(5)		1.0	10	0.51	n
1012	BUTYLENES MIXTURE or	2F	(1),(2),(3),(5)		1.0	10	0.5	j, n
1012	1-BUTYLENE or		(1),(2),(3),(5)		1.0	10	0.53	
1012	CIS-2-BUTENE or		(1),(2),(3),(5)		1.0	10	0.55	
1012	TRANS-2-BUTYLENE		(1),(2),(3),(5)		1.0	10	0.54	
1013	CARBON DIOXIDE	2A	(1),(2),(3),(5)		19.0	10	0.66	g, n
			(1),(2),(3),(5)		25.0	10	0.75	g, n
1014	CARBON DIOXIDE AND OXYGEN MIXTURE, COMPRESSED	1O	(1),(2),(3),(5)	1.5		10	2/3 T.P.	
1015	CARBON DIOXIDE AND NITROUS OXIDE MIXTURE	2A	(1),(3),(5)		25.0	10	0.75	g, n
1016	CARBON MONOXIDE, COMPRESSED	1TF	(1),(2),(3),(5)	1.5		5	2/3 T.P.	k
1017	CHLORINE	2TC	(1),(2),(3),(5)		2.2	5	1.25	a, n
1018	CHLORODIFLUORO-METHANE (REFRIGERANT GAS R22)	2A	(1),(2),(3),(5)		2.9	10	1.03	n
1020	CHLOROPENTAFLUORO-ETHANE (REFRIGERANT GAS R115)	2A	(1),(2),(3),(5)		2.5	10	1.08	n
1021	1-CHLORO-1,2,2,2-TETRAFLUOROETHANE (REFRIGERANT GAS R124)	2A	(1),(2),(3),(5)		1.2	10	1.2	n
1022	CHLOROTRIFLUORO-METHANE (REFRIGERANT GAS R13)	2A	(1),(2),(3),(5)		10.0	10	0.83	g, n
			(1),(2),(3),(5)		12.0	10	0.90	g, n
			(1),(2),(3),(5)		19.0	10	1.04	g, n
			(1),(2),(3),(5)		25.0	10	1.10	g, n
1023	COAL GAS, COMPRESED	1TF	(1),(2),(3),(5)	1.5		5	2/3 T.P.	
1026	CYANOGEN	2TF	(1),(2),(3),(5)		10.0	5	0.70	k, n
1027	CYCLOPROPANE	2F	(1),(2),(3),(5)		2.0	10	0.53	n
1028	DICHLORODIFLUORO-METHANE (REFRIGERANT GAS R12)	2A	(1),(2),(3),(5)		1.8	10	1.15	n
1029	DICHLOROFLUOROMETHANE (REFRIGERANT GAS R21)	2A	(1),(2),(3),(5)		1.0	10	1.23	n
1030	1,1-DIFLUOROETHANE (REFRIGERANT GAS R152a)	2F	(1),(2),(3),(5)		1.8	10	0.79	n
1032	DIMETHYLAMINE, ANHYDROUS	2F	(1),(2),(3),(5)		1.0	10	0.59	b, n
1033	DIMETHYL ETHER	2F	(1),(2),(3),(5)		1.8	10	0.58	n

UN No.	NAME AND DESCRIPTION	CLASSIFI-CATION CODE	PACKING	TEST			FILLING	SPECIAL
			TYPE OF RECEPTACLE	PRESSURE (T.P.)		PERIOD (years)[a]	MAX. FILL. DEGREE kg/l or MAX. FILL. PRESSURE MPa	REQUIRE-MENTS
				X FILL. PRESS.	MPa			
1035	ETHANE	2F	(1),(2),(3),(5)		9.5	10	0.25	g, n
			(1),(2),(3),(5)		12	10	0.29	g, n
			(1),(2),(3),(5)		30	10	0.39	g, n
1036	ETHYLAMINE	2F	(1),(2),(3),(5)		1.0	10	0.61	b, n
1037	ETHYL CHLORIDE	2F	(1),(2),(3),(5)		1.0	10	0.80	a, n
1039	ETHYL METHYL ETHER	2F	(1),(2),(3),(5)		1.0	10	0.64	n
1040	ETHYLENE OXIDE or ETHYLENE OXIDE WITH NITROGEN up to a total pressure of 1MPa (10 bar) at 50EC	2TF	(1),(2),(3),(5)		1.5	5	0.78	f, n
1041	ETHYLENE OXIDE AND CARBON DIOXIDE MIXTURE with more than 9% ethylene oxide but not more than 87%	2F	(1),(2),(3),(5)		19	10	0.66	g, n
			(1),(2),(3),(5)		25	10	0.75	g, n
1045	FLUORINE, COMPRESSED	1TOC	(1),(5)		20.0	5	2.8 MPa	a, d, e, l
1046	HELIUM, COMPRESSED	1A	(1),(2),(3),(5)	1.5		10	2/3 T.P.	
1048	HYDROGEN BROMIDE, ANHYDROUS	2TC	(1),(2),(3),(5)		6.0	3	1.54	a, n
1049	HYDROGEN, COMPRESSED	1F	(1),(2),(3),(5)	1.5		10	2/3 T.P.	
1050	HYDROGEN CHLORIDE, ANHYDROUS	2TC	(1),(2),(3),(5)		10.0	3	0.30	a, g, n
			(1),(2),(3),(5)		12.0	3	0.56	a, g, n
			(1),(2),(3),(5)		15.0	3	0.67	a, g, n
			(1),(2),(3),(5)		20.0	3	0.74	a, g, n
1053	HYDROGEN SULPHIDE	2TF	(1),(2),(3),(5)		5.5	5	0.67	k, n
1055	ISOBUTYLENE	2F	(1),(2),(3),(5)		1.0	10	0.52	n
1056	KRYPTON, COMPRESSED	1A	(1),(2),(3),(5)	1.5		10	2/3 T.P.	
1058	LIQUEFIED GASES, non-flammable, charged with nitrogen, carbon dioxide or air	2A	(1),(2),(3),(5)	1.5		10		j, n
1060	METHYLACETYLENE AND PROPADIENE MIXTURE, STABILIZED	2F	(1),(2),(3),(5)			10		c, f, j, n
	Propadiene with 1% to 4% methylacetylene		(1),(2),(3),(5)		2.2	10	0.50	c, f, n
	Mixture P1		(1),(2),(3),(5)		3.0	10	0.49	c, f, n
	Mixture P2		(1),(2),(3),(5)		2.4	10	0.47	c, f, n
1061	METHYLAMINE, ANHYDROUS	2F	(1),(2),(3),(5)		1.3	10	0.58	b, n
1062	METHYL BROMIDE	2T	(1),(2)(3),(5)		1.0	5	1.51	a
1063	METHYL CHLORIDE (REFRIGERANT GAS R 40)	2F	(1),(2)(3),(5)		1.7	10	0.81	a, n
1064	METHYL MERCAPTAN	2TF	(1),(2)(3),(5)		1.0	5	0.78	k, n
1065	NEON, COMPRESSED	1A	(1),(2)(3),(5)	1.5		10	2/3 T.P.	
1066	NITROGEN, COMPRESSED	1A	(1),(2)(3),(5)	1.5		10	2/3 T.P.	
1067	DINITROGEN TETROXIDE (NITROGEN DIOXIDE)	2 TOC	(1),(3),(5)		1.0	3	1.30	e, l
1069	NITROSYL CHLORIDE	2TC	(1),(5)		1.3	3	1.10	e, l, n
1070	NITROUS OXIDE	2O	(1),(2)(3),(5)		18.0	10	0.68	g
			(1),(2)(3),(5)		22.5	10	0.74	g
			(1),(2)(3),(5)		25.0	10	0.75	g
1071	OIL GAS, COMPRESSED	1TF	(1),(2)(3),(5)	1.5		5	2/3 T.P.	
1072	OXYGEN, COMPRESSED	1O	(1),(2)(3),(5)	1.5		10	2/3 T.P.	

P200	PACKING INSTRUCTION (cont'd)							P200
UN No.	NAME AND DESCRIPTION	CLASSIFI-CATION CODE	PACKING	TEST			FILLING	SPECIAL
			TYPE OF RECEPTACLE	PRESSURE (T.P.)		PERIOD (years)[a]	MAX. FILL. DEGREE kg/l or MAX. FILL. PRESSURE MPa	REQUIRE-MENTS
				X FILL. PRESS.	MPa			
1076	PHOSGENE	2TC	(1),(3),(5)		2.0	3	1.23	e, l, n
1077	PROPYLENE	2F	(1),(2)(3),(5)		3.0	10	0.43	n
1078	REFRIGERANT GASES, N.O.S.	2A	(1),(2)(3),(5)			10		n, z
	Mixture F1		(1),(2)(3),(5)		1.2	10	1.23	
	Mixture F2		(1),(2)(3),(5)		1.8	10	1.15	
	Mixture F3		(1),(2)(3),(5)		2.9	10	1.03	
1079	SULPHUR DIOXIDE	2TC	(1),(2)(3),(5)		1.4	3	1.23	n
1080	SULPHUR HEXAFLUORIDE	2A	(1),(2)(3),(5)		7.0	10	1.04	g, n
			(1),(2)(3),(5)		14.0	10	1.33	g, n
			(1),(2)(3),(5)		16.0	10	1.37	g, n
1081	TETRAFLUOROETHYLENE, INHIBITED	2F	(1),(2)(3),(5)		20.0	10	0.5 MPa	f, n
1082	TRIFLUOROCHLORO-ETHYLENE, INHIBITED	2TF	(1),(2)(3),(5)		1.9	5	1.13	f, k, n
1083	TRIMETHYLAMINE, ANHYDROUS	2F	(1),(2)(3),(5)		1.0	10	0.56	b, n
1085	VINYL BROMIDE, INHIBITED	2F	(1),(2)(3),(5)		1.0	10	1.37	a, f, n
1086	VINYL CHLORIDE, INHIBITED	2F	(1),(2)(3),(5)		1.2	10	0.81	a, f, n
1087	VINYL METHYL ETHER, INHIBITED	2F	(1),(2)(3),(5)		1.0	10	0.67	f, n
1581	CHLOROPICRIN AND METHYL BROMIDE MIXTURE	2T	(1),(2)(3),(5)		1.0	5	1.51	a
1582	CHLOROPICRIN AND METHYL CHLORIDE MIXTURE	2T	(1),(2)(3),(5)		1.7	5	0.81	a
1589	CYANOGEN CHLORIDE, INHIBITED	2TC	(1),(5)		2.0	3	1.03	e, f, l
1612	HEXAETHYL TETRAPHOSPHATE AND COMPRESSED GAS MIXTURE	1T	(1),(2),(3),(5)	1.5		5	2/3 T.P,	
1660	NITRIC OXIDE, COMPRESSED	1TOC	(1),(5)	1.5		3	2/3 T.P.	e, l
1741	BORON TRICHLORIDE	2TC	(1),(2),(3),(5)		1.0	3	1.19	n
1749	CHLORINE TRIFLUORIDE	2TOC	(1),(2),(3),(5)		3.0	3	1.40	a
1858	HEXAFLUOROPROPYLENE (REFRIGERANT GAS R1216)	2A	(1),(2),(3),(5)		2.2	10	1.11	n
1859	SILICON TETRAFLUORIDE, COMPRESSED	1TC	(1),(2),(3),(5)		20	3	0.74	g
			(1),(2),(3),(5)		30		1.1	g
1860	VINYL FLUORIDE, INHIBITED	2F	(1),(2),(3),(5)		25.0	10	0.64	a, f, g, n
1911	DIBORANE, COMPRESSED	1TF	(1),(5)		25.0	5	0.072	e, f, l
1912	METHYLCHLORIDE AND METHYLENE CHLORIDE MIXTURE	2F	(1),(2),(3),(5)		1.7	10	0.81	a, n
1952	CARBON DIOXIDE AND ETHYLENE OXIDE MIXTURE with not more than 9% ethylene oxide	2A	(1),(2),(3),(5)		19	10	0.66	n
			(1),(2),(3),(5)		25	10	0.75	n
1953	COMPRESSED GAS, TOXIC, FLAMMABLE, N.O.S.	1TF	(1),(2),(3),(5)	1.5		5	2/3 T.P.	z
1954	COMPRESSED GAS, FLAMMABLE, N.O.S.	1F	(1),(2),(3),(5)	1.5		10	2/3 T.P.	z
1955	COMPRESSED GAS, TOXIC, N.O.S.	1T	(1),(2),(3),(5)	1.5		5	2/3 T.P.	z
1956	COMPRESSED GAS, N.O.S.	1A	(1),(2),(3),(5)	1.5		10	2/3 T.P.	z
1957	DEUTERIUM, COMPRESSED	1F	(1),(2),(3),(5)	1.5		10	2/3 T.P.	

UN No.	NAME AND DESCRIPTION	CLASSIFICATION CODE	PACKING	TEST			FILLING	SPECIAL REQUIREMENTS
			TYPE OF RECEPTACLE	PRESSURE (T.P.)		PERIOD (years)[a]	MAX. FILL. DEGREE kg/l or MAX. FILL. PRESSURE MPa	
				X FILL. PRESS.	MPa			
1958	DICHLOROTETRAFLUOROETHANE (REFRIGERANT GAS R114)	2A	(1),(2),(3),(5)		1.0	10	1.30	n
1959	1,1-DIFLUOROETHYLENE (REFRIGERANT GAS R1132a)	2F	(1),(2),(3),(5)		25	10	0.77	g, n
1962	ETHYLENE, COMPRESSED	1F	(1),(2),(3),(5)		22.5	10	0.34	g
			(1),(2),(3),(5)		30	10	0.37	g
1964	HYDROCARBON GAS MIXTURE, COMPRESSED, N.O.S.	1F	(1),(2),(3),(5)	1.5		10	2/3 T.P.	z
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S.	2F	(1),(2),(3),(5)			10	[b]	m, n, z
	Mixture A		(1),(2),(3),(5)		1.0	10	0.50	
	Mixture AO1		(1),(2),(3),(5)		1.5	10	0.49	
	Mixture AO2		(1),(2),(3),(5)		1.5	10	0.48	
	Mixture AO		(1),(2),(3),(5)		1.5	10	0.47	
	Mixture A1		(1),(2),(3),(5)		2.0	10	0.46	
	Mixture B1		(1),(2),(3),(5)		2.5	10	0.45	
	Mixture B2		(1),(2),(3),(5)		2.5	10	0.44	
	Mixture B		(1),(2),(3),(5)		2.5	10	0.43	
	Mixture C		(1),(2),(3),(5)		3.0	10	0.42	
1967	INSECTICIDE GAS, TOXIC, N.O.S.	2T	(1),(2),(3),(5)			5		z
1968	INSECTICIDE GAS, N.O.S.	2A	(1),(2),(3),(5)			10		n, z
1969	ISOBUTANE	2F	(1),(2),(3),(5)		1.0	10	0.49	n
1971	METHANE, COMPRESSED or NATURAL GAS, COMPRESSED with high methane content	1F	(1),(2),(3),(5)	1.5		10	2/3 T.P	
1973	CHLORODIFLUOROMETHANE AND CHLOROPENTAFLUOROETHANE MIXTURE with fixed boiling point, with approximately 49% chlorodifluoromethane (REFRIGERANT GAS R502)	2A	(1),(2),(3),(5)		3.1	10	1.05	n
1974	CHLORODIFLUOROBROMOMETHANE (R12B1)	2A	(1),(2),(3),(5)		1.0	10	1.61	n
1975	NITRIC OXIDE AND DINITROGEN TETROXIDE MIXTURE (NITRIC OXIDE AND NITROGEN DIOXIDE MIXTURE)	2TOC	(1),(2),(3),(5)			3		e, j, l
1976	OCTAFLUOROCYCLOBUTANE (REFRIGERANT GAS RC318)	2A	(1),(2),(3),(5)		1.1	10	1.34	n
1978	PROPANE	2F	(1),(2),(3),(5)		2.5	10	0.42	n
1979	RARE GASES MIXTURE, COMPRESSED	1A	(1),(2),(3),(5)	1.5		10	2/3 T.P.	
1980	RARE GASES AND OXYGEN MIXTURE, COMPRESSED	1A	(1),(2),(3),(5)	1.5		10	2/3 T.P	
1981	RARE GASES AND NITROGEN MIXTURE, COMPRESSED	1A	(1),(2),(3),(5)	1.5		10	2/3 T.P.	
1982	TETRAFLUOROMETHANE, COMPRESSED (REFRIGERANT GAS R14, COMPRESSED)	1A	(1),(2),(3),(5)		20	10	0.62	g
			(1),(2),(3),(5)		30		0.94	g
1983	1-CHLORO-2,2,2-TRIFLUOROETHANE (REFRIGERANT GAS R133a)	2A	(1),(2),(3),(5)		1.0	10	1.18	n
1984	TRIFLUOROMETHANE (REFRIGERANT GAS R23)	2A	(1),(2),(3),(5)		19.0	10	0.87	g, n
			(1),(2),(3),(5)		25.0	10	0.95	g, n
2034	HYDROGEN AND METHANE MIXTURE, COMPRESSED	1F	(1),(2),(3),(5)	1.5		10	2/3 T.P.	
2035	1,1,1-TRIFLUOROETHANE (REFRIGERANT GAS R143a)	2F	(1),(2),(3),(5)		3.5	10	0.75	n

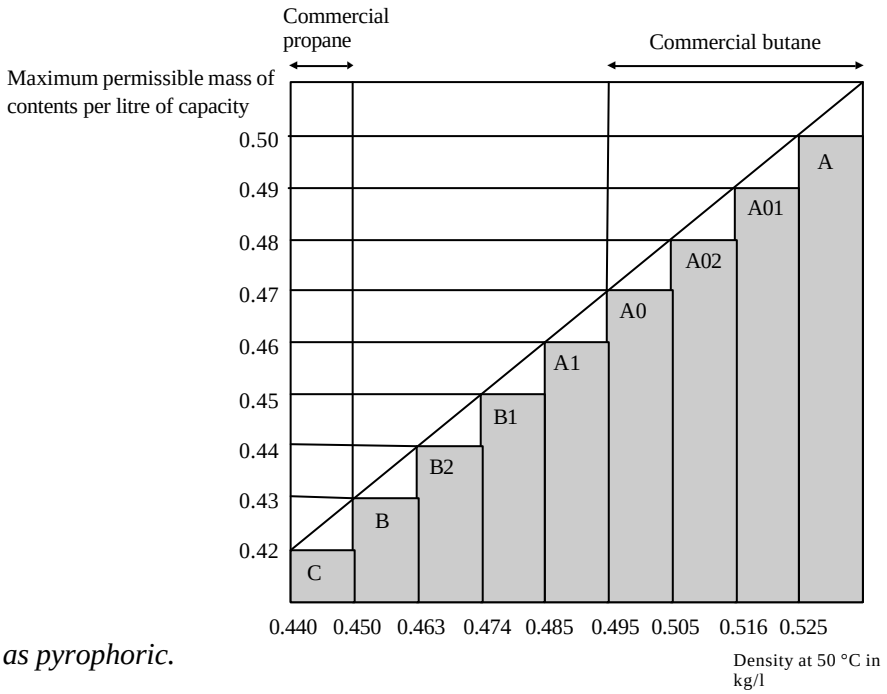
UN No.	NAME AND DESCRIPTION	CLASSIFICATION CODE	PACKING	TEST			FILLING	SPECIAL REQUIREMENTS
			TYPE OF RECEPTACLE	PRESSURE (T.P.)		PERIOD (years)[a]	MAX. FILL. DEGREE kg/l or MAX. FILL. PRESSURE MPa	
				X FILL. PRESS.	MPa			
2036	XENON, COMPRESSED	1A	(1),(2),(3),(5)		13	10	1.24	g
2044	2,2-DIMETHYLPROPANE	2F	(1),(2),(3),(5)		1.0	10	0.53	n
2073	AMMONIA SOLUTION, relative density less than 0.88 at 15EC	4A						
	with more than 35% and not more than 40% ammonia		(1),(2),(3),(5)		1.0	5	0.80	
	with more than 40% and not more than 50% ammonia		(1),(2),(3),(5)		1.0	5	0.77	
2188	ARSINE	2TF	(1),(5)		4.2	5	1.10	e, l
2189	DICHLOROSILANE	2TFC	(1),(2),(3),(5)		1	3	0.90	
2190	OXYGEN DIFLUORIDE	1TOC	(1),(5)		20.0	3	2.8 MPa	a, d, e, l
2191	SULPHURYL FLUORIDE	2T	(1),(2),(3),(5)		5.0	5	1.10	k
2192	GERMANE[c]	2TF	(1),(5)		25.0	5	1.02	e, g, l, n
2193	HEXAFLUOROETHANE, COMPRESSED (REFRIGERANT GAS R116, COMPRESSED)	1A	(1),(2),(3),(5)		20	10	1.10	g
2194	SELENIUM HEXAFLUORIDE	2TC	(1),(5)		3.6	3	1.46	e, g, l, n
2195	TELLURIUM HEXAFLUORIDE	2TC	(1),(5)		2.0	3	1.0	e, l, n
2196	TUNGSTEN HEXAFLUORIDE	2TC	(1),(5)		1.0	3	2.70	a, e, l, n
2197	HYDROGEN IODIDE, ANHYDROUS	2TC	(1),(2),(3),(5)		2.3	3	2.25	a, n
2198	PHOSPHORUS PENTAFLUORIDE, COMPRESSED	1TC	(1),(5)		20	3	0.9	e, g, l
			(1),(5)		30		1.34	e, g, l
2199	PHOSPHINE[c]	2TF	(1),(5)		22.5	5	0.30	e, g, l, n
			(1),(5)		25.0	5	0.51	e, g, l, n
2200	PROPADIENE, INHIBITED	2F	(1),(2),(3),(5)		2.2	10	0.50	f, n
2202	HYDROGEN SELENIDE, ANHYDROUS	2TF	(1),(5)		3.1	5	1.60	e, l
2203	SILANE, COMPRESSED[c]	1F	(1),(2),(3),(5)		22.5	10	0.32	e, g, l
			(1),(2),(3),(5)		25.0	10	0.41	e, g, l
2204	CARBONYL SULPHIDE	2TF	(1),(2),(3),(5)		2.6	5	0.84	k, n
2417	CARBONYL FLUORIDE, COMPRESSED	1TC	(1),(2),(3),(5)		20	3	0.47	g
			(1),(2),(3),(5)		30		0.7	g
2418	SULPHUR TETRAFLUORIDE	2TC	(1),(5)		3.0	3	0.91	e, l, n
2419	BROMOTRIFLUORO-ETHYLENE	2F	(1),(2),(3),(5)		1.0	10	1.19	n
2420	HEXAFLUOROACETONE	2TC	(1),(2),(3),(5)		2.2	3	1.08	n
2422	OCTAFLUOROBUT-2-ENE (REFRIGERANT GAS R1318)	2A	(1),(2),(3),(5)		1.2	10	1.34	n
2424	OCTAFLUOROPROPANE (REFRIGERANT GAS R218)	2A	(1),(2),(3),(5)		2.5	10	1.09	n
2451	NITROGEN TRIFLUORIDE	1O	(1),(2),(3),(5)		20	10	0.5	g
			(1),(2),(3),(5)		30		0.75	g
2452	ETHYLACETYLENE, INHIBITED	2F	(1),(2),(3),(5)		1.0	10	0.57	c, f, n
2453	ETHYL FLUORIDE (REFRIGERANT GAS R161)	2F	(1),(2),(3),(5)		3.0	10	0.57	n
2454	METHYL FLUORIDE (REFRIGERANT GAS R41)	2F	(1),(2),(3),(5)		30.0	10	0.36	n
2517	1-CHLORO-1,1-DIFLUOROETHANE (REFRIGERANT GAS R142(b)	2F	(1),(2),(3),(5)		1.0	10	0.99	n

UN No.	NAME AND DESCRIPTION	CLASSIFICATION CODE	PACKING	TEST			FILLING	SPECIAL REQUIREMENTS
			TYPE OF RECEPTACLE	PRESSURE (T.P.)		PERIOD (years)[a]	MAX. FILL. DEGREE kg/l or MAX. FILL. PRESSURE MPa	
				X FILL. PRESS.	MPa			
2534	METHYLCHLOROSILANE	2TFC	(1),(2),(3),(5)			3		j, n
2548	CHLORINE PENTAFLUORIDE	2TOC	(1),(5)		1.3	3	1.49	a, e, l
2599	CHLOROTRIFLUORO-METHANE AND TRIFLUOROMETHANE, AZEOTROPIC MIXTURE with approximately 60% chlorotrifluoromethane (REFRIGERANT GAS R503)	2A	(1),(2),(3),(5)		3.1	10	0.11	n
			(1),(2),(3),(5)		4.2	10	0.20	n
			(1),(2),(3),(5)		10.0	10	0.66	n
2600	CARBON MONOXIDE AND HYDROGEN MIXTURE, COMPRESSED	1TF	(1),(2),(3),(5)	1.5		5	2/3 T.P.	k
2601	CYCLOBUTANE	2F	(1),(2),(3),(5)		1.0	10	0.63	n
2602	DICHLORODIFLUORO-METHANE AND 1,1-DIFLUOROETHANE, AZEOTROPIC MIXTURE with approximately 74% dichlorodifluoromethane (REFRIGERANT GAS R500)	2A	(1),(2),(3),(5)		2.2	10	1.01	n
2676	STIBINE	2TF	(1),(5)		2.0	5	1.2	e, l, n
2901	BROMINE CHLORIDE	2TOC	(1),(2),(3),(5)		1.0	3	1.5	a
3057	TRIFLUOROACETYL CHLORIDE	2TC	(1),(2),(3),(5)		1.7	3	1.17	n
3070	ETHYLENE OXIDE AND DICHLORODIFLUORO-METHANE MIXTURE with not more than 12.5% ethylene oxide	2A	(1),(2),(3),(5)		1.8	10	1.09	n
3083	PERCHLORYL FLUORIDE	2TO	(1),(2),(3),(5)		3.3	5	1.21	k
3153	PERFLUORO(METHYL VINYL ETHER)	2F	(1),(2),(3),(5)		2.0	10	0.75	n
3154	PERFLUORO(ETHYL VINYL ETHER)	2F	(1),(2),(3),(5)		1.0	10	0.98	n
3156	COMPRESSED GAS, OXIDIZING, N.O.S.	1O	(1),(2),(3),(5)	1.5		10	2/3 T.P.	z
3157	LIQUEFIED GAS, OXIDIZING, N.O.S.	2O	(1),(2),(3),(5)			10		z
3159	1,1,1,2-TETRAFLUOROETHANE (REFRIGERNAT GAS R134a)	2A	(1),(2),(3),(5)		2.2	10	1.04	n
3160	LIQUEFIED GAS, TOXIC, FLAMMABLE, N.O.S.	2TF	(1),(2),(3),(5)			5		n, z
3161	LIQUEFIED GAS, FLAMMABLE, N.O.S.	2F	(1),(2),(3),(5)			10		n, z
3162	LIQUEFIED GAS, TOXIC, N.O.S.	2T	(1),(2),(3),(5)			5		z
3163	LIQUEFIED GAS, N.O.S.	2A	(1),(2),(3),(5)			10		n, z
3220	PENTAFLUOROETHANE (REFRIGERANT GAS R125)	2A	(1),(2),(3),(5)		4.9	10	0.95	g, n
			(1),(2),(3),(5)		3.6	10	0.72	g, n
3252	DIFLUOROMETHANE (REFRIGERANT GAS R32)	2F	(1),(2),(3),(5)		4.8	10	0.78	n
3296	HEPTAFLUOROPROPANE (REFRIGERANT GAS R227)	2A	(1),(2),(3),(5)		1.5	10	1.2	n
3297	ETHYLENE OXIDE AND CHLOROTETRAFLUORO-ETHANE MIXTURE with not more than 8.8% ethylene oxide	2A	(1),(2),(3),(5)		1.0	10	1.16	n
3298	ETHYLENE OXIDE AND PENTAFLUOROETHANE MIXTURE with not more than 7.9% ethylene oxide	2A	(1),(2),(3),(5)		2.6	10	1.02	n

P200	PACKING INSTRUCTION (cont'd)							P200
UN No.	NAME AND DESCRIPTION	CLASSIFI-CATION CODE	PACKING	TEST			FILLING	SPECIAL
			TYPE OF RECEPTACLE	PRESSURE (T.P.)		PERIOD (years)[a]	MAX. FILL. DEGREE kg/l or MAX. FILL. PRESSURE MPa	REQUIRE-MENTS
				X FILL. PRESS.	MPa			
3299	ETHYLENE OXIDE AND TETRAFLUOROETHANE MIXTURE with not more than 5.6% ethylene oxide	2A	(1),(2),(3),(5)		1.7	10	1.03	n
3300	ETHYLENE OXIDE AND CARBON DIOXIDE MIXTURE with more than 87% ethylene oxide	2TF	(1),(2),(3),(5)		2.8	5	0.73	f, n
3303	COMPRESSED GAS, TOXIC, OXIDIZING, N.O.S.	1TO	(1),(2),(3),(5)	1.5		5	2/3 T.P.	z
3304	COMPRESSED GAS, TOXIC, CORROSIVE, N.O.S.	1TC	(1),(2),(3),(5)	1.5		3	2/3 T.P.	z
3305	COMPRESSED GAS, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.	1TFC	(1),(2),(3),(5)	1.5		3	2/3 T.P.	z
3306	COMPRESSED GAS, TOXIC, OXIDIZING, CORROSIVE, N.O.S.	1TOC	(1),(2),(3),(5)	1.5		3	2/3 T.P.	z
3307	LIQUEFIED GAS, TOXIC, OXIDIZING, N.O.S.	2TO	(1),(2),(3),(5)			5		z
3308	LIQUEFIED GAS, TOXIC, CORROSIVE, N.O.S.	2TC	(1),(2),(3),(5)			3		z, n
3309	LIQUEFIED GAS, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.	2TFC	(1),(2),(3),(5)			3		n, z
3310	LIQUEFIED GAS, TOXIC, OXIDIZING, CORROSIVE, N.O.S.	2TOC	(1),(2),(3),(5)			3		z
3318	AMMONIA SOLUTION, relative density less than 0.880 at 15EC in water, with more than 50% ammonia	4TC	(1),(2),(3),(5)			5		j
3337	REFRIGERANT GAS R404A	2A	(1),(2),(3),(5)		3.5	10	0.84	n
3338	REFRIGERANT GAS R407A	2A	(1),(2),(3),(5)		3.5	10	0.95	n
3339	REFRIGERANT GAS R407B	2A	(1),(2),(3),(5)		3.7	10	0.95	n
3340	REFRIGERANT GAS R407C	2A	(1),(2),(3),(5)		3.4	10	0.95	n
3354	INSECTICIDE GAS, FLAMMABLE, N.O.S.	2F	(1),(2),(3),(5)			10		n, z
3355	INSECTICIDE GAS, TOXIC, FLAMMABLE, N.O.S.	2TF	(1),(2),(3),(5)			5		n, z

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

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



c *Considered as pyrophoric.*

P201	PACKING INSTRUCTION	P201

This instruction applies to UN Nos. 3167, 3168 and 3169.

The following packagings are authorized:

(1) Compressed gas cylinders and gas receptacles conforming to the construction, testing and filling requirements approved by the competent authority;

(2) 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;

(3) 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

This instruction applies to UN No. 3353.

The following packagings are authorized:

Packagings conforming to the packing group III performance level.

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

Additional requirements:

1. The packaging shall be designed and constructed to prevent inadvertent operation during normal conditions of carriage.

2. The pressure vessel shall be in accordance with the requirements of the competent authority for the gas(es) contained in the pressure vessel.

Type of packagings: Cryogenic receptacles

General instructions:

(1) The special packing provisions of 4.1.6 shall be met.

(2) The receptacles shall be so insulated that they cannot become coated with dew or hoar-frost.

(3) In the case of receptacles intended for the carriage of gases of classification code 3O, the material used to ensure the leakproofness of the joints or for the maintenance of the closures shall be compatible with the contents.

Particular instructions for closed cryogenic receptacles:

(4) The receptacles shall be fitted with safety valves.

(5) For refrigerated liquefied gases of classification codes 3A and 3O the degree of filling, at the filling temperature and at a pressure of 0.1 MPa (1 bar) shall not exceed 98% of the capacity.

(6) For refrigerated liquefied gases of 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 would reach 95% of the capacity at that temperature.

(7) Receptacles shall be subjected to periodic inspections in accordance with the provisions of 6.2.1.6.

(8) Periodic inspections shall be carried out every 10 years.
By derogation from this date, the periodic inspection of receptacles which make use of composite materials (composite receptacles) may be carried out at intervals determined by the competent authority of the Contracting Party to ADR which has approved the technical code for the design and construction.

Particular instructions for open cryogenic receptacles:

(9) Open cryogenic receptacles are not allowed for flammable refrigerated liquefied gases of classification code 3F, and UN No. 2187 carbon dioxide, refrigerated liquid and its mixtures.

(10) The receptacles shall be equipped with devices which prevent the liquid from splashing out.

(11) Glass receptacles shall be double-walled vacuum insulated and surrounded by an absorbent insulating material; they shall be protected by iron-wire baskets and placed in metal cases. The metal cases for the glass receptacles and the other receptacles shall be fitted with means of handling.

(12) The openings of the receptacles shall be fitted with devices allowing gases to escape, preventing any splashing out of the liquid, and so fixed that they cannot fall out.

(13) In the case of UN No. 1073 oxygen refrigerated liquid and mixtures thereof, the devices referred to above and the absorbent insulating material surrounding the glass receptacles shall be made of incombustible materials.

Reference to standards (*reserved*)

P204	PACKING INSTRUCTION	P204

This packing instruction applies to UN No. 1950 aerosols and UN No. 2037 receptacles, small, containing gas (gas cartridges)

(1) The special packing provisions of **4.1.6** shall be met when applicable.

(2) Receptacles shall be so closed and leakproof as to prevent escape of the gases.

(3) For UN No. 1950 aerosols and UN No. 2037 receptacles, small, containing gas (gas cartridges):

(a) the internal pressure at 50 °C shall exceed neither two-thirds of the test pressure nor 1.32 MPa (13.2 bar).
(b) they shall be so filled that at 50 °C the liquid phase does not exceed 95% of their capacity.
(c) they shall satisfy a tightness (leakproofness) test in a hot-water bath:

- The temperature of the bath and the duration of the test shall be such that the internal pressure of each receptacle reaches at least 90% of the internal pressure that would be reached at 55 °C;
- However, if the contents are sensitive to heat or if the receptacles are made of a plastics material which softens at this temperature, the temperature of the bath shall be from 20 °C to 30 °C; in addition, one receptacle out of every 2000 shall be tested at the temperature prescribed in the foregoing indent;
- No leakage or permanent deformation shall occur. The provision concerning permanent deformation is not applicable to receptacles which, being made of plastics material, soften.

The requirements of instruction P204 (3)(c) are deemed to be met if the following standards are complied with:

- for aerosol dispensers (UN No. 1950 aerosols):
  Annex to Council Directive 75/324/EEC [a] as amended by Commission Directive 94/1/EC [b];
- for UN No. 2037 gas cartridges containing UN No. 1965 hydrocarbon gas mixture, liquefied:
  EN 417:1992 Non-refillable metallic gas cartridges for liquefied petroleum gases, with or without a valve, for use with portable appliances - Construction, inspection, testing and marking.

(4) For UN No. 1950 aerosols, only non-pyrophoric and non-toxic gases may be used as propellants, as constituents of propellants, or as filler gases.

(5) All compressed and liquefied gases, except the pyrophoric gases and very toxic gases (gases with an LC50 lower than 200 ppm), shall be accepted as filling gases for UN No. 2037 gas cartridges.

(6) Aerosols and gas cartridges shall be placed in wooden boxes or strong fibreboard or metal boxes; UN No. 1950 aerosols made of glass or synthetic material and liable to shatter shall be separated from one another by interposed sheets of fibreboard or of another suitable material.

(7) A package shall not weigh more than 50 kg if fibreboard boxes are used or more than 75 kg if other packagings are used.

(8) In the case of carriage by full load, metal articles may also be packed as follows: the articles shall be grouped together in units on trays and held in position with an appropriate plastics cover; these units shall be stacked and suitably secured on pallets.

[a] *European Communities Council Directive 75/324/EEC of 20 May 1975 on the approximation of the laws of the Member States (of the European Communities) concerning packagings for aerosols, published in the Official Journal of the European Communities No. L147 of 9 June 1975.*

[b] *European Commission Directive 94/1/EC of 6 January 1994 to align with Directive 75/324/EEC on the approximation of the laws of the Member States (of the European Union) concerning aerosol packagings to technical progress, published in the Official Journal of the European Communities No. L23 of 28 January 1994.*

P205	PACKING INSTRUCTION	P205

This packing instruction applies to UN No. 1057 lighters or lighter refills

(1)	The special packing provisions of **4.1.6** shall be met when applicable.
(2)	The articles shall comply with the provisions of the country in which they were filled.
(3)	Lighters and lighter refills shall be provided with protection against inadvertent discharge.
(4)	The liquid portion of the gas shall not exceed 85% of the capacity of the receptacle at 15 °C.
(5)	The receptacles, including the closures, shall be capable of withstanding an internal pressure of the liquefied petroleum gas at 55 °C.
(6)	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 carriage.
(7)	The lighters or lighter refills shall be tightly packed to prevent inadvertent operation of the release devices.
(8)	Lighters shall contain not more than 10 g of liquefied petroleum gas. Lighter refills shall contain not more than 65 g of liquefied petroleum gas.
(9)	The lighters and lighter refills shall be packed in strong outer packagings conforming to 6.1.4 consisting of natural wood boxes (4C1, 4C2), plywood boxes (4D) or reconstituted wood boxes (4F) with a maximum gross mass of 75 kg, or fibreboard boxes (4G) with a maximum gross mass of 40 kg. The packagings shall be tested and approved in accordance with Chapter 6.1 for packing group II. Nevertheless, if these packagings have a maximum gross mass of not more than 2kg, compliance with the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.5 to 4.1.1.7.

P206	**PACKING INSTRUCTION**	**P206**
This packing instruction applies to UN No. 3150 devices, small, hydrocarbon gas powered or hydrocarbon gas refills for small devices		
(1)	The special packing provisions of **4.1.6** when applicable shall be met.	
(2)	The articles shall comply with the provisions of the country in which they were filled.	
(3)	The devices and refills shall be packed in outer packagings conforming to 6.1.4 tested and approved in accordance with Chapter 6.1 for packing group II.	

P300	PACKING INSTRUCTION	P300

This instruction applies to UN No. 3064.

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

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.

Additional requirements:

1. Metal cans shall be completely surrounded with absorbent cushioning material

2. Wooden boxes shall be completely lined with suitable material impervious to water and nitroglycerin.

P301	PACKING INSTRUCTION	P301

This instruction applies to UN No. 3165.

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

(1) 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 dispatch 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;

(2) 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 2 860 kPa and a minimum burst gauge pressure of 5 170 kPa.
Each vessel shall be leak-checked during manufacture and before dispatch 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

This instruction applies to UN No. 3269.

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

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 g per inner packaging if solid.

P400	PACKING INSTRUCTION	P400

The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met (see also the Table in 4.1.4.4):

(1) Steel gas cylinders and gas receptacles, which shall comply with the appropriate requirements in the Table of 4.1.4.4. 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 carried so that the pressure relief devices remain in the vapour space of the cylinder during normal conditions of handling and carriage;

(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 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, provided that the general provisions of **4.1.1** and **4.1.3** are met (see also the Table in 4.1.4.4):

(1) Steel gas cylinders and gas receptacles, which shall comply with the appropriate requirements in the Table of 4.1.4.4. 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 carried so that the pressure relief devices remain in the cylinder during normal conditions of handling and carriage;

		Inner packaging	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

P402	PACKING INSTRUCTION	P402

The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met (see also the Table in 4.1.4.4):

(1) Steel gas cylinders and gas receptacles, which shall comply with the appropriate requirements in the Table of 4.1.4.4. 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 the pressure relief devices remain in the vapour space of the cylinder during normal conditions of handling and carriage. Filling shall not be greater than 90% of the capacity of the cylinder;

		Maximum net mass	
		Inner packaging	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.	10 kg (glass) 15 kg (metal or plastics)	125 kg 125 kg

Special packing provision

PP78 For UN No. 3130, the openings of receptacles shall be tightly closed by means of two devices in series, one of which shall be screwed or secured in an equivalent manner.

P403	PACKING INSTRUCTION	P403
The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:		
Combination packagings:		
Inner packagings	**Outer packagings**	**Maximum net mass**
Glass 2 kg Plastics 15 kg Metal 20 kg Inner packagings shall have threaded closures	**Drums** steel (1A2) aluminium (1B2) metal, other than steel or aluminium (1N2) plastics (1H2) plywood (1D) fibre (1G) **Boxes** steel (4A) aluminium (4B) natural wood (4C1) natural wood with sift proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) expanded plastics (4H1) solid plastics (4H2) **Jerricans** steel (3A2) aluminium (3B2) plastics (3H2)	 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 250 kg 250 kg 250 kg 125 kg 125 kg 60 kg 250 kg 120 kg 120 kg 120 kg
Single packagings:		**Maximum net mass**
Drums steel(1A1, 1A2) aluminium (1B1, 1B2) metal other than steel or aluminium (1N1, 1N2) plastics (1H1, 1H2) **Jerricans** steel (3A1, 3A2) aluminium (3B1, 3B2) plastics (3H1, 3H2) **Composite packagings** plastics receptacle with outer steel or aluminium drums (6HA1 or 6HB1) plastics receptacle with outer fibre, plastics or plywood drums (6HG1, 6HH1 or 6HD1) plastics receptacle with outer steel or aluminium crate or box or with outer wooden, plywood, fibreboard or solid plastics boxes (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2)		 250 kg 250 kg 250 kg 250 kg 120 kg 120 kg 120 kg 250 kg 75 kg 75 kg
Additional requirement: Packagings shall be hermetically sealed.		

P404	PACKING INSTRUCTION	P404

This instruction applies to pyrophoric solids: UN Nos: 1370, 1383, 1854, 1855, 2005, 2008, 2545, 2546, 2846, 2881, 3052, 3200 and 3203.

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

(1) Combination packagings

Outer packagings:	(1A2, 1B2, 1N2, 1H2, 1D, 4A, 4B, 4C1, 4C2, 4D, 4F or 4H2)
Inner packagings:	Metal packagings with a capacity of not more than 15kg each. Inner packagings shall be hermetically sealed and have threaded closures;

(2) Metal packagings: (1A1, 1A2, 1B1, 1N1, 1N2, 3A1, 3A2, 3B1 and 3B2)
Maximum gross mass: 150 kg;

(3) Composite packagings: Plastics receptacle with outer steel or aluminium drum (6HA1 or 6HB1)
Maximum gross mass: 150 kg.

P405	PACKING INSTRUCTION	P405

This instruction applies to UN No. 1381.

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

(1) For UN No. 1381, phosphorus, wet:

(a) Combination packagings

Outer packagings: (4A, 4B, 4C1, 4C2, 4D or 4F)
Maximum net mass: 75 kg

Inner packagings:

(i) hermetically sealed metal cans, with a maximum net mass of 15kg; or

(ii) 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); maximum net mass: 400 kg
Jerricans (3A1 or 3B1); maximum net mass: 120 kg.

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

(2) For UN No. 1381, dry phosphorus:

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

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

P406	PACKING INSTRUCTION	P406

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

(1) Combination packagings

outer packagings: (4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2, 1G, 1D, 1H2 or 3H2)

inner packagings: water-resistant packagings;

(2) 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) 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 with outer steel or aluminium drums (6HA1 or 6HB1), plastics receptacle with outer fibre, plastics or plywood drums (6HG1, 6HH1 or 6HD1), plastics receptacle with outer steel or aluminium crate or box or with outer wooden, plywood, fibreboard or solid plastics boxes (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2).

Additional requirements:

1. Packagings shall be designed and constructed to prevent the loss of water or alcohol content or the content of the phlegmatizer.

2. Packagings shall be so constructed and closed so as to avoid an explosive overpressure or pressure build-up of more than 300 kPa (3 bar).

3. The type of packaging and maximum permitted quantity per package are limited when this packing instruction is applied in accordance with special provisions 15 or 18 of Chapter 3.3.

Special packing provisions:

PP24 For UN No. 2852, the quantity carried shall not exceed 500 g per package.

PP25 For UN No. 1347, the quantity carried shall not exceed 15 kg per package.

PP26 For UN Nos. 1310, 1320, 1321, 1322, 1344, 1347, 1348, 1349, 1517, 2907, 3317 and 3344 packagings shall be lead free.

P407	PACKING INSTRUCTION	P407

This instruction applies to UN Nos. 1331, 1944, 1945 and 2254.

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

Combination packagings comprising securely closed inner packagings to prevent accidental ignition under normal conditions of transport. The maximum net mass of the outer packagings shall not exceed 45 kg except for fibreboard boxes which shall not exceed 30 kg.

Additional requirement:

Matches shall be tightly packed.

Special packing provision:

PP27 UN No. 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. Inner packagings shall not contain more than 700 strike-anywhere matches.

P408	PACKING INSTRUCTION	P408

This instruction applies to UN No. 3292.

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

(1) For cells:

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 during carriage. Packagings shall conform to the packing group II performance level;

(2) For batteries:

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.

Additional requirement:

Batteries shall be protected against short circuit and shall be isolated in such a manner as to prevent short circuits.

P409	PACKING INSTRUCTION	P409

This instruction applies to UN Nos. 2956, 3242 and 3251.

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

(1) Fibre drum (1G) which may be fitted with a liner or coating; maximum net mass: 50 kg;

(2) Combination packagings: Fibreboard box (4G) with a single inner plastic bag; maximum net mass: 50 kg;

(3) Combination packagings: Fibreboard box (4G) or fibre drum (1G) with plastics inner packagings each containing a maximum of 5 kg; maximum net mass: 25 kg.

P410	PACKING INSTRUCTION		P410
The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:			
Combination packagings:			
Inner packagings	**Outer packagings**	**Maximum net mass**	
		Packing group II	**Packing group III**
Glass 10 kg Plastics [a] 30 kg Metal 40 kg Paper [a, b] 10 kg Fibre [a, b] 10 kg [a] *These packagings shall be sift-proof.* [b] *These inner packagings shall not be used when the substances being carried may become liquid during carriage.*	**Drums** steel (1A2) aluminium (1B2) metal other than steel or aluminium (1N2) plastics (1H2) plywood (1D) fibre (1G) [a] **Boxes** steel (4A) aluminium (4B) natural wood (4C1) natural wood with sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) [a] expanded plastics (4H1) solid plastics (4H2) **Jerricans** steel (3A2) aluminium (3B2) plastics (3H2)	 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 60 kg 400 kg 120 kg 120 kg 120 kg	 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 400 kg 60 kg 400 kg 120 kg 120 kg 120 kg
Single packagings:			
Drums steel (1A1 or 1A2) aluminium (1B1 or 1B2) metal other than steel or aluminium (1N1 or 1N2) plastics (1H1 or 1H2) **Jerricans** steel (3A1 or 3A2) aluminium (3B1 or 3B2) plastics (3H1 or 3H2)		 400 kg 400 kg 400 kg 400 kg 120 kg 120 kg 120 kg	 400 kg 400 kg 400 kg 400 kg 120 kg 120 kg 120 kg

P410	PACKING INSTRUCTION (cont'd)	P410
Single packagings (cont'd):	**Packing group II**	**Packing group III**
Boxes		
steel (4A) [c]	400 kg	400 kg
aluminium (4B) [c]	400 kg	400 kg
natural wood (4C1) [c]	400 kg	400 kg
plywood (4D) [c]	400 kg	400 kg
reconstituted wood (4F) [c]	400 kg	400 kg
natural wood with sift-proof walls (4C2) [c]	400 kg	400 kg
fibreboard (4G) [c]	400 kg	400 kg
solid plastics (4H2) [c]	400 kg	400 kg
Bags		
Bags (5H3, 5H4, 5L3, 5M2) [c, d]	50 kg	50 kg
Composite packagings		
plastics receptacle with outer steel, aluminium, plywood, fibre or plastics drum (6HA1, 6HB1, 6HG1, 6HD1, or 6HH1)	400 kg	400 kg
plastics receptacle with outer steel or aluminium crate or box, or outer wooden, plywood, fibreboard or solid plastics box (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2)	75 kg	75 kg
glass receptacle with outer steel, aluminium, plywood or fibre drum (6PA1, 6PB1, 6PD1 or 6PG1) or outer steel or aluminium crate or box or with outer wooden or fibreboard box or with outer wickerwork hamper (6PA2, 6PB2, 6PC, 6PD2, or 6PG2) or with outer solid or expanded plastics packaging (6PH1 or 6PH2)	75 kg	75 kg

[c] *These packagings shall not be used when the substances being carried may become liquid during carriage.*

[d] *These packagings shall only be used for packing group II substances when carried in a closed vehicle or container.*

Special packing provisions:

PP39 For UN No. 1378, for metal packagings a venting device is required.

PP40 For UN Nos. 1326, 1352, 1358, 1395, 1396, 1404, 1436, 1437, 1485, 1495, 1871, 2805, 3182 and 3247, packing group II, bags are not allowed.

P411	PACKING INSTRUCTION	P411
This instruction applies to UN No. 3270.		
The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met: (1) Fibreboard box with a maximum gross mass of 30 kg; (2) Other packagings, provided that explosion is not possible by reason of increased internal pressure. Maximum net mass shall not exceed 30 kg.		

P500	PACKING INSTRUCTION	P500
This instruction applies to UN No. 3356.		
The general provisions of **4.1.1** and **4.1.3** shall be met. Packagings shall conform to the packing group II performance level. The generator(s) shall be carried in a package which meets the following requirements when one generator in the package is actuated: (a) Other generators in the package will not be actuated; (b) Packaging material will not ignite; and (c) The outside surface temperature of the completed package shall not exceed 100 °C.		

P501	PACKING INSTRUCTION	P501

This instruction applies to UN No. 2015.

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

Combination packagings:	**Inner packaging maximum capacity**	**Outer packaging maximum net mass**
(1) Boxes (4A, 4B, 4C1, 4C2, 4D, 4H2) or drums (1A2, 1B2, 1N2, 1H2, 1D) or jerricans (3A2, 3B2, 3H2) with glass, plastics or metal inner packagings	5 *l*	125 kg
(2) Fibreboard box (4G) or fibre drum (1G), with plastics or metal inner packagings each in a plastics bag	2 *l*	50 kg

Single packagings:	**Maximum capacity**
Drums	
steel (1A1) aluminium (1B1) metal other than steel or aluminium (1N1) plastics (1H1)	250 *l*
Jerricans steel (3A1) aluminium (3B1) plastics (3H1)	60 *l*
Composite packagings	
plastics receptacle with outer steel or aluminium drum (6HA1, 6HB1)	250 *l*
plastics receptacle with outer fibre, plastics or plywood drum (6HG1, 6HH1, 6HD1)	250 *l*
plastics receptacle with outer steel or aluminium crate or box or plastics receptacle with outer wooden, plywood, fibreboard or solid plastics box (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2)	60 *l*
glass receptacle with outer steel, aluminium, fibre, plywood, solid plastics or expanded plastics drum (6PA1, 6PB1, 6PG1, 6PD1, 6PH1 or 6PH2) or with outer steel or aluminium crate or box or with outer wooden or fibreboard box or with outer wickerwork hamper (6PA2, 6PB2, 6PC, 6PG2 or 6PD2)	60 *l*

Additional requirements:

1. Packagings shall have a maximum filling degree of 90%.

2. Packagings shall be vented.

P502	PACKING INSTRUCTION	P502
The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:		
Combination packagings:		
Inner packagings	**Outer packagings**	**Maximum net mass**
Glass 5 *l* Metal 5 *l* Plastics 5 *l*	**Drums**	
	steel (1A2)	125 kg
	aluminium (1B2)	125 kg
	metal other than steel or aluminium (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:		**Maximum capacity**
Drums steel (1A1) aluminium (1B1) plastics (1H1)		250 *l*
Jerricans steel (3A1) aluminium (3B1) plastics (3H1)		60 *l*
Composite packagings		
plastics receptacle with outer steel or aluminium drum (6HA1, 6HB1)		250 *l*
plastics receptacle with outer fibre, plastics or plywood drum (6HG1, 6HH1, 6HD1)		250 *l*
plastics receptacle with outer steel or aluminium crate or box or plastics receptacle with outer wooden, plywood, fibreboard or solid plastics box (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2)		60 *l*
glass receptacle with outer steel, aluminium, fibre, plywood, solid plastics or expanded plastics drum (6PA1, 6PB1, 6PG1, 6PD1, 6PH1 or 6PH2) or with outer steel or aluminium crate or box or with outer wooden or fibreboard box or with outer wickerwork hamper (6PA2, 6PB2, 6PC, 6PG2 or 6PD2)		60 *l*
Special packing provision:		
PP28 For UN No. 1873, only glass inner packagings are authorized for combination packagings.		

P503	PACKING INSTRUCTION	P503
The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:		
Combination packagings:		
Inner packagings	**Outer packagings**	**Maximum net mass**
Glass 5 kg. Metal 5 kg Plastics 5 kg	**Drums** steel (1A2) aluminium (1B2) metal other than steel or aluminium (1N2) plastics (1H2) plywood (1D) fibre (1G) **Boxes** steel (4A) aluminium (4B) natural wood (4C1) natural wood with sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) expanded plastics (4H1) solid plastics (4H2)	 125kg 125kg 125kg 125kg 125kg 125kg 125 kg 125 kg 125 kg 125 kg 125 kg 125 kg 40 kg 60 kg 125 kg
Single packagings:		
Metal drums (1A1, 1A2, 1B1, 1B2, 1N1 or 1N2) with a maximum net mass of 250 kg. 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, provided that the general provisions of **4.1.1** and **4.1.3** are met:		
Combination packagings:		**Maximum net mass**
(1)	Glass receptacles with a maximum capacity of 5 litres in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H2 outer packagings	75 kg
(2)	Plastics 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
(3)	Metal receptacles with a maximum capacity of 40 litres in 1G, 4F or 4G outer packagings	125 kg
(4)	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*
steel, removable head (1A2)		250 *l*
aluminium, non-removable head (1B1)		250 *l*
aluminium, removable head (1B2)		250 *l*
metal other than steel or aluminium, non-removable head (1N1)		250 *l*
metal other than steel or aluminium, removable head (1N2)		250 *l*
plastics, non-removable head (1H1)		250 *l*
plastics, removable head (3H2)		250 *l*
Jerricans		
steel, non-removable head (3A1)		60 *l*
steel, removable head (3A2)		60 *l*
aluminium, non-removable head (3B1)		60 *l*
aluminium, removable head (3B2)		60 *l*
plastics, non-removable head (3H1)		60 *l*
plastics, removable head (3H2)		60 *l*
Composite packagings:		
plastics receptacle with outer steel or aluminium drum (6HA1, 6HB1)		250 *l*
plastics receptacle with outer fibre, plastics or plywood drum (6HG1, 6HH1, 6HD1)		120 *l*
plastics receptacle with outer steel or aluminium crate or box or plastics receptacle with outer wooden, plywood, fibreboard or solid plastics box (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2)		60 *l*
glass receptacle with outer steel, aluminium, fibre, plywood, solid plastics or expanded plastics drum (6PA1, 6PB1, 6PG1, 6PD1, 6PH1 or 6PH2) or with outer steel or aluminium crate or box or with outer wooden fibreboard box or with outer wickerwork hamper (6PA2, 6PB2, 6PC, 6PG2 or 6PD2)		60 *l*

Special packing provisions:

PP10 For UN No. 2014 PG II and UN No. 2984 PG III, the packaging shall be vented.

PP29 For UN No. 2014, maximum degree of filling shall be 90%.

P520 **PACKING INSTRUCTION** **P520**

This instruction applies to organic peroxides of Class 5.2 and self-reactive substances of Class 4.1

The packagings listed below are authorized provided the general provisions of **4.1.1** and **4.1.3** and special provisions of **4.1.7** are met.

The packing methods are designated OP1 to OP8. The packing methods appropriate for the individual currently assigned organic peroxides and self-reactive substances are listed in 4.1.7.1.3, 2.2.41.4 and 2.2.52.4. The quantities specified for each packing method are the maximum quantities authorized per package. The following packagings are authorized:

(1) 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);

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

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

Maximum quantity per packaging/package [a] for packing methods OP1 to OP8

Packing Method / **Maximum Quantity**	OP1	OP2 [a]	OP3	OP4 [a]	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 [b]
Maximum contents in litres for liquids [c]	0.5	-	5	-	30	60	60	225 [d]

[a] *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.*

[b] *60 kg for jerricans / 100 kg for boxes.*

[c] *Viscous substances shall be treated as solids when they do not meet the criteria provided in the definition for "liquids" presented in 1.2.1.*

[d] *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 maximum contents 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 shall also comply with the provisions given in 4.1.5.10 and 4.1.5.11.

Special packing provisions:

PP21 For certain self-reactive substances of types B or C, UN Nos. 3221, 3222, 3223, 3224, 3231, 3232, 3233 and 3234, a smaller packaging than that allowed by packing methods OP5 or OP6 respectively shall be used (see 4.1.6 and 2.2.41.4).

PP22 UN No. 3241, 2-Bromo-2-nitropropane-1, 3-diol, shall be packed in accordance with packing method OP6.

P600	PACKING INSTRUCTION	P600
This instruction applies to UN Nos. 1700, 2016 and 2017.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: Outer packagings (1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H2) meeting the packing group II performance level. The articles shall be individually packaged and separated from each other using partitions, dividers, inner packagings or cushioning material to prevent inadvertent discharge during normal conditions of carriage. Maximum net mass: 75 kg		

P601	PACKING INSTRUCTION	P601

The following packagings are authorized provided the general provisions of **4.1.1** and **4.1.3** are met (see also the Table of 4.1.4.4):

(1) Combination packagings consisting of glass inner packagings not exceeding 1 litre 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 vibration during carriage;

(2) Combination packagings consisting of metal inner packagings or additionally, for UN No. 1744 only, in polyvinylidene fluoride (PVDF) inner packagings, not exceeding 5 litres 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 carriage;

(3) Combination packagings:

Outer packagings: Plastic or steel drums, removable head (1A2 or 1H2) tested in accordance with the test requirements in 6.1.5 as combination packagings as assembled for carriage;

Inner packagings:

Drums and composite packagings (1A1, 1B1, 1N1, 1H1 or 6HA1) meeting the requirements of Chapter 6.1 for single packagings, subject to the following conditions:

(a) The hydraulic pressure test shall be conducted at a pressure of at least 0.3 MPa (gauge pressure);

(b) The design and production leakproofness tests shall be conducted at a test pressure of 30 kPa;

(c) They 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) Their capacity shall not exceed 125 litres; and

(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 carriage; and

(ii) provided with a cap seal;

(f) The inner packaging shall be tested periodically at least every 5 years according to (a) and (b);

(g) The complete packaging shall be visually inspected to the satisfaction of the competent authority at least every 3 years;

(h) The outer and inner packaging shall bear in clearly legible and durable characters:

(i) the date (month, year) of the initial test and the latest periodic test and inspection;

(ii) The stamp of the expert who carried out the test and inspection;

(4) Gas cylinders and gas receptacles, which shall comply with the appropriate requirements of the Table of 4.1.4.4.

P602	PACKING INSTRUCTION	P602

The following packagings are authorised provided the general provisions of **4.1.1** and **4.1.3** are met:

(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 vibration during carriage. Inner packagings shall not exceed 1 litre in capacity;

(2) Combination packagings consisting of metal inner packagings individually packed with absorbent material sufficient to absorb the entire 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 carriage. Inner packagings shall not exceed 5 litres in capacity;

(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 0.3 MPa (gauge pressure);

  (b) The design and production leakproofness tests shall be conducted at a test pressure of 30 kPa; and

  (c) 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 carriage; and
    (ii) provided with a cap seal;

(4) Gas cylinders and gas receptacles with a minimum test pressure of 1 MPa (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

This instruction applies to UN Nos. 2814 and 2900.

The following packagings are authorized provided the special packing provisions of **4.1.8** are met:

Packagings meeting the requirements of Chapter 6.3 and approved accordingly consisting of:

(a) Inner packagings comprising:

(i) leakproof primary receptacle(s);

(ii) a leakproof secondary packaging;

(iii) other than for solid infectious substances, 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.

Additional requirements:

1. 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.

2. Other than for exceptional consignments, e.g. whole organs which require special packaging, the following additional requirements shall apply:

(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 in accordance with the requirements of P200. The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the liquid nitrogen.

3. 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.

P621	PACKING INSTRUCTION	P621
This instruction applies to UN No. 3291.		
The following packagings are authorized provided the general provisions of **4.1.1** and **4.1.3** are met: (1) Rigid, leakproof packagings meeting the requirements of Chapter 6.1 for solids, at the packing group II performance level, provided there is sufficient absorbent material to absorb the entire amount of liquid present and the packaging is capable of retaining liquids; (2) For packages containing larger quantities of liquid, rigid packagings meeting the requirements of Chapter 6.1 at the packing group II performance level for liquids.		
Additional requirement: 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.		

P650	PACKING INSTRUCTION	P650
This instruction applies to diagnostic specimens		
Diagnostic specimens may be carried in either: (1) Packagings that meet the following conditions: (a) The primary receptacles do not contain more than 100 ml; (b) The outer packaging does not contain more than 500 ml; (c) The primary receptacles are leakproof; and (d) The packagings are in accordance with P620. However, it need not be subjected to the tests; or (2) Packagings that comply with standard EN 829:1996.		

P800	PACKING INSTRUCTION	P800

This instruction applies to UN Nos. 2809 and 2803.

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

(1) Cylinders in accordance with P200; or

(2) Steel flasks or bottles with threaded closures with a capacity not exceeding 2.5 l; or

(3) Combination packagings which conform to the following requirements:

(a) Inner packagings shall comprise glass, metal or rigid plastics intended to contain liquids with a maximum net mass of 15 kg each;

(b) The inner packagings shall be packed with sufficient cushioning material to prevent breakage;

(c) 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;

(d) The following outer packagings and maximum net masses are authorized:

Outer packaging:	**Maximum net mass**
Drums	
steel (1A2)	400 kg
metal other than steel or aluminium (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

Special packing provision:

PP41 For UN No. 2803, when it is necessary to carry gallium at low temperatures in order to maintain it in a completely solid state, the above packagings may be overpack ed 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

This instruction applies to new and used batteries assigned to UN Nos. 2794, 2795 or 3028.

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

(1) Rigid outer packagings;

(2) Wooden slatted crates;

(3) Pallets.

Additional requirements:

1. Batteries shall be protected against short circuits.

2. Batteries stacked shall be adequately secured in tiers separated by a layer of non conductive material.

3. Battery terminals shall not support the weight of other superimposed elements.

4. Batteries shall be packaged or secured to prevent inadvertent movement. Any cushioning material used shall be inert.

P801a	PACKING INSTRUCTION	P801a

This instruction applies to used batteries of UN Nos. 2794, 2795 , 2800 and 3028.

Stainless steel or solid plastics battery boxes of a capacity of up to 1 m3 are authorized provided the following provisions are met:

(a) The battery boxes shall be resistant to the corrosive substances contained in the storage batteries;

(b) Under normal conditions of carriage, no corrosive substance shall leak from the battery boxes and no other substance (e.g. water) shall enter the battery boxes. No dangerous residues of corrosive substances contained in the storage batteries shall adhere to the outside of the battery boxes;

(c) The battery boxes shall not be loaded with storage batteries to a height greater than the height of their sides;

(d) No storage battery containing substances or other dangerous goods which may react dangerously with one another shall be placed in a battery box;

(e) The battery boxes shall be either:

(i) covered; or

(ii) carried in closed or sheeted vehicles or containers.

P802	PACKING INSTRUCTION	P802

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

(1) Combination packagings:
Outer packagings: 1A2, 1B2, 1N2, 1H2, 1D, 4A, 4B, 4C1, 4C2, 4D, 4F, or 4H2;
maximum net mass: 75 kg.
Inner packagings: glass or plastics; maximum capacity: 10 litres;

(2) Combination packagings:
Outer packagings: 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2;
maximum net mass: 125 kg.
Inner packagings: metal; maximum capacity: 40 litres;

(3) Composite packagings: Glass receptacle with outer steel, aluminium, plywood or solid plastics drum (6PA1, 6PB1, 6PD1, or 6PH2) or with outer steel or aluminium crate or box or with outer wooden box or with outer wickerwork hamper (6PA2, 6PB2, 6PC or 6PD2); maximum capacity: 60 litres;

(4) Austenitic steel drums (1A1) with a maximum capacity of 250 litres;

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

P803	PACKING INSTRUCTION	P803

This instruction applies to UN No. 2028.

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

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

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

Maximum net mass: 75 kg.

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

P900	PACKING INSTRUCTION	P900
(Reserved)		

P901	PACKING INSTRUCTION	P901
This instruction applies to UN No. 3316.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: Packagings conforming to the performance level consistent with the packing group assigned to the kit as a whole (see 3.3.1, special provision 251). Maximum quantity of dangerous goods per outer packaging: 10 kg.		
Additional requirement: 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.		

P902	PACKING INSTRUCTION	P902
This instruction applies to UN No. 3268.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: Packagings conforming to the packing group III performance level. 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 carriage. The articles may also be carried unpackaged in dedicated handling devices, vehicles or containers when moved from where they are manufactured to an assembly plant.		

P903	PACKING INSTRUCTION	P903
This instruction applies to UN Nos. 3090 and 3091.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: Packagings conforming to the packing group II performance level. 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 carriage.		
Additional requirement: Batteries shall be protected against short circuit.		

P903a	PACKING INSTRUCTION	P903a

This instruction applies to used cells and batteries of UN Nos. 3090 and 3091.

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

Packagings conforming to the packing group II performance level.

Non-approved packagings shall, however, be permitted provided that:

- they meet the general provisions of 4.1.1 and 4.1.3;
- the cells and batteries are packed and stowed so as to prevent any risk of short circuits;
- the packages weigh not more than 30 kg.

Additional requirement:

Batteries shall be protected against short circuit.

P904	PACKING INSTRUCTION	P904

This 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;

(2) Packagings, which need not conform to the packaging test requirements of Part 6, but conforming 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 100 mm;

(3) For substances consigned in liquid nitrogen: Plastics primary receptacles capable of withstanding very low temperatures 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 in accordance with the requirements of P200. The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the liquid nitrogen.

P905	PACKING INSTRUCTION	P905

This instruction applies to UN Nos. 3072 and 2990.

Any suitable packaging is authorized, provided the general provisions of **4.1.1** and **4.1.3** are met, except that packagings need not conform to the 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 carried unpackaged.

Additional requirements:

1. 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 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 lithium 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.

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

P906	PACKING INSTRUCTION	P906

This instruction applies to UN Nos. 2315, 3151 and 3152.

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

(1) For liquids and solids containing or contaminated with PCBs: Packagings in accordance with P001 or P002, as appropriate;

(2) For transformers and condensers and other devices: 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.

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

Additional requirement:

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

R001	**PACKING INSTRUCTION**		**R001**
The following packagings are authorized provided the general provisions of **4.1.1** and **4.1.3** are met:			
Light gauge metal packagings	**Maximum capacity/maximum net mass**		
	Packing group I	**Packing group II**	**Packing group III**
non-removable head (0A1)	Not allowed	40 *l* / 50 kg	40 *l* / 50 kg
removable head (0A2) [a]	Not allowed	40 *l* / 50 kg	40 *l* / 50 kg
[a] *Not allowed for UN No. 1261 NITROMETHANE.*			
***NOTE 1**: This instruction applies to solids and liquids (provided the design type is tested and marked appropriately).* ***NOTE 2**: For Class 3, packing group II, these packagings may be used only for substances with no subsidiary risk and a vapour pressure of not more than 110 kPa at 50 °C and for slightly toxic pesticides.*			
Special packing provision: **RR3** For UN Nos. 1204 and 3256, light gauge metal packagings are not permitted.			

4.1.4.2 ***Packing instructions concerning the use of IBCs***

IBC01	**PACKING INSTRUCTION**	**IBC01**
The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met: Metal (31A, 31B and 31N).		
Additional requirement: Only liquids with a vapour pressure less than or equal to 110 kPa at 50 °C, or 130 kPa at 55 °C, are authorized.		
Special packing provision: **B12** For UN No. 3130, the openings of receptacles for this substance shall be tightly closed by means of two devices in series, one of which shall be screwed or secured in an equivalent manner.		

IBC02	PACKING INSTRUCTION	IBC02

The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met:

(1) Metal (31A, 31B and 31N);

(2) Rigid plastics (31H1 and 31H2);

(3) Composite (31HZ1).

Additional requirement:

Only liquids with a vapour pressure less than or equal to 110 kPa at 50 °C, or 130 kPa at 55 °C, are authorized.

Special packing provisions:

B5 For UN Nos. 1791, 2014 and 3149, IBCs shall be provided with a device to allow venting during carriage. The inlet to the venting device shall be sited in the vapour space of the IBC under maximum filling conditions during carriage.

B7 For UN Nos. 1222 and 1865, IBCs with a capacity greater than 450 litres are not permitted due to the substance's potential for explosion when carried in large volumes.

B8 The pure form of this substance shall not be transported in IBCs since it is known to have a vapour pressure of more than 110 kPa at 50 °C or 130 kPa at 55 °C.

B11 Bottom openings are permitted provided they are fitted with two closure devices in series.

IBC03	PACKING INSTRUCTION	IBC03

The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met:

(1) Metal (31A, 31B and 31N);

(2) Rigid plastics (31H1 and 31H2);

(3) Composite (31HZ1, 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2).

Additional requirement:

Only liquids with a vapour pressure less than or equal to 110 kPa at 50 °C, or 130 kPa at 55 °C, are authorized.

Special packing provision:

B8 The pure form of this substance shall not be carried in IBCs since it is known to have a vapour pressure of more than 110 kPa at 50 °C or 130 kPa at 55 °C.

IBC04	PACKING INSTRUCTION	IBC04
The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N).		
Special packing provision: **B1** For packing group I substances, IBCs shall be carried in closed vehicles or containers.		

IBC05	PACKING INSTRUCTION	IBC05
The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met: (1) Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); (2) Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); (3) Composite (11HZ1, 21HZ1 and 31HZ1).		
Special packing provisions: **B1** For packing group I substances, IBCs shall be carried in closed vehicles or containers. **B2** For packing group II solid substances, IBCs other than metal or rigid plastics IBCs shall be carried in closed vehicles or containers.		

IBC06	PACKING INSTRUCTION	IBC06
The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met: (1) Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); (2) Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); (3) Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2).		
Additional requirement: Composite IBCs 11HZ2, 21HZ2 and 31HZ2 shall not be used when the substances being carried may become liquid during carriage.		
Special packing provisions: **B1** For packing group I substances, IBCs shall be transported in closed vehicles or containers. **B2** For packing group II solid substances, IBCs other than metal or rigid plastics IBCs shall be carried in closed vehicles or containers.		

IBC07	PACKING INSTRUCTION	IBC07

The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met:

(1) Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N);

(2) Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2);

(3) Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2);

(4) Wooden (11C, 11D and 11F).

Additional requirement:

Liners of wooden IBCs shall be sift-proof.

Special packing provisions:

B1 For packing group I substances, IBCs shall be carried in closed vehicles or containers.

B2 For packing group II solid substances, IBCs other than metal or rigid plastics IBCs shall be carried in closed vehicles or containers.

IBC08	PACKING INSTRUCTION	IBC08

The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met:

(1) Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N);

(2) Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2);

(3) Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2);

(4) Fibreboard (11G);

(5) Wooden (11C, 11D and 11F);

(6) Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 and 13M2).

Special packing provisions:

B2 For packing group II solid substances, IBCs other than metal or rigid plastics IBCs shall be carried in closed vehicles or containers.

B3 Flexible IBCs shall be sift-proof and water-resistant or shall be fitted with a sift-proof and water-restistant liner.

B4 Flexible, fibreboard or wooden IBCs shall be sift-proof and water-resistant or shall be fitted with a sift-proof and water-resistant liner.

B6 For UN Nos. 1363, 1364, 1365, 1386, 1841, 2211, 2217, 2793 and 3314, IBCs are not required to meet the IBC testing requirements of Chapter 6.5.

IBC99	PACKING INSTRUCTION	IBC99

Only IBCs which are approved by the competent authority may be used.

IBC100	PACKING INSTRUCTION	IBC100

This instruction applies to UN Nos. 0082, 0241, 0331 and 0332.

The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** and special provisions of 4.1.5 are met:

(1) Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N);

(2) Flexible (13H2, 13H3, 13H4, 13L2, 13L3, 13L4 and 13M2);

(3) Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2);

(4) Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2).

Additional requirements:

1. IBCs shall only be used for free flowing substances.

2. Flexible IBCs shall only be used for solids.

Special packing provisions:

B9 For UN No. 0082, this packing instruction may only be used when the substances are mixtures of ammonium nitrate or other inorganic nitrates with other combustible substances which are not explosive ingredients. Such explosives shall not contain nitroglycerin, similar liquid organic nitrates, or chlorates. Metal IBCs are not authorized.

B10 For UN No. 0241, this packing instruction may only be used for substances which consist of water as an essential ingredient and high proportions of ammonium nitrate or other oxidizing substances some or all of which are in solution. The other constituents may include hydrocarbons or aluminium powder, but shall not include nitro-derivatives such as trinitrotoluene. Metal IBCs are not authorized.

IBC 520	PACKING INSTRUCTION				IBC520
This instruction applies to organic peroxides and self-reactive substances of type F.					
The IBCs listed below are authorized for the formulations listed, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** and special provisions of **4.1.7.2** are met. For formulations not listed below, only IBCs which are approved by the competent authority may be used (see 4.1.7.2.2).					
UN No.	**Organic peroxide**	**Type of IBC**	**Maximum quantity (litres)**	**Control temper-ature**	**Emer-gency temper-ature**
3109	**ORGANIC PEROXIDE, TYPE F, LIQUID** tert-Butyl hydroperoxide, not more than 72% with water	31A	1 250		
	tert-Butyl peroxyacetate, not more than 32% in diluent type A	31A 31HA1	1 250 1 000		
	tert-Butyl peroxy-3,5,5-trimethylhexanoate, not more than 32% in diluent type A	31A 31HA1	1 250 1 000		
	Cumyl hydroperoxide, not more than 90% in diluent type A	31HA1	1 250		
	Dibenzoyl peroxide, not more than 42% as a stable dispersion in water	31H1	1 000		
	Di-tert-butyl peroxide, not more than 52% in diluent type A	31A 31HA1	1 250 1 000		
	1,1-Di-(tert-butylperoxy) cyclohexane, not more than 42% in diluent type A	31H1	1 000		
	Dilauroyl peroxide, not more than 42%, stable dispersion, in water	31HA1	1 000		
	Isopropyl cumyl hydroperoxide, not more than 72% in diluent type A	31HA1	1 250		
	p-Menthyl hydroperoxide, not more than 72% in diluent type A	31HA1	1 250		
	Peroxyacetic acid, stabilized, not more than 17%	31H1 31HA1 31A	1 500 1 500 1 500		

3119	**ORGANIC PEROXIDE, TYPE F, LIQUID, TEMPERATURE CONTROLLED**				
	tert-Butyl peroxy-2-ethylhexanoate, not more than 32% in diluent type B	31HA1 31A	1 000 1 250	+30 °C +30 °C	+35 °C +35 °C
	tert-Butyl peroxyneodecanoate, not more than 32% in diluent type A stable dispersion, in water	31A	1 250	0 °C	+10 °C
	tert-Butyl peroxyneodecanoate, not more than 42% stable dispersion, in water	31A	1 250	- 5 °C	+ 5 °C
	tert-Butyl peroxypivalate, not more than 27% in diluent type B	31HA1 31A	1 000 1 250	+10 °C +10 °C	+15 °C +15 °C
	Cumyl peroxyneodecanoate, not more than 52%, stable dispersion, in water	31A	1 250	-15 °C	- 5 °C
	Di-(4-tert-butylcyclohexyl) peroxydicarbonate, not more than 42%, stable dispersion, in water	31HA1	1 000	+30 °C	+35 °C
	Dicetyl peroxydicarbonate, not more than 42%, stable dispersion, in water	31HA1	1 000	+30 °C	+35 °C
	Di-(2-ethylhexyl) peroxydicarbonate, not more than 52%, stable dispersion, in water	31A	1 250	-20 °C	-10 °C
	Dimyristyl peroxydicarbonate, not more than 42%, stable dispersion, in water	31HA1	1 000	+15 °C	+20 °C
	Di-(3,5,5-trimethylhexanoyl) peroxide, not more than 38% in diluent type A	31HA1 31A	1 000 1 250	+10 °C +10 °C	+15 °C +15 °C
	Di-(3,5,5-trimethylhexanoyl) peroxide, not more than 52%, stable dispersion, in water	31A	1 250	+10 °C	+15 °C
	1,1,3,3-Tetramethylbutyl peroxyneodecanoate, not more than 52%, stable dispersion, in water	31A	1 250	- 5 °C	+ 5 °C

Additional requirements:

1. IBCs shall be provided with a device to allow venting during carriage. The inlet to the pressure-relief device shall be sited in the vapour space of the IBC under maximum filling conditions during carriage.

2. To prevent explosive rupture of metal IBCs or composite IBCs with complete metal casing, the emergency-relief devices shall be designed to vent all the decomposition products and vapours evolved during self-accelerating decomposition or during a period of not less than one hour of fire-engulfment as calculated by the formula in 4.2.1.13.8. The control and emergency temperatures specified in this packing instruction are based on a non-insulated IBC. When consigning an organic peroxide in an IBC in accordance with this instruction, it is the responsibility of the consignor to ensure that:

   (a) the pressure and emergency relief devices installed on the IBC are designed to take appropriate account of the self-accelerating decomposition of the organic peroxide and of fire-engulfment; and

   (b) when applicable, the control and emergency temperatures indicated are appropriate, taking into account the design (e.g. insulation) of the IBC to be used.

IBC620	PACKING INSTRUCTION	IBC620
This instruction applies to UN No. 3291.		
The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met: Rigid, leakproof IBCs conforming to the packing group II performance level.		
Additional requirements: 1. There shall be sufficient absorbent material to absorb the entire amount of liquid present in the IBC. 2. IBCs shall be capable of retaining liquids. 3. IBCs intended to contain sharp objects such as broken glass and needles shall be resistant to puncture.		

4.1.4.3 ***Packing instructions concerning the use of large packagings***

LP01	**PACKING INSTRUCTION (LIQUIDS)**	**LP01**

The following large packagings are authorized provided the general provision of **4.1.1** and **4.1.3** are met:

Inner packagings	**Large outer packagings**	**Packing group I**	**Packing group II**	**Packing group III**
Glass 10 litre Plastics 30 litre Metal 40 litre	Steel (50A) Aluminium (50B) Metal other than steel or aluminium (50N) Rigid plastics (50H) Natural wood (50C) Plywood (50D) Reconstituted wood (50F) Fibreboard (50G)	Not allowed	Not allowed	Maximum capacity: 3 m^3

LP02	**PACKING INSTRUCTION (SOLIDS)**	**LP02**

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

Inner packagings		**Large outer packagings**	**Packing group I**	**Packing group II**	**Packing group III**
Glass	10kg	Steel (50A) Aluminium (50B) Metal other than steel or aluminium (50N) Rigid plastics (50H) Natural wood (50C) Plywood (50D) Reconstituted wood (50F) Fibreboard (50G)	Not allowed	Not allowed	Maximum capacity: 3 m^3
Plastics **[b]**	50kg				
Metal	50 kg				
Paper **[a, b]**	50 kg				
Fibre **[a, b]**	50 kg				

a *These inner packagings shall not be used when the substances being carried may become liquid during carriage.*

b *These inner packagings shall be sift-proof.*

LP99	**PACKING INSTRUCTION**	**LP99**

Only large packagings which are approved by the competent authority may be used (see 4.1.3.7).

LP101	PACKING INSTRUCTION	LP101
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** and special provisions of 4.1.5 are met:		
Inner packagings	**Intermediate packagings**	**Large packagings**
Not necessary	Not necessary	Steel (50A) Aluminium (50B) Metal other than steel or aluminium (50N) Rigid plastics (50H) Natural wood (50C) Plywood (50D) Reconstituted wood (50F) Fibreboard (50G)

Special packing provision:

L1 For UN Nos. 0006, 0009, 0010, 0015, 0016, 0018, 0019, 0034, 0035, 0038, 0039, 0048, 0056, 0137, 0138, 0168, 0169, 0171, 0181, 0182, 0183, 0186, 0221, 0243, 0244, 0245, 0246, 0254, 0280, 0281, 0286, 0287, 0297, 0299, 0300, 0301, 0303, 0321, 0328, 0329, 0344, 0345, 0346, 0347, 0362, 0363, 0370, 0412, 0424, 0425, 0434, 0435, 0436, 0437, 0438, 0451, 0488 and 0502:
Large and robust explosives articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems shall be protected against stimuli encountered during normal conditions of carriage. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for carriage unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling devices.

LP102	PACKING INSTRUCTION	LP102
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** and special provisions of **4.1.5** are met:		
Inner packagings	**Intermediate packagings**	**Outer packagings**
Bags water resistant **Receptacles** fibreboard metal plastics wood **Sheets** fibreboard, corrugated **Tubes** fibreboard	Not necessary	Steel (50A) Aluminium (50B) Metal other than steel or aluminium (50N) Rigid plastics (50H) Natural wood (50C) Plywood (50D) Reconstituted wood (50F) Fibreboard (50G)

LP621	PACKING INSTRUCTION	LP621
This instruction applies to UN No. 3291.		
The following large packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** and the special provisions of **4.1.8** are met: (1) For clinical waste placed in inner packagings: Rigid, leakproof large packagings conforming to the requirements of Chapter 6.6 for solids, at the packing group II performance level, provided there is sufficient absorbent material to absorb the entire amount of liquid present and the large packaging is capable of retaining liquids; (2) For packages containing larger quantities of liquid: Large rigid packagings conforming to the requirements of Chapter 6.6, at the packing group II performance level, for liquids.		
Additional requirement: Large 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 6.6.		

4.1.4.4 ***Particular requirements applicable to gas cylinders and gas receptacles***

When gas cylinders or gas receptacles are used as packaging for substances assigned to packing instructions P400, P401, P402 or P601, they shall be constructed, tested, filled and marked according to the corresponding requirements (PR1 to PR6) as mentioned in the table below for each UN number.

TABLE

LIST OF PARTICULAR REQUIREMENTS (PR)
FOR GAS CYLINDERS AND RECEPTACLES

Pressure receptacle requirements	**UN Nos.**	**Applicable construction, testing, filling and marking requirements**
PR1	1366 1370 1380 1389 1391 1411 1421 1928 2003 2445 2845 2870 3049 3050 3051 3052 3053 3076 3129 3130 3148 3194 3203 3207 3254	The substances classified under these UN numbers shall be packed in hermetically closing metal receptacles which are not affected by the contents and have a capacity of not more than 450 litres. The receptacles shall be subjected to the initial test and periodic tests every five years at a pressure of not less than 1MPa (10 bar) (gauge pressure). The receptacles shall not be filled to more than 90% of their capacity; however, a space of at least 5% shall remain empty for safety when the liquid is at an average temperature of 50 °C. During carriage, the liquid shall be under a layer of inert gas the gauge pressure of which shall be not less than 50 kPa (0.5 bar). The receptacles shall carry a data plate with the following particulars entered in a durable form: - substance or substances [a] accepted for carriage; - tare [b] of the receptacle, including accessories; - test pressure [b] (gauge pressure); - date (month, year) of the last test undergone; - stamp of the expert who carried out the test; - capacity [b] of the receptacle; - maximum mass of filling allowed [b]

[a] *The name may be replaced by a generic description covering substances of a similar nature and also compatible with the characteristics of the receptacle.*

[b] *The units of measurement to be added each time after the numerical values.*

Pressure receptacle requirements	UN Nos.	Applicable construction, testing, filling and marking requirements
PR2	1183 1242 1295 2988	The substances classified under these UN number shall be packed in corrosion-resistant steel receptacles with a maximum capacity of 450 litres. The closing device of the receptacle shall be protected by a cap. The receptacles shall be subjected to the initial test and periodic tests every five years at a pressure of not less than 0.4 MPa (4 bar) (gauge pressure). The maximum permissible mass of filling per litre of capacity for trichlorosilane, ethyldichlorosilane and methyldichlorosilane shall not exceed 1.14 kg, 0.93 kg or 0.95 kg respectively, if the filling is carried out by mass; if the filling is by volume, the degree of filling shall not exceed 85%. The receptacles shall also carry a plate showing the following particulars in a durable form: - description of the substance(s) accepted for carriage, or for chlorosilanes : "chlorosilanes, Class 4.3"; - tare [b] of the receptacle, including accessories; - test pressure [b] (gauge pressure); - date (month, year) of the last test undergone; - stamp of the expert who carried out the test; - capacity [b] of the receptacle; - maximum degree of filling allowed by mass [b] for each substance accepted for carriage.

[b] *The units of measurement to be added each time after the numerical values.*

Pressure receptacle requirements	UN Nos.	Applicable construction, testing, filling and marking requirements
PR3	1092 1251 1259 1605 1613 1994 3294	The substances classified under these UN numbers shall be packed in metal receptacles fitted with completely leakproof closing devices which shall, if necessary, be secured against mechanical damage by protective caps. Steel receptacles of a capacity not exceeding 150 litres shall have a minimum wall thickness of 3 mm, and larger steel receptacles and receptacles made of other materials shall have walls at least thick enough to guarantee equivalent mechanical strength. The maximum capacity of receptacles permitted shall be 250 litres. The mass of the contents shall be not more than 1 kg of liquid per litre of capacity. Before being used for the first time, the receptacles shall undergo a hydraulic pressure test at a pressure of not less than 1 MPa (10 bar) (gauge pressure). The pressure test shall be repeated every five years and shall include a meticulous inspection of the inside of the receptacle and a check of the tare. The receptacles shall bear the following particulars in clearly legible and durable characters: - substance or substances [a] accepted for carriage; - the name of the owner of the receptacle; - the tare [b] of the receptacle, including such fittings and accessories as valves, protective caps, etc; - the date (month, year) of the initial test and of the most recent test, and the stamp of the expert who carried out the test; - the maximum permissible mass of the contents of the receptacle in kg; - the internal pressure (test pressure) to be applied in the hydraulic pressure test.

[a] *The name may be replaced by a generic description covering substances of a similar nature and also compatible with the characteristics of the receptacle.*

[b] *The units of measurement to be added each time after the numerical values.*

Pressure receptacle requirements	UN Nos.	Applicable construction, testing, filling and marking requirements
PR4	1185	This substance shall be packed in steel receptacles of sufficient thickness, which shall be closed by a screw-threaded bung and a screw-threaded protective cap or equivalent device leakproof both to liquid and to vapour. The receptacles shall initially and periodically, at least every five years, be tested at a pressure of at least 1 MPa (10 bar) (gauge pressure) in accordance with 6.2.1.5 and 6.2.1.6. The mass of the contents shall not exceed 0.67 kg per litre of capacity. A package shall not weigh more than 75 kg. Receptacles shall bear, in clearly legible and durable characters: - the name or mark of the manufacturer and the number of the receptacle; - the word "ethyleneimine"; - the tare [b] of the receptacle and its maximum permitted mass[b] when filled; - the date (month and year) of the initial test and of the most recent test undergone; - the stamp of the expert who carried out the tests and examinations.

[b] *The units of measurement to be added each time after the numerical values.*

Pressure receptacle requirements	UN Nos.	Applicable construction, testing, filling and marking requirements
PR5	2480 2481	The substances classified under this UN number shall be packed in receptacles made of pure aluminium having a wall thickness of not less than 5 mm or in receptacles of stainless steel. The receptacles shall be fully welded. They shall initially and periodically, at least every five years, be tested at a pressure of at least 0.5 MPa (5 bar) (gauge pressure) in accordance with 6.2.1.5 and 6.2.1.6. They shall be so closed as to be leakproof by means of two closures one above the other, one of which shall be screw-threaded or secured in an equally effective manner. The degree of filling shall be not more than 90 %. Drums weighing more than 100 kg shall be fitted with rolling hoops or stiffening ribs. The receptacles shall bear, in clearly legible and durable characters: - the name or mark of the manufacturer and the number of the receptacle; - substance or substances [a] accepted for carriage; - the tare [b] of the receptacle and its maximum permitted mass when filled; - the date (month and year) of the initial test and of the most recent test undergone; - the stamp of the expert who carried out the tests and examinations.

[a] *The name may be replaced by a generic description covering substances of a similar nature and also compatible with the characteristics of the receptacle.*

[b] *The units of measurement to be added each time after the numerical values.*

Pressure receptacle requirements	UN No.	Applicable construction, testing, filling and marking requirements
PR6	1744	Bromine containing less than 0.005% water, or between 0.005% and 0.2% water, provided that in the latter case measures are taken to prevent corrosion of the lining of the receptacles, may be carried in receptacles satisfying the following conditions: (a) The receptacles shall be made of steel and be equipped with a leakproof lining made of lead or of some other material affording equivalent protection and with a hermetic closure; receptacles made of monel metal or nickel, or with a nickel lining, shall also be permitted; (b) The capacity of the receptacles shall not exceed 450 litres; (c) The receptacles shall not be filled to more than 92% of their capacity or more than 2.86 kg per litre of capacity; (d) The receptacles shall be welded and designed for a calculation pressure of not less than 2.1 MPa (21 bar) gauge pressure. The materials and workmanship shall in other respects meet the relevant requirements of Chapter 6.2. The initial test of unlined steel receptacles shall be subject to the requirements of 6.2.1.5; (e) The closures shall project as little as possible from the receptacle and be fitted with protective caps. The closures and caps shall be fitted with gaskets made of a material not capable of being attacked by bromine. The closures shall be in the upper part of the receptacles in such a manner that they can in no case be in permanent contact with the liquid phase; (f) The receptacles shall be provided with fittings enabling them to stand stably upright, and with lifting attachments (rings, flanges, etc.) at the top, which shall be tested at twice the working load. Before being put into service, the receptacles shall be subjected to a leakproofness test at a pressure of at least 200 kPa (2 bar) gauge pressure.

Pressure receptacle requirements	UN No.	Applicable construction, testing, filling and marking requirements
PR6 (cont'd)		The leakproofness test shall be repeated every two years and shall be accompanied by an internal inspection of the receptacle and a check of its tare. The test and the inspection shall be carried out under the supervision of an expert approved by the competent authority. The receptacles shall bear, in clearly legible and durable characters: - the name or the mark of the manufacturer and the number of the receptacle, - the word "Bromine", - tare [b] mass of the receptacle and the permissible maximum mass [b] of the filled receptacle, - date (month, year) of the initial test and of the latest periodical test, - stamp of the expert who carried out the tests and examinations.

[b] *The units of measurement to be added each time after the numerical values.*

4.1.5 Special packing provisions for goods of Class 1

4.1.5.1 The general provisions of Section 4.1.1 shall be met.

4.1.5.2 All packagings for Class 1 goods shall be so designed and constructed that:

(a) They will protect the explosives, prevent them escaping and cause no increase in the risk of unintended ignition or initiation when subjected to normal conditions of carriage including foreseeable changes in temperature, humidity and pressure;

(b) The complete package can be handled safely in normal conditions of carriage; and

(c) The packages will withstand any loading imposed on them by foreseeable stacking to which they will be subject during carriage so that they do not add to the risk presented by the explosives, the containment function of the packagings is not harmed, and they are not distorted in a way or to an extent which will reduce their strength or cause instability of a stack.

4.1.5.3 All explosive substances and articles, as prepared for carriage, shall have been classified in accordance with the procedures detailed in 2.2.1.

4.1.5.4 Class 1 goods shall be packed in accordance with the appropriate packing instruction shown in Column (8) of Table A of Chapter 3.2, as detailed in 4.1.4.

4.1.5.5 Packagings, including IBCs and large packagings shall conform to the requirements of Chapter 6.1, 6.5 or 6.6, respectively, and shall meet the test requirements of 6.1.5, 6.5.4 or 6.6.5, respectively, for packing group II, subject to 4.1.1.13, 6.1.2.4 and 6.5.1.4.4. Packagings other than metal packagings meeting the test criteria of packing group I may be used. To avoid unnecessary confinement, metal packagings of packing group I shall not be used.

4.1.5.6 The closure device of packagings containing liquid explosives shall ensure a double protection against leakage.

4.1.5.7 The closure device of metal drums shall include a suitable gasket; if a closure device includes a screw-thread, the ingress of explosive substances into the screw-thread shall be prevented.

4.1.5.8 Packagings for water soluble substances shall be water resistant. Packagings for desensitized or phlegmatized substances shall be closed to prevent changes in concentration during carriage.

4.1.5.9 When the packaging includes a double envelope filled with water which may freeze during transport, a sufficient quantity of an anti-freeze agent shall be added to the water to prevent freezing. Anti-freeze that could create a fire hazard because of its inherent flammability shall not be used.

4.1.5.10 Nails, staples and other closure devices made of metal without protective covering shall not penetrate to the inside of the outer packaging unless the inner packaging adequately protects the explosives against contact with the metal.

4.1.5.11 Inner packagings, fittings and cushioning materials and the placing of explosive substances or articles in packages shall be accomplished in a manner which prevents the explosive substances or articles from becoming loose in the outer packaging under normal conditions of carriage. Metallic components of articles shall be prevented from making contact with metal packagings. Articles containing explosive substances not enclosed in an outer casing

shall be separated from each other in order to prevent friction and impact. Padding, trays, partitioning in the inner or outer packaging, mouldings or receptacles may be used for this purpose.

4.1.5.12 Packagings shall be made of materials compatible with, and impermeable to, the explosives contained in the package, so that neither interaction between the explosives and the packaging materials, nor leakage, causes the explosive to become unsafe to carriage, or the hazard division or compatibility group to change.

4.1.5.13 The ingress of explosive substances into the recesses of seamed metal packagings shall be prevented.

4.1.5.14 Plastics packagings shall not be liable to generate or accumulate sufficient static electricity so that a discharge could cause the packaged explosive substances or articles to initiate, ignite or function.

4.1.5.15 Large and robust explosives articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems shall be protected against stimuli encountered during normal conditions of carriage. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for carriage unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling, storage or launching devices in such a way that they will not become loose during normal conditions of carriage.

Where such large explosive articles are as part of their operational safety and suitability tests subjected to test regimes that meet the intentions of ADR and such tests have been successfully undertaken, the competent authority may approve such articles to be carried under these Regulations.

4.1.5.16 Explosive substances shall not be packed in inner or outer packagings where the differences in internal and external pressures, due to thermal or other effects, could cause an explosion or rupture of the package.

4.1.5.17 Whenever loose explosive substances or the explosive substance of an uncased or partly cased article may come into contact with the inner surface of metal packagings (1A2, 1B2, 4A, 4B and metal receptacles), the metal packaging shall be provided with an inner liner or coating (see 4.1.1.2).

4.1.5.18 Packing instruction P101 may be used for any explosive provided the packaging has been approved by a competent authority regardless of whether the packaging complies with the packing instruction assignment in Column (8) of Table A of Chapter 3.2.

4.1.6 Special packing provisions for goods of Class 2

4.1.6.1 Receptacles, including their closures, shall be selected to contain a gas or a mixture of gases according to the requirements of 6.2.1.2 "Materials of receptacles" and the requirements of the relevant packing instructions of 4.1.4.

4.1.6.2 A change of use of a refillable 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).

***NOTE 1**: Refillable receptacles for the transport of gases of Class 2 shall be periodically inspected according to the periodicity set out in the relevant packing instructions (P200 or P203) and according to the provisions detailed in 6.2.1.6 "Periodic inspection".*

***NOTE 2**: Receptacles ready for shipment shall be marked and labelled according to the provisions set out in chapter 5.2.*

4.1.6.3 Receptacles except open cryogenic 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 receptacles shall be firmly secured therein. Unless otherwise specified in the relevant packing instructions, receptacles may be enclosed in outer packagings either singly or in groups.

4.1.6.4 Valves (cocks) shall be effectively protected from damage which could cause gas release if the receptacle falls, and during carriage and stacking. This requirement is deemed to be complied with if one or more of the following conditions are fulfilled (see also table of standards at the end of this section):

(a) Valves are placed inside the neck of the receptacle and protected by a screw-threaded plug;

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

(c) Valves are protected by shrouds or guards;

(d) Valves are designed and constructed in such a way that their ability to withstand damage without leakage of product has been demonstrated;

(e) Valves are placed inside a protective frame;

(f) Receptacles are carried in protective boxes or frames.

4.1.6.5 Receptacles, containing pyrophoric gases or very toxic gases (gases with an LC_{50} lower than 200 ppm) shall have their valve(s) openings fitted with gas-tight plugs or cap nuts which shall be made of a material not liable to attack by the contents of the receptacle.

4.1.6.6 Receptacles may be carried after the expiry of the time-limit set for the periodic test prescribed for the purpose of undergoing the test.

4.1.6.7 Requirements of the following packing provisions are considered to have been complied with if the following standards, as relevant, are applied:

Applicable paragraphs	**Reference**	**Title of document**
4.1.6.2	EN 1795:1997	Gas cylinders (excluding LPG) - Procedures for change of gas service.
4.1.6.4	EN 962:1996/A2:2000	Valve protection caps and valve guards for industrial and medical gas cylinders - Design, construction and tests

4.1.7 Special packing provisions for organic peroxides (Class 5.2) and self-reactive substances of Class 4.1

4.1.7.1 *Use of packagings*

4.1.7.1.1 Packagings for organic peroxides and self-reactive substances shall meet the requirements of Chapter 6.1 or of Chapter 6.6 at the packing group II performance level. To avoid unnecessary confinement, metal packagings meeting the test criteria of packing group I shall not be used.

4.1.7.1.2 The packing methods for organic peroxides and self-reactive substances are listed in packing instruction 520 and are designated OP1 to OP8. The quantities specified for each packing method are the maximum quantities authorized per package.

4.1.7.1.3 The packing methods appropriate for the individual currently assigned organic peroxides and self-reactive substances are listed in 2.2.41.4 and 2.2.52.4.

4.1.7.1.4 For new organic peroxides, new self-reactive substances or new formulations of currently assigned organic peroxides or self-reactive substances, the following procedure shall be used to assign the appropriate packing method:

(a) ORGANIC PEROXIDE, TYPE B or SELF-REACTIVE SUBSTANCE, TYPE B:

Packing method OP5 shall be assigned, provided that the organic peroxide (or self-reactive substance) satisfies the criteria of 20.4.3 (b) (resp. 20.4.2 (b)) of the Manual of Tests and Criteria in a packaging authorized by the packing method. If the organic peroxide (or self-reactive substance) can only satisfy these criteria in a smaller packaging than those authorized by packing method OP5 (viz. one of the packagings listed for OP1 to OP4), then the corresponding packing method with the lower OP number is assigned;

(b) ORGANIC PEROXIDE, TYPE C or SELF-REACTIVE SUBSTANCE, TYPE C:

Packing method OP6 shall be assigned, provided that the organic peroxide (or self-reactive substance) satisfies the criteria of 20.4.3 (c) (resp. 20.4.2 (c)) of the Manual of Tests and Criteria in a packaging authorized by the packing method. If the organic peroxide (or self-reactive substance) can only satisfy these criteria in a smaller packaging than those authorized by packing method OP6 then the corresponding packing method with the lower OP number is assigned;

(c) ORGANIC PEROXIDE, TYPE D or SELF-REACTIVE SUBSTANCE, TYPE D:

Packing method OP7 shall be assigned to this type of organic peroxide or self-reactive substance;

(d) ORGANIC PEROXIDE, TYPE E or SELF-REACTIVE SUBSTANCE, TYPE E:

Packing method OP8 shall be assigned to this type of organic peroxide or self-reactive substance;

(e) ORGANIC PEROXIDE, TYPE F or SELF-REACTIVE SUBSTANCE, TYPE F:

Packing method OP8 shall be assigned to this type of organic peroxide or self-reactive substance.

4.1.7.2 *Use of intermediate bulk containers*

4.1.7.2.1 The currently assigned organic peroxides specifically listed in the table of 2.2.52.4 and indicated with the letter "N" in the "Packing Method" column of that table may be carried in IBCs in accordance with packing instruction IBC520.

4.1.7.2.2 Other organic peroxides and self-reactive substances of type F may be carried in IBCs under conditions established by the competent authority of the country of origin when, on the basis of the appropriate tests, that competent authority is satisfied that such carriage may be safely conducted. The tests undertaken shall include those necessary:

(a) To prove that the organic peroxide (or self-reactive substance) complies with the principles for classification given in 20.4.3 (f) [resp. 20.4.2 (f)] of the Manual of Tests and Criteria, exit box F of Figure 20.1 (b) of the Manual;

(b) To prove the compatibility of all materials normally in contact with the substance during carriage;

(c) To determine, when applicable, the control and emergency temperatures associated with the carriage of the product in the IBC concerned as derived from the SADT;

(d) To design, when applicable, pressure and emergency relief devices; and

(e) To determine if any special provisions are necessary for safe carriage of the substance.

If the country of origin is not a Contracting Party to ADR, the classification and transport conditions shall be recognized by the competent authority of the first country Contracting Party to ADR reached by the consignment.

4.1.8 Special packing provisions for infectious substances (Class 6.2)

4.1.8.1 Consignors of infectious substances shall ensure that packages are prepared in such a manner that they arrive at their destination in good condition and present no hazard to persons or animals during carriage.

4.1.8.2 The definitions in 1.2.1 and the general provisions of 4.1.1.1 to 4.1.1.14, except 4.1.1.3 and 4.1.1.9 to 4.1.1.12, apply to infectious substances packages.

4.1.8.3 An itemized list of contents shall be enclosed between the secondary packaging and the outer packaging.

4.1.8.4 Before an empty packaging is returned to the consignor, or sent elsewhere, it shall be thoroughly disinfected or sterilized and any label or marking indicating that it had contained an infectious substance shall be removed or obliterated.

4.1.9 Special packing provisions for Class 7

4.1.9.1 ***General***

4.1.9.1.1 Radioactive material, packagings and packages shall meet the requirements of Chapter 6.4. The quantity of radioactive material in a package shall not exceed the limits specified in 2.2.7.7.1.

4.1.9.1.2 The non-fixed contamination on the external surfaces of any package shall be kept as low as practicable and, under routine conditions of transport, shall not exceed the following limits:

(a) 4 Bq/cm^2 for beta and gamma emitters and low toxicity alpha emitters; and

(b) 0.4 Bq/cm^2 for all other alpha emitters.

These limits are applicable when averaged over any area of 300 cm^2 of any part of the surface.

4.1.9.1.3 A package shall not contain any other items except such articles and documents as are necessary for the use of the radioactive material. This requirement shall not preclude the carriage of low specific activity material or surface contaminated objects with other items. The carriage of such articles and documents in a package, or of low specific activity material or surface contaminated objects with other items may be permitted provided that there is no interaction between them and the packaging or its radioactive contents that would reduce the safety of the package.

4.1.9.1.4 Except as provided in 7.5.11, CV33, the level of non-fixed contamination on the external and internal surfaces of overpacks, containers, tanks and intermediate bulk containers shall not exceed the limits specified in 4.1.9.1.2.

4.1.9.1.5 Radioactive material with a subsidiary risk shall be carried in packagings, IBCs or tanks fully complying with the requirements of the relevant chapters of Part 6 as appropriate, as well as applicable requirements of Chapters 4.1 , 4.2 or 4.3 for that subsidiary risk.

4.1.9.2 ***Requirements and controls for carriage of LSA material and SCO***

4.1.9.2.1 The quantity of LSA material or SCO in a single Industrial package Type 1 (Type IP-1), Industrial package Type 2 (Type IP-2), Industrial package Type 3 (Type IP-3), or object or collection of objects, whichever is appropriate, shall be so restricted that the external radiation level at 3 m from the unshielded material or object or collection of objects does not exceed 10 mSv/h.

4.1.9.2.2 LSA material and SCO which is or contains fissile material shall meet the applicable requirements of 7.5.11, CV33 and 6.4.11.1.

4.1.9.2.3 LSA material and SCO in groups LSA-I and SCO-I may be carried unpackaged under the following conditions:

(a) All unpackaged material other than ores containing only naturally occurring radionuclides shall be carried in such a manner that under routine conditions of carriage there will be no escape of the radioactive contents from the vehicle nor will there be any loss of shielding;

(b) Each vehicle shall be under exclusive use, except when only carrying SCO-I on which the contamination on the accessible and the inaccessible surfaces is not greater than ten times the applicable level specified in 2.2.7.2; and

(c) For SCO-I where it is suspected that non-fixed contamination exists on inaccessible surfaces in excess of the values specified in 2.2.7.5 (a)(i), measures shall be taken to ensure that the radioactive material is not released into the vehicle.

4.1.9.2.4 LSA material and SCO, except as otherwise specified in 4.1.9.2.3, shall be packaged in accordance with the table below:

Industrial package requirements for LSA material and SCO

Radioactive contents	Industrial package type	
	Exclusive use	**Not under exclusive use**
LSA-I		
Solid [a]	Type IP-1	Type IP-1
Liquid	Type IP-1	Type IP-2
LSA-II		
Solid	Type IP-2	Type IP-2
Liquid and gas	Type IP-2	Type IP-3
LSA-III	Type IP-2	Type IP-3
SCO-I [a]	Type IP-1	Type IP-1
SCO-II	Type IP-2	Type IP-2

[a] *Under the conditions specified in 4.1.9.2.3, LSA-I material and SCO-I may be carried unpackaged.*

4.1.10 Special provisions for mixed packing

4.1.1.10.1 When mixed packing is permitted in accordance with the provisions of this section, different dangerous goods or dangerous goods and other goods may be packed together in combination packagings conforming to 6.1.4.2.1, provided that they do not react dangerously with one another and that all other relevant provisions of this Chapter are complied with.

NOTE 1*: See also 4.1.1.5 and 4.1.1.6.*

NOTE 2*: For goods of Class 7, see 4.1.9.*

4.1.10.2 Except for packages containing Class 1 goods only or Class 7 goods only, if wooden or fibreboard boxes are used as outer packagings, a package containing different goods packed together shall not weigh more than 100 kg.

4.1.10.3 Unless otherwise prescribed by a special provision applicable according to 4.1.10.4, dangerous goods of the same class and the same classification code may be packed together.

4.1.10.4 When indicated for a given entry in Column (9b) of Table A of Chapter 3.2, the following special provisions shall apply to the mixed packing of the goods assigned to that entry with other goods in the same package.

MP 1 May only be packed together with goods of the same type within the same compatibility group.

MP 2 Shall not be packed together with other goods.

MP 3 Mixed packing of UN No. 1873 with UN No. 1802 is permitted.

MP 4 Shall not be packed together with goods of other classes or with goods which are not subject to the requirements of ADR. However, if this organic peroxide is a hardener or compound system for Class 3 substances, mixed packing is permitted with these substances of Class 3.

MP 5 UN No. 2814 and UN No. 2900 may be packed together in a combination packaging in conformity with P620. They shall not be packed together with

other goods; this does not apply to diagnostic specimens packed in accordance with P650 or to substances added as coolants, e.g. ice, dry ice or deeply refrigerated liquid nitrogen.

MP 6 Shall not be packed together with other goods. This does not apply to substances added as coolants, e.g. ice, dry ice or deeply refrigerated liquid nitrogen.

MP 7 May - in quantities not exceeding 5 litres per inner packaging - be packed together in a combination packaging conforming to 6.1.4.21:

- with goods of the same class covered by other classification codes when mixed packing is also permitted for these; or

- with goods which are not subject to the requirements of ADR,

provided they do not react dangerously with one another.

MP 8 May - in quantities not exceeding 3 litres per inner packaging - be packed together in a combination packaging conforming to 6.1.4.21:

- with goods of the same class covered by other classification codes when mixed packing is also permitted for these; or

- with goods which are not subject to the requirements of ADR,

provided they do not react dangerously with one another.

MP 9 May be packed together in an outer packaging for combination packagings in accordance with 6.1.4.21:

- with other goods of Class 2;

- with goods of other classes, when the mixed packing is also permitted for these; or

- with goods which are not subject to the requirements of ADR,

provided they do not react dangerously with one another.

MP 10 May - in quantities not exceeding 5 kg per inner packaging - be packed together in a combination packaging conforming to 6.1.4.21:

- with goods of the same class covered by other classification codes or with goods of other classes, when mixed packing is also permitted for these; or

- with goods which are not subject to the requirements of ADR,

provided they do not react dangerously with one another.

MP 11 May - in quantities not exceeding 5 kg per inner packaging - be packed together in a combination packaging conforming to 6.1.4.21:

- with goods of the same class covered by other classification codes or with goods of other classes (except substances of packing group I or II of Class 5.1) when mixed packing is also permitted for these; or

- with goods which are not subject to the requirements of ADR,

provided they do not react dangerously with one another.

MP 12 May - in quantities not exceeding 5 kg per inner packaging - be packed together in a combination packaging conforming to 6.1.4.21:

- with goods of the same class covered by other classification codes or with goods of other classes (except substances of packing group I or II of Class 5.1) when mixed packing is also permitted for these; or

- with goods which are not subject to the requirements of ADR,

provided they do not react dangerously with one another.

Packagings shall not weigh more than 45 kg. If fibreboard boxes are used as outer pacagings however, a package shall not weigh more than 27 kg.

MP 13 May - in quantities not exceeding 3 kg per inner packaging and per package - be packed together in a combination packaging conforming to 6.1.4.21:

- with goods of the same class covered by other classification codes or with goods of other classes, when mixed packing is also permitted for these; or

- with goods which are not subject to the requirements of ADR,

provided they do not react dangerously with one another.

MP 14 May - in quantities not exceeding 6 kg per inner packaging - be packed together in a combination packaging conforming to 6.1.4.21:

- with goods of the same class covered by other classification codes or with goods of other classes, when mixed packing is also permitted for these; or

- with goods which are not subject to the requirements of ADR,

provided they do not react dangerously with one another.

MP 15 May - in quantities not exceeding 3 litres per inner packaging - be packed together in a combination packaging conforming to 6.1.4.21:

- with goods of the same class covered by other classification codes or with goods of other classes, when mixed packing is also permitted for these; or

- with goods which are not subject to the requirements of ADR,

provided they do not react dangerously with one another.

MP 16 May - in quantities not exceeding 3 litres per inner packaging and per package - be packed together in a combination packaging conforming to 6.1.4.21:

- with goods of the same class covered by other classification codes or with goods of other classes, when mixed packing is also permitted for these; or

- with goods which are not subject to the requirements of ADR,

provided they do not react dangerously with one another.

MP 17 May - in quantities not exceeding 0.5 litre per inner packaging and 1 litre per package - be packed together in a combination packaging conforming to 6.1.4.21:

- with goods of other classes, except Class 7, when mixed packing is also permitted for these; or

- with goods which are not subject to the requirements of ADR,

provided they do not react dangerously with one another.

MP 18 May - in quantities not exceeding 0.5 kg per inner packaging and 1 kg per package - be packed together in a combination packaging conforming to 6.1.4.21:

- with goods or articles of other classes, except Class 7, when mixed packing is also permitted for these; or

- with goods which are not subject to the requirements of ADR,

provided they do not react dangerously with one another.

MP 19 May - in quantities not exceeding 5 litres per inner packaging - be packed together in a combination packaging conforming to 6.1.4.21:

- with goods of the same class covered by other classification codes or with goods of other classes, when mixed packing is also permitted for these; or

- with goods which are not subject to the requirements of ADR, provided they do not react dangerously with one another.

MP 20 May be packed together with substances covered by the same UN number.

Shall not be packed together with goods and articles of Class 1 having different UN numbers.

Shall not be packed together with goods of other classes or with goods which are not subject to the requirements of ADR.

MP 21 May be packed together with articles covered by the same UN number.

Shall not be packed together with goods of Class 1 having different UN numbers, except for

(a) their own means of ignition, provided that

(i) the means of ignition will not function under normal conditions of carriage; or

(ii) such means have at least two effective protective features which prevent explosion of an article in the event of accidental functioning of the means of initiation; or

(iii) when such means do not have two effective protective features (i.e. means of initiation assigned to compatibility group B), in the opinion of the competent authority of the country of origin[2], the accidental functioning of the means of initiation does not cause the explosion of an article under normal conditions of carriage;

(b) articles of compatibility groups C, D and E.

Shall not be packed together with goods of other classes or with goods which are not subject to the requirements of ADR.

When goods are packed together in accordance with this special provision, account shall be taken of a possible amendment of the classification of packages in accordance with 2.2.1.1. For the description of the goods in the transport document, see 5.4.1.2.1 (b).

MP 22 May be packed together with articles covered by the same UN number.

Shall not be packed together with goods of Class 1 having different UN numbers, except for

(a) their own means of ignition, provided that the means of ignition will not function under normal conditions of carriage;

(b) articles of compatibility groups C, D and E.

Shall not be packed together with goods of other classes or with goods which are not subject to the requirements of ADR.

When goods are packed together in accordance with this special provision, account shall be taken of a possible amendment of the classification of packages in accordance with 2.2.1.1. For the description of the goods in the transport document, see 5.4.1.2.1 (b).

MP 23 May be packed together with articles covered by the same UN number.

Shall not be packed together with goods and articles of Class 1 having different UN numbers ; however, exception is made for their own means of ignition, provided that the means of ignition will not function under normal conditions of carriage.

Shall not be packed together with goods of other classes or with goods which are not subject to the requirements of ADR.

When goods are packed together in accordance with this special provision, account shall be taken of a possible amendment of the classification of packages in accordance with 2.2.1.1. For the description of the goods in the transport document, see 5.4.1.2.1 (b).

MP 24 May be packed together with goods with the UN numbers shown in the table below, under the following conditions :

[2] *If the country of origin is not a Contracting Party to ADR, the approval shall require validation by the competent authority of the first country Contracting Party to ADR reached by the consignment.*

- if a letter A is indicated in the table, the goods with those UN numbers may be included in the same package without any special limitation of mass;

- if a letter B is indicated in the table, the goods with those UN numbers may be included in the same package up to a total mass of 50 kg of explosive substances.

When goods are packed together in accordance with this special provision, account shall be taken of a possible amendment of the classification of packages in accordance with 2.2.1.1. For the description of the goods in the transport document, see 5.4.1.2.1 (b).

UN No.	0012	0014	0027	0028	0044	0054	0160	0161	0186	0191	0194	0195	0197	0238	0240	0312	0333	0334	0335	0336	0337	0373	0405	0428	0429	0430	0431	0432
0012		A																										
0014	A																											
0027				B	B		B	B																				
0028			B		B		B	B																				
0044			B	B			B	B																				
0054									B	B	B	B	B	B	B	B						B	B	B	B	B	B	B
0160			B	B	B			B																				
0161			B	B	B		B																					
0186						B				B	B	B	B	B	B	B						B	B	B	B	B	B	B
0191						B			B		B	B	B	B	B	B						B	B	B	B	B	B	B
0194						B			B	B		B	B	B	B	B						B	B	B	B	B	B	B
0195						B			B	B	B		B	B	B	B						B	B	B	B	B	B	B
0197						B			B	B	B	B		B	B	B						B	B	B	B	B	B	B
0238						B			B	B	B	B	B		B	B						B	B	B	B	B	B	B
0240						B			B	B	B	B	B	B		B						B	B	B	B	B	B	B
0312						B			B	B	B	B	B	B	B							B	B	B	B	B	B	B
0333																		A	A	A	A							
0334																	A		A	A	A							
0335																	A	A		A	A							
0336																	A	A	A		A							
0337																	A	A	A	A								
0373						B			B	B	B	B	B	B	B	B							B	B	B	B	B	B
0405						B			B	B	B	B	B	B	B	B						B		B	B	B	B	B
0428						B			B	B	B	B	B	B	B	B						B	B		B	B	B	B
0429						B			B	B	B	B	B	B	B	B						B	B	B		B	B	B
0430						B			B	B	B	B	B	B	B	B						B	B	B	B		B	B
0431						B			B	B	B	B	B	B	B	B						B	B	B	B	B		B
0432						B			B	B	B	B	B	B	B	B						B	B	B	B	B	B	