

Chapter 3.3

Special provisions applicable to certain substances, materials or articles

- 3.3.1 When column 6 of the Dangerous Goods List indicates that a special provision is relevant to a dangerous good, the meaning and requirement(s) of that special provision are as set out below. Where a special provision includes a requirement for package marking, the provisions of 5.2.1.2.1 to .4 shall be met. If the required mark is in the form of specific wording indicated in quotation marks, such as "LITHIUM BATTERIES FOR DISPOSAL", the size of the mark shall be at least 12 mm, unless otherwise indicated in the special provision or elsewhere in this Code.
- 16 Samples of new or existing explosive substances or articles may be transported as directed by the competent authority 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 authority. Explosive samples which are wetted or desensitized shall be limited to 25 kg.
- 23 Even though this substance has a flammability hazard, it only exhibits such hazard under extreme fire conditions in confined areas.
- 26 This substance is not permitted for transport in portable tanks, or intermediate bulk containers with a capacity exceeding 450 L, due to the potential initiation of an explosion when transported in large volumes.
- 28 This substance may be transported under the provisions of class 4.1 only if it is so packaged that the percentage of diluent will not fall below that stated, at any time during transport (see 2.4.2.4).
- 29 The packages, including bales, are exempt from labelling provided that they are marked with the appropriate class (e.g. "class 4.2").
- 32 When in any other form, this substance is not subject to the provisions of this Code.
- 37 When coated, this substance is not subject to the provisions of this Code.
- 38 This substance, when it contains not more than 0.1% calcium carbide, is not subject to the provisions of this Code.
- 39 This substance, when it contains less than 30% or not less than 90% silicon, is not subject to the provisions of this Code.
- 43 When offered for transport as pesticides, these substances shall be transported under the relevant pesticide entry and in accordance with the relevant pesticide provisions (see 2.6.2.3 and 2.6.2.4).
- 45 Antimony sulphides and oxides which contain not more than 0.5% of arsenic, calculated on the total mass, are not subject to the provisions of this Code.
- 47 Ferricyanides and ferrocyanides are not subject to the provisions of this Code.
- 59 These substances, when they contain not more than 50% magnesium, are not subject to the provisions of this Code.
- 61 The technical name, which shall supplement the proper shipping name, shall be the ISO common name, or 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 3.1.2.8.1.1).
- 62 This substance, when it contains not more than 4% sodium hydroxide, is not subject to the provisions of this Code.
- 63 The division of class 2 and the subsidiary hazards depend on the nature of the contents of the aerosol dispenser. The following provisions shall apply:
- .1 Class 2.1 applies if the contents include 85% by mass or more flammable components and the chemical heat of combustion is 30 kJ/g or more;
 - .2 Class 2.2 applies if the contents contain 1% by mass or less flammable components and the heat of combustion is less than 20 kJ/g.

- .3 Otherwise the product shall be classified as tested by the tests described in the *Manual of Tests and Criteria*, part III, section 31. Extremely flammable and flammable aerosols shall be classified in class 2.1; non-flammable in class 2.2;
- .4 Gases of class 2.3 shall not be used as a propellant in an aerosol dispenser;
- .5 Where the contents other than the propellant of aerosol dispensers to be ejected are classified as class 6.1 packing groups II or III or class 8 packing groups II or III, the aerosol shall have a subsidiary hazard of class 6.1 or class 8;
- .6 Aerosols with contents meeting the criteria for packing group I for toxicity or corrosivity shall be prohibited from transport;
- .7 Except for consignments transported in limited quantities (see chapter 3.4), packages containing aerosols shall bear labels for the primary hazard and for the subsidiary hazard(s), if any.

Flammable components are flammable liquids, flammable solids or flammable gases and gas mixtures as defined in notes 1 to 3 of subsection 31.1.3 of part III of the *Manual of Tests and Criteria*. This designation does not cover pyrophoric, self-heating or water-reactive substances. The chemical heat of combustion shall be determined by one of the following methods: ASTM D240, ISO/FDIS 13943:1999 (E/F) 86.1 to 86.3 or NFPA 30B.

- 65 Hydrogen peroxide aqueous solutions with less than 8% hydrogen peroxide are not subject to the provisions of this Code.
- 66 Cinnabar is not subject to the provisions of this Code.
- ⊗
- 105 Nitrocellulose meeting the descriptions of UN 2556 or UN 2557 may be classified in class 4.1.
- 113 The transport of chemically unstable mixtures is prohibited.
- 117 Only regulated when transported by sea.
- 119 Refrigerating machines and refrigerating-machinery components including 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 and refrigerating-machine components are not subject to the provisions of this Code if they contain less than 12 kg of gas in class 2.2 or less than 12 L of ammonia solution (UN 2672).
- 122 The subsidiary hazard(s), the control and emergency temperatures, if any, and the generic entry number for each of the currently assigned organic peroxide formulations are given in 2.5.3.2.4, 4.1.4.2 packing instruction IBC520 and 4.2.5.2.6 portable tank instruction T23.
- 123 Only regulated when transported by air or by sea.
- 127 Other inert material or inert material mixture may be used at the discretion of the competent authority, provided this inert material has identical phlegmatizing properties.
- 131 The phlegmatized substance shall be significantly less sensitive than dry PETN.
- 133 If over-confined in packagings, this substance may exhibit explosive behaviour. Packagings authorized under packing instruction P409 are intended to prevent over-confinement. When a packaging other than those prescribed under packing instruction P409 is authorized by the competent authority of the country of origin in accordance with 4.1.3.7, the package shall bear an "EXPLOSIVE" subsidiary hazard label (Model No. 1, see 5.2.2.2.2) 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 5.4.1.5.5.1). The provisions of 7.1.3.1, 7.1.4.4 and 7.2.3.3 shall also be considered.
- 135 The dihydrated sodium salt of dichloroisocyanuric acid does not meet the criteria for inclusion in class 5.1 and is not subject to the provisions of this Code unless meeting the criteria for inclusion in another class or division.
- 138 *p*-Bromobenzyl cyanide is not subject to the provisions of this Code.
- 141 Products which have undergone sufficient heat treatment so that they present no hazard during transport are not subject to the provisions of this Code.
- 142 Solvent-extracted soya bean meal containing not more than 1.5% oil and 11% moisture, being substantially free from flammable solvents, which is accompanied by a certificate from the shipper stating that the substance, as offered for shipment, meets this requirement is not subject to the provisions of this Code.
- 144 An aqueous solution containing not more than 24% alcohol by volume is not subject to the provisions of this Code.
- 145 Alcoholic beverages of packing group III, when transported in receptacles of 250 L or less, are not subject to the provisions of this Code.

- 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 as required by 2.1.3.
- 153 This entry applies only if it is demonstrated, on the basis of tests, that the substance, when in contact with water, is not combustible nor shows a tendency to auto-ignition and that the mixture of gases evolved is not flammable.
- 163 A substance specifically listed by name in the Dangerous Goods List shall not be transported under this entry. Materials transported 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 transport is not subject to the provisions of this Code. Manufactured articles containing asbestos and not meeting this provision are nevertheless not subject to the provisions of this Code when packaged so that no escape of hazardous quantities of respirable asbestos fibres can occur during transport.
- 169 Phthalic anhydride in the solid state and tetrahydrophthalic anhydride, with not more than 0.05% maleic anhydride, are not subject to the provisions of this Code. Phthalic anhydride molten at a temperature above its flashpoint, with not more than 0.05% maleic anhydride, shall be classified under UN 3256.
- 172 Where a radioactive material has (a) subsidiary hazard(s):
- .1 The substance shall be allocated to packing group I, II or III, if appropriate, by application of the packing group criteria provided in part 2 corresponding to the nature of the predominant subsidiary hazard;
 - .2 Packages shall be labelled with subsidiary hazard labels corresponding to each subsidiary hazard exhibited by the material; corresponding placards shall be affixed to cargo transport units in accordance with the relevant provisions of 5.3.1;
 - .3 For the purposes of documentation and package marking, the proper shipping name shall be supplemented with the name of the constituents which most predominantly contribute to this (these) subsidiary hazard(s) and which shall be enclosed in parenthesis;
- △ 4 The dangerous goods transport document shall indicate the class or division of the subsidiary hazard and, where assigned, the packing group as required by 5.4.1.4.1.4 and 5.4.1.4.1.5.
- For packing, see also 4.1.9.1.5.
- 177 Barium sulphate is not subject to the provisions of this Code.
- 178 This entry shall be used only when no other appropriate entry exists in the list, and only with the approval of the competent authority of the country of origin.
- 181 Packages containing this type of substance shall bear the “EXPLOSIVE” subsidiary hazard label (Model No. 1, see 5.2.2.2.2) 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 5.4.1.5.5.1). The provisions of 7.2.3.3 shall also be considered.
- 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.
- 188 Cells and batteries offered for transport are not subject to other provisions of this Code if they meet the following:
- .1 For a lithium metal or lithium alloy cell, the lithium content is not more than 1 g, and for a lithium-ion cell, the watt-hour rating is not more than 20 Wh;
 - .2 For a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g, and for a lithium-ion battery, the watt-hour rating is not more than 100 Wh. Lithium-ion batteries subject to this provision shall be marked with the watt-hour rating on the outside case, except those manufactured before 1 January 2009;
 - .3 Each cell or battery meets the provisions of 2.9.4.1, 2.9.4.5, 2.9.4.6 if applicable and 2.9.4.7;
 - .4 Cells and batteries, except when installed in equipment, shall be packed in inner packagings that completely enclose the cell or battery. Cells and batteries shall be protected so as to prevent short circuits. This includes protection against contact with electrically conductive material within the same packaging that could lead to a short circuit. The inner packagings shall be packed in strong outer packagings which conform to the provisions of 4.1.1.1, 4.1.1.2, and 4.1.1.5;

- .5 Cells and batteries when installed in equipment shall be protected from damage and short circuit, and the equipment shall be equipped with an effective means of preventing accidental activation. This requirement does not apply to devices which are intentionally active in transport (radio frequency identification (RFID) transmitters, watches, sensors, etc.) and which are not capable of generating a dangerous evolution of heat. When batteries are installed in equipment, the equipment shall be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained;
- .6 Each package shall be marked with the appropriate lithium battery mark, as illustrated in 5.2.1.10;

Note 1: The provisions concerning marking in special provision 188 of amendment 37-14 of the Code may continue to be applied until 31 December 2018.

Note 2: Packages containing lithium batteries packed in conformity with the provisions of part 4, chapter 11, packing instructions 965 or 968, Section IB of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air that bear the mark as shown in 5.2.1.10 (lithium battery mark) and the label shown in 5.2.2.2.2, Model No. 9A shall be deemed to meet the provisions of this special provision.

This requirement does not apply to:

- .1 packages containing only button cell batteries installed in equipment (including circuit boards); and
- .2 packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment.

When packages are placed in an overpack, the lithium battery mark shall either be clearly visible or be reproduced on the outside of the overpack and the overpack shall be marked with the word "OVERPACK". The lettering of the "OVERPACK" mark shall be at least 12 mm high;

- .7 Except when cells or batteries are installed in equipment, each package shall be capable of withstanding a 1.2 m drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell to cell) contact and without release of contents; and
- .8 Except when cells or batteries are installed in or packed with equipment, packages shall not exceed 30 kg gross mass. As used in this special provision "equipment" means apparatus for which the lithium cells or batteries will provide electrical power for its operation.

As used above and elsewhere in this Code, "lithium content" means the mass of lithium in the anode of a lithium metal or lithium alloy cell.

Separate entries exist for lithium metal batteries and lithium ion batteries to facilitate the transport of these batteries for specific modes of transport and to enable the application of different emergency response actions.

A single cell battery as defined in part III, subsection 38.3.2.3 of the *Manual of Tests and Criteria* is considered a "cell" and shall be transported according to the requirements for "cells" for the purpose of this special provision.

- 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 provisions of this Code.
- 191 Receptacles with a capacity not exceeding 50 mL containing only non-toxic constituents are not subject to the provisions of this Code.
- 193 This entry may only be used for ammonium nitrate based compound fertilizers. They shall be classified in accordance with the procedure as set out in the *Manual of Tests and Criteria*, part III, section 39.
- 194 The control and emergency temperatures, if any, and the generic entry number for each of the currently assigned self-reactive substances are given in 2.4.2.3.2.3.
- 195 For certain organic peroxides types B or C, a smaller packaging than that allowed by packing methods OP5 or OP6 respectively has to be used (see 4.1.7 and 2.5.3.2.4).
- 196 Formulations which, in laboratory testing, neither detonate in the cavitated state nor deflagrate, which show no effect when heated under confinement and which exhibit no explosive power may be transported under this entry. The formulation must also be thermally stable (i.e. the SADT is 60°C or higher for a 50 kg package). Formulations not meeting these criteria shall be transported under the provisions of class 5.2 (see 2.5.3.2.4).
- 198 Nitrocellulose solutions containing not more than 20% nitrocellulose may be transported as paint, perfumery products or printing ink, as applicable. See UN Nos. 1210, 1263, 1266, 3066, 3469 and 3470.

- 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 (see ISO 3711:1990, *Lead chromate pigments and lead chromate-molybdate pigments – Specifications and methods of test*) are considered insoluble and are not subject to the provisions of this Code unless they meet the criteria for inclusion in another hazard class.
- 201 Lighters and lighter refills shall comply with the provisions of the country in which they were filled. They shall be provided with protection against inadvertent discharge. The liquid portion of the gas shall not exceed 85% of the capacity of the receptacle at 15°C. The receptacles, including the closures, shall be capable of withstanding an internal pressure of twice the pressure of the liquefied petroleum gas at 55°C. The valve mechanisms and ignition devices shall be securely sealed, taped or otherwise fastened or designed to prevent operation or leakage of the contents during transport. Lighters shall not contain more than 10 g of liquefied petroleum gas. Lighter refills shall not contain more than 65 g of liquefied petroleum gas.
- 203 This entry shall not be used for polychlorinated biphenyls, UN 2315.
- 204 Articles containing smoke-producing substance(s) corrosive according to the criteria for class 8 shall be labelled with a “CORROSIVE” subsidiary hazard label (Model No. 8, see 5.2.2.2.2).
Articles containing smoke-producing substance(s) toxic by inhalation according to the criteria for class 6.1 shall be labelled with a “TOXIC” subsidiary hazard label (Model No. 6.1, see 5.2.2.2.2), except that those manufactured before 31 December 2016 may be transported until 1 January 2019 without a “TOXIC” subsidiary hazard label.
- 205 This entry shall not be used for PENTACHLOROPHENOL, UN 3155.
- 207 Plastics 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 provisions of this Code.
- 209 The gas shall be at a pressure corresponding to ambient atmospheric pressure at the time the containment system is closed and this shall not exceed 105 kPa absolute.
- 210 Toxins from plant, animal or bacterial sources which contain infectious substances, or toxins that are contained in infectious substances, shall be classified under 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 2.4.2.3.2.3). Homogeneous mixtures containing not more than 35% by mass of azodicarbonamide and at least 65% of inert substance are not subject to this Code unless criteria of other classes are met.
- 216 Mixtures of solids which are not subject to the provisions of this Code and flammable liquids may be transported 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 or cargo transport unit is closed. Each cargo transport unit shall be leakproof when used as a bulk container. Sealed packets and articles containing less than 10 mL of a packing group II or III flammable liquid absorbed into a solid material are not subject to the provisions of this Code provided there is no free liquid in the packet or article.
- 217 This entry shall only be used for mixtures of solids which are not subject to the provisions of this Code and toxic liquids may be transported 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 or cargo transport unit is closed. Each cargo transport unit shall be leakproof when used as a bulk container. This entry shall not be used for solids containing a packing group I liquid.
- 218 This entry shall only be used for mixtures of solids which are not subject to the provisions of this Code and corrosive liquids may be transported 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 or cargo transport unit is closed. Each cargo transport unit shall be leakproof when used as a bulk container. This entry shall not be used for solids containing a packing group I liquid.
- 219 Genetically modified microorganisms (GMMOs) and genetically modified organisms (GMOs) packed and marked in accordance with packing instruction P904 are not subject to any other provisions of this Code.
If GMMOs or GMOs meet the definition in chapter 2.6 of a toxic substance or an infectious substance and the criteria for inclusion in class 6.1 or 6.2, the provisions of this Code for transporting toxic substances or infectious substances apply.

- 220 The technical name of the flammable liquid component only 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.
- 223 If the chemical or physical properties of a substance covered by this description are such that, when tested, it does not meet the established defining criteria for the class or division listed in column 3, or any other class or division, it is not subject to the provisions of this Code except in the case of a marine pollutant where 2.10.3 applies.
- 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 division 1.4C or 1.4S) without changing the classification of class 2.2 provided the total quantity of deflagrating (propellant) explosives does not exceed 3.2 g per extinguishing unit. Fire extinguishers shall be manufactured, tested, approved and labelled according to the provisions applied in the country of manufacture.
- Note:** "Provisions applied in the country of manufacture" means the provisions applicable in the country of manufacture or those applicable in the country of use.
- Fire extinguishers under this entry include:
- .1 portable fire extinguishers for manual handling and operation;
 - .2 fire extinguishers for installation in aircraft;
 - .3 fire extinguishers mounted on wheels for manual handling;
 - .4 fire extinguishing equipment or machinery mounted on wheels or wheeled platforms or units transported similar to (small) trailers; and
 - .5 fire extinguishers composed of a non-rollable pressure drum and equipment, and handled, e.g. by fork lift or crane when loaded or unloaded.
- Note:** Pressure receptacles which contain gases for use in the above-mentioned extinguishers or for use in stationary fire-fighting installations shall meet the requirements in chapter 6.2 and all requirements applicable to the relevant dangerous goods when these pressure receptacles are transported separately.
- 226 Formulations of these substances containing not less than 30% non-volatile, non-flammable phlegmatizer are not subject to the provisions of this Code.
- 227 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 I.
- 228 Mixtures not meeting the criteria for flammable gases (class 2.1) shall be transported under UN 3163.
- 230 Lithium cells and batteries may be transported under this entry if they meet the provisions of 2.9.4.
- 232 This entry shall only be used when the substance does not meet the criteria of any other class. Transport in cargo transport units other than in tanks shall be in accordance with standards specified by the competent authority of the country of origin.
- 235 This entry applies to articles which contain class 1 explosive substances and which may also contain dangerous goods of other classes. These articles are used to enhance safety in vehicles, vessels or aircraft, e.g. air bag inflators, air bag modules, seat-belt pretensioners, and pyromechanical devices.
- 236 Polyester resin kits consist of two components: a base material (either class 3 or class 4.1, packing group II or III) and an activator (organic peroxide). The organic peroxide shall be type D, E, or F, not requiring temperature control. The packing group shall be II or III, according to the criteria of either class 3 or class 4.1, as appropriate, applied to the base material. The quantity limit shown in column 7a of the Dangerous Goods List 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 transport, 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, 33.2.1, that nitrocellulose membrane filters in the form in which they are to be transported are not subject to the provisions of this Code applicable to flammable solids in class 4.1.
- 238 .1 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 $24^{\circ}\text{C} \pm 4^{\circ}\text{C}$ 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.

Non-spillable type 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.

- .2 Non-spillable batteries are not subject to the provisions of this Code 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, when packaged for transport, the terminals are protected from short circuit.

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

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

Batteries shall consist of cells secured within and fully enclosed by a metal casing so constructed and closed as to prevent the release of the dangerous goods under normal conditions of transport.

△ 240 *Deleted.*

241 The formulation shall be prepared so that it remains homogeneous and does not separate during transport. 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 N.1 in the *Manual of Tests and Criteria*, part III, **subsection 33.2.4** (chips, if necessary, crushed and sieved to a particle size of less than 1.25 mm) are not subject to the provisions of this Code.

242 Sulphur is not subject to the provisions of this Code when it has been formed to a specific shape (such as prills, granules, pellets, pastilles or flakes).

243 Gasoline, motor spirit and petrol for use in spark-ignition engines (e.g. in automobiles, stationary engines and other engines) shall be assigned to this entry regardless of variations in volatility.

244 This entry includes materials and substances such as aluminium dross, aluminium skimmings, spent cathodes, spent potliner and aluminium salt slags.

Before loading, these by-products shall be cooled to ambient temperature, unless they have been calcined to remove moisture. Cargo transport units containing bulk loads shall be adequately ventilated and protected against ingress of water throughout the journey.

247 Alcoholic beverages containing more than 24% alcohol but not more than 70% by volume, when transported as part of the manufacturing process, may be transported in wooden barrels with a capacity of more than 250 L and not more than 500 L meeting the general requirements of 4.1.1, as appropriate, on the following conditions:

- .1 the wooden barrels shall be checked and tightened before filling;
- .2 sufficient ullage (not less than 3%) shall be left to allow for the expansion of the liquid;
- .3 the wooden barrels shall be transported with the bungholes pointing upwards;
- .4 the wooden barrels shall be transported in containers meeting the provisions of the *International Convention for Safe Containers, 1972* (CSC Convention), as amended, and each wooden barrel shall be secured in custom-made cradles and be wedged by appropriate means to prevent it from being displaced in any way during transport; and
- .5 when carried on board ships, the containers shall be stowed in open cargo spaces or in enclosed cargo spaces complying with the requirements for class 3 flammable liquids with a flashpoint of 23°C c.c. or less in regulation II-2/19 of SOLAS, 74, as amended or regulation II-2/54 of SOLAS 74, as amended by the resolutions indicated in II-2/1.2.1, as applicable.

249 Ferrocium, stabilized against corrosion, with a minimum iron content of 10% is not subject to the provisions of this Code.

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 transport of substances under this

entry shall be in accordance with the chain of custody and security procedures specified by the Organization for the Prohibition of Chemical Weapons.

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

- .1 it shall be packaged according to packing instruction 623 in the International Civil Aviation Organization's Technical Instructions for the Safe Transport of Dangerous Goods by Air; and
- .2 during transport, it shall be accompanied by a copy of the document of approval for transport, showing the quantity limitations and the packing provisions.

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 example, for medical, analytical, testing or repair purposes. Such kits shall only contain dangerous goods that are permitted as:

- .1 excepted quantities not exceeding the quantity indicated by the code in column 7b of the Dangerous Goods List of chapter 3.2, provided that the net quantity per inner packaging and net quantity per package are as prescribed in 3.5.1.2 and 3.5.1.3; or
- .2 limited quantities as indicated in column 7a of the Dangerous Goods List of chapter 3.2, provided that the net quantity per inner packaging does not exceed 250 mL or 250 g.

Components shall not react dangerously (see 4.1.1.6). The total quantity of dangerous goods in any one kit shall not exceed either 1 L or 1 kg.

For the purposes of completion of the dangerous goods transport document as set out in 5.4.1.4.1, the packing group shown on the document shall be the most stringent packing group assigned to any individual substance in the kit. Where the kit contains only dangerous goods to which no packing group is assigned, no packing group need be indicated on the dangerous goods transport document.

Kits which are carried on board vehicles for first-aid or operating purposes are not subject to the provisions of this Code.

Chemical kits and first aid kits containing dangerous goods in inner packagings which do not exceed the quantity limits for limited quantities applicable to individual substances as specified in column 7a of the Dangerous Goods List may be transported in accordance with chapter 3.4.

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

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

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

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 in transport 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 under class 4.1 on the basis of series 6(c) tests of part I of the *Manual of Tests and Criteria* on at least three packages as prepared for transport. Mixtures containing at least 98%, by mass, of phlegmatizer are not subject to the provisions of this Code. Packages containing mixtures with not less than 90%, by mass, of phlegmatizer need not bear a "TOXIC" subsidiary hazard label.

272 This substance shall not be transported under the provisions of class 4.1 unless specifically authorized by the competent authority (see UN 0143 or UN 0150 as appropriate).

273 Maneb and manebe 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 m³ 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 For the purposes of documentation and package marking, the proper shipping name shall be supplemented with the technical name (see 3.1.2.8.1).

- For UN 3077 and UN 3082 only, the technical name may be a name shown in capital letters in column 2 of the Dangerous Goods List, provided that this name does not include "N.O.S." and that special provision 274 is not assigned. The name which most appropriately describes the substance or mixture shall be used, e.g.:

- UN 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PAINT)

- UN 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PERFUMERY PRODUCTS).

- 277 For aerosols or receptacles containing toxic substances, the limited quantity value is 120 mL. For all other aerosols or receptacles, the limited quantity value is 1,000 mL.
- 278 These substances shall not be classified and transported unless authorized by the competent authority on the basis of results from series 2 tests and series 6(c) tests of part I of the *Manual of Tests and Criteria* on packages as prepared for transport (see 2.1.3.1). The competent authority shall assign the packing group on the basis of the chapter 2.3 criteria and the package type used for the series 6(c) tests.
- 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 this Code.
- 280 This entry applies to safety devices for vehicles, vessels or aircraft, e.g. air bag inflators, air bag modules, seat-belt pretensioners, and pyromechanical devices, which contain dangerous goods of class 1 or of other classes, when transported as component parts and if these articles as presented for transport have been tested in accordance with test series 6(c) of part I of the *Manual of Tests and Criteria*, with no explosion of the device, no fragmentation of device casing or pressure receptacle, and no projection hazard nor thermal effect which would significantly hinder fire-fighting or emergency response efforts in the immediate vicinity. This entry does not apply to life-saving appliances described in special provision 296 (UN Nos. 2990 and 3072).
- 281 Transport of hay, straw or bhusa when wet, damp or contaminated with oil is prohibited and when not wet or contaminated with oil is subject to the provisions of this Code.
- 283 Articles, containing gas, intended to function as shock absorbers, including impact-energy-absorbing devices or pneumatic springs, are not subject to the provisions of this Code provided:
- .1 each article has a gas space capacity not exceeding 1.6 L and a charge pressure not exceeding 280 bar where the product of the capacity (litres) and charge pressure (bar) does not exceed 80 (i.e. 0.5 L gas space and 160 bar charge pressure, 1 L gas space and 80 bar charge pressure, 1.6 L gas space and 50 bar charge pressure, 0.28 L gas space and 280 bar charge pressure);
 - .2 each article has a minimum burst pressure of 4 times the charge pressure at 20°C for products not exceeding 0.5 L gas space capacity and 5 times charge pressure for products greater than 0.5 L gas space capacity;
 - .3 each article is manufactured from material which will not fragment upon rupture;
 - .4 each article is manufactured in accordance with a quality-assurance standard acceptable to the competent authority; and
 - .5 the design type has been subjected to a fire test demonstrating that pressure in the article is relieved 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.
- 284 An oxygen generator, chemical, containing oxidizing substances shall meet the following conditions:
- .1 the generator, when containing an explosive device, shall only be transported under this entry when excluded from class 1 in accordance with 2.1.3 of this Code;
 - .2 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; and
 - .3 when the 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 provisions of this Code when contained individually in an article or a sealed packet.
- 288 These substances shall not be classified and transported 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 transport (see 2.1.3).
- 289 Safety devices, electrically initiated and safety devices, pyrotechnic installed in vehicles, vessels or aircraft or in completed components such as steering columns, door panels, seats, etc., are not subject to the provisions of this Code.
- 290 When this radioactive material meets the definitions and criteria of other classes or divisions as defined in part 2, it shall be classified in accordance with the following:
- .1 where the substance meets the criteria for dangerous goods in excepted quantities as set out in chapter 3.5, the packagings shall be in accordance with 3.5.2 and meet the testing requirements of 3.5.3. All other requirements applicable to radioactive material, excepted packages as set out in 1.5.1.5 shall apply without reference to the other class or division;

- .2 where the quantity exceeds the limits specified in 3.5.1.2, the substance shall be classified in accordance with the predominant subsidiary hazard. The dangerous goods transport document shall describe the substance with the UN number and proper shipping name applicable to the other class supplemented with the name applicable to the radioactive excepted package according to column 2 in the Dangerous Goods List of chapter 3.2, and the substance shall be transported in accordance with the provisions applicable to that UN number. An example of the information shown on the dangerous goods transport document is:
UN 1993, Flammable liquid, N.O.S. (ethanol and toluene mixture), Radioactive material, excepted package – limited quantity of material, class 3, PG II.
In addition, the provisions of 2.7.2.4.1 shall apply;
- .3 the provisions of chapter 3.4 for the transport of dangerous goods packed in limited quantities shall not apply to substances classified in accordance with subparagraph .2;
- .4 when the substance meets a special provision that exempts this substance from all dangerous goods provisions of the other classes, it shall be classified in accordance with the applicable UN number of class 7 and all requirements specified in 1.5.1.5 shall apply.
- 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 and refrigerating-machine components 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 transport. Refrigerating machines and refrigerating-machine components are not subject to the provisions of this Code if they contain less than 12 kg of gas.
- 293 The following definitions apply to matches:
- .1 *Fusee matches* are matches the heads of which are prepared with a friction-sensitive igniter composition and a pyrotechnic composition which burns with little or no flame, but with intense heat;
- .2 *Safety matches* are matches that combined with or attached to the box, book or card that can be ignited by friction only on a prepared surface;
- .3 *“Strike anywhere” matches* are matches that can be ignited by friction on a solid surface;
- .4 *Wax ‘Vesta’ matches* are matches that can be ignited by friction either on a prepared surface or on a solid surface.
- 294 Safety matches and wax ‘Vesta’ matches in an outer packaging not exceeding 25 kg net mass are not subject to any other provision (except marking) of this Code when packaged in accordance with packing instruction P407.
- 295 Batteries need not be individually marked and labelled if the pallet bears the appropriate mark and label.
- 296 These entries apply to life-saving appliances such as liferafts, personal flotation devices and self-inflating slides. UN 2990 applies to self-inflating appliances. UN 3072 applies to life-saving appliances that are not self-inflating. Life-saving appliances may contain:
- .1 signal devices (class 1) which may include smoke and illumination signal flares packed in packagings that prevent them from being inadvertently activated;
- .2 for UN 2990 only, cartridges, power device of division 1.4, compatibility group S, may be contained for purposes of the self-inflating mechanism and provided that the quantity of explosives per appliance does not exceed 3.2 g;
- .3 class 2.2 compressed or liquefied gases;
- .4 electric storage batteries (class 8) and lithium batteries (class 9);
- .5 first aid kits or repair kits containing small quantities of dangerous goods (e.g. classes 3, 4.1, 5.2, 8 or 9 substances); or
- .6 “Strike anywhere” matches packed in packagings that prevent them from being inadvertently activated.
- Life-saving appliances packed in strong rigid outer packagings with a total maximum gross mass of 40 kg, containing no dangerous goods other than class 2.2 compressed or liquefied gases with no subsidiary hazard in receptacles with a capacity not exceeding 120 mL, installed solely for the purpose of the activation of the appliance, are not subject to the provision of this Code.
- 299 Consignments of:
- .1 Cotton, dry having a density not less than 360 kg/m³;
- .2 Flax, dry having a density not less than 400 kg/m³;
- .3 Sisal, dry having a density not less than 360 kg/m³; and
- .4 Tampico fibre, dry having a density not less than 360 kg/m³,
- according to ISO 8115:1986, are not subject to the provisions of this Code when transported in closed cargo transport units.

- 300 Fish meal, fish scrap and krill meal shall not be transported if the temperature at the time of loading exceeds 35°C or 5°C above the ambient temperature, whichever is higher.
- △ 301 This entry only applies to articles such as machinery, apparatus or devices containing dangerous goods as a residue or an integral element of the articles. It shall not be used for articles for which a proper shipping name already exists in the Dangerous Goods List. Articles transported under this entry shall only contain dangerous goods which are authorized to be transported in accordance with the provisions in chapter 3.4 (Limited quantities). The quantity of dangerous goods in articles shall not exceed the quantity specified in column 7a of the Dangerous Goods List for each item of dangerous goods contained. If the articles contains more than one item of dangerous goods, the individual dangerous goods shall be enclosed to prevent them reacting dangerously with one another during transport (see 4.1.1.6). When it is required to ensure liquid dangerous goods remain in their intended orientation, orientation arrows shall be displayed on at least two opposite vertical sides with the arrows pointing in the correct direction in accordance with 5.2.1.7.1.
- 302 Fumigated cargo transport units containing no other dangerous goods are only subject to the provisions of 5.5.2.
- 303 Receptacles shall be assigned to the class and, if any, subsidiary hazard of the gas or mixture of gases contained therein determined in accordance with the provisions of chapter 2.2.
- 304 This entry may only be used for the transport of non-activated batteries which contain dry potassium hydroxide and which are intended to be activated prior to use by the addition of an appropriate amount of water to the individual cells.
- 305 These substances are not subject to the provisions of this Code when in concentrations of not more than 50 mg/kg.
- 306 This entry may only be used for substances that are too insensitive for acceptance into class 1 when tested in accordance with test series 2 (see *Manual of Tests and Criteria*, part I).
- 307 This entry may only be used for ammonium nitrate based fertilizers. They shall be classified in accordance with the procedure as set out in the *Manual of Tests and Criteria*, part III, section 39.
- △ 308 Stabilization of fish meal shall be achieved to prevent spontaneous combustion by effective application of ethoxyquin, BHT (butylated hydroxytoluene) or tocopherols (also used in a blend with rosemary extract) at the time of production. The said application shall occur within twelve months prior to shipment. Fish scrap or fish meal shall contain at least 50 ppm (mg/kg) of ethoxyquin, 100 ppm (mg/kg) of BHT or 250 ppm (mg/kg) of tocopherol based antioxidant at the time of shipment.
- 309 This entry applies to non-sensitized emulsions, suspensions and gels consisting primarily of a mixture of ammonium nitrate and fuel, intended to produce a Type E blasting explosive only after further processing prior to use.
- The mixture for emulsions typically has the following composition: 60–85% ammonium nitrate, 5–30% water, 2–8% fuel, 0.5–4% emulsifier agent, 0–10% soluble flame suppressants, and trace additives. Other inorganic nitrate salts may replace part of the ammonium nitrate.
- The mixture for suspensions and gels typically has the following composition: 60–85% ammonium nitrate, 0–5% sodium or potassium perchlorate, 0–17% hexamine nitrate or monomethylamine nitrate, 5–30% water, 2–15% fuel, 0.5–4% thickening agent, 0–10% soluble flame suppressants, and trace additives. Other inorganic nitrate salts may replace part of the ammonium nitrate.
- △ Substances shall satisfy the criteria for classification as an ammonium nitrate emulsion, suspension or gel, intermediate for blasting explosives (ANE) of Test Series 8 of the *Manual of Tests and Criteria*, part I, section 18 and be approved by the competent authority.
- 310 The testing requirements in the *Manual of Tests and Criteria*, part III, subsection 38.3 do not apply to production runs, consisting of not more than 100 cells or batteries, or to pre-production prototypes of cells or batteries when these prototypes are transported for testing when packaged in accordance with packing instruction P910 of 4.1.4.1 or LP905 of 4.1.4.3, as applicable.
- The transport document shall include the following statement: "Transport in accordance with special provision 310".
- △ Damaged or defective cells, batteries, or cells and batteries contained in equipment shall be transported in accordance with special provision 376.
- Cells, batteries or cells and batteries contained in equipment transported for disposal or recycling may be packaged in accordance with special provision 377 and packing instruction P909 of 4.1.4.1.
- 311 Substances shall not be transported under this entry unless approved by the competent authority on the basis of the results of appropriate tests according to part I of the *Manual of Tests and Criteria*. Packaging shall ensure that the percentage of diluent does not fall below that stated in the competent authority approval at any time during transport.
- 314 .1 These substances are liable to exothermic decomposition at elevated temperatures. Decomposition can be initiated by heat or by impurities (e.g. powdered metals (iron, manganese, cobalt, magnesium) and their compounds).

- .2 During the course of transport, these substances shall be shaded from direct sunlight and all sources of heat and be placed in adequately ventilated areas.
- 315 This entry shall not be used for class 6.1 substances which meet the inhalation toxicity criteria for packing group I described in 2.6.2.2.4.3.
- 316 This entry applies only to calcium hypochlorite, dry, when transported in non-friable tablet form.
- 317 “Fissile-excepted” applies only to those fissile materials and packages containing fissile material which are excepted in accordance with 2.7.2.3.5.
- 318 For the purposes of documentation, the proper shipping name shall be supplemented with the technical name (see 3.1.2.8). Technical names need not be shown on the package. When the infectious substances to be transported are unknown, but suspected of meeting the criteria for inclusion in category A and assignment to UN 2814 or UN 2900, the words “suspected category A infectious substance” shall be shown, in parentheses, following the proper shipping name on the transport document, but not on the outer packagings.
- 319 Substances packed and packages marked in accordance with packing instruction P650 are not subject to any other provisions of this Code.
- 321 These storage systems shall always be considered as containing hydrogen.
- 322 When transported in non-friable tablet form, these goods are assigned to packing group III.
- △ 323 *Deleted.*
- 324 This substance needs to be stabilized when in concentrations of not more than 99%.
- 325 In the case of non-fissile or fissile-excepted uranium hexafluoride, the material shall be classified under UN 2978.
- 326 In the case of fissile uranium hexafluoride, the material shall be classified under UN 2977.
- △ 327 Waste aerosols and waste gas cartridges consigned in accordance with 5.4.1.4.3.3 may be transported under UN 1950 or UN 2037, as appropriate, for the purposes of reprocessing or disposal. They need not be protected against movement and inadvertent discharge provided that measures to prevent dangerous build-up of pressure and dangerous atmospheres are addressed. Waste aerosols, other than those leaking or severely deformed, shall be packed in accordance with packing instruction P207 and special provision PP87, or packing instruction LP200 and special packing provision L2. Waste gas cartridges, other than those leaking or severely deformed, shall be packed in accordance with packing instruction P003 and special packing provisions PP17 and PP96, or packing instruction LP200 and special packing provision L2. Leaking or severely deformed aerosols and gas cartridges shall be transported in salvage pressure receptacles or salvage packagings provided appropriate measures are taken to ensure there is no dangerous build-up of pressure. Waste aerosols and waste gas cartridges shall not be transported in closed freight containers.
- Waste gas cartridges that were filled with gases of class 2.2 and have been pierced are not subject to this Code.
- 328 This entry applies to fuel cell cartridges, including when contained in equipment or packed with equipment. Fuel cell cartridges installed in or integral to a fuel cell system are regarded as contained in equipment. “Fuel cell cartridge” means an article that stores fuel for discharge into the fuel cell through a valve(s) that controls the discharge of fuel into the fuel cell. Fuel cell cartridges, including when contained in equipment, shall be designed and constructed to prevent fuel leakage under normal conditions of transport.
- Fuel cell cartridge design types using liquids as fuels shall pass an internal pressure test at a pressure of 100 kPa (gauge) without leakage.
- Except for fuel cell cartridges containing hydrogen in metal hydride, which shall be in compliance with special provision 339, each fuel cell cartridge design type shall be shown to pass a 1.2 m drop test onto an unyielding surface, in the orientation most likely to result in failure of the containment system, with no loss of contents.
- When lithium metal or lithium ion batteries are contained in the fuel cell system, the consignment shall be consigned under this entry and under the appropriate entries for UN 3091 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT.
- 332 Magnesium nitrate hexahydrate is not subject to the provisions of this Code.
- 333 Ethanol and gasoline, motor spirit or petrol mixtures for use in spark-ignition engines (e.g. in automobiles, stationary engines and other engines) shall be assigned to this entry regardless of variations in volatility.
- 334 A fuel cell cartridge may contain an activator provided it is fitted with two independent means of preventing unintended mixing with the fuel during transport.

335 Mixtures of solids which are not subject to the provisions of this Code and environmentally hazardous liquids assigned to UN 3082 may be classified and transported as UN 3077, provided there is no free liquid visible at the time the substance is loaded or at the time the packaging or cargo transport unit is closed. If free liquid is visible at the time the mixture is loaded or at the time the packaging or cargo transport unit is closed, the mixture shall be classified as UN 3082. Each cargo transport unit shall be leakproof when used as a bulk container. Sealed packets and articles containing less than 10 mL of an environmentally hazardous liquid assigned to UN 3082, absorbed into a solid material but with no free liquid in the packet or article, or containing less than 10 g of an environmentally hazardous solid assigned to UN 3077, are not subject to the provisions of this Code.

338 Each fuel cell cartridge transported under this entry and designed to contain a liquefied flammable gas shall:

- .1 be capable of withstanding, without leakage or bursting, a pressure of at least two times the equilibrium pressure of the contents at 55°C;
- .2 not contain more than 200 mL liquefied flammable gas, the vapour pressure of which shall not exceed 1 000 kPa at 55°C; and
- .3 pass the hot water bath test prescribed in 6.2.4.1 of chapter 6.2.

339 Fuel cell cartridges containing hydrogen in a metal hydride transported under this entry shall have a water capacity less than or equal to 120 mL. The pressure in the fuel cell cartridge shall not exceed 5 MPa at 55°C. The design type shall withstand, without leaking or bursting, a pressure of two (2) times the design pressure of the cartridge at 55°C or 200 kPa more than the design pressure of the cartridge at 55°C, whichever is greater. The pressure at which this test is conducted is referred to in the Drop Test and the Hydrogen Cycling Test as the “minimum shell burst pressure”.

Fuel cell cartridges shall be filled in accordance with procedures provided by the manufacturer. The manufacturer shall provide the following information with each fuel cell cartridge:

- .1 Inspection procedures to be carried out before initial filling and before refilling of the fuel cell cartridge;
- .2 Safety precautions and potential hazards to be aware of;
- .3 Method for determining when the rated capacity has been achieved;
- .4 Minimum and maximum pressure range;
- .5 Minimum and maximum temperature range; and
- .6 Any other requirements to be met for initial filling and refilling, including the type of equipment to be used for initial filling and refilling.

The fuel cell cartridges shall be designed and constructed to prevent fuel leakage under normal conditions of transport. Each cartridge design type, including cartridges integral to a fuel cell, shall be subjected to and shall pass the following tests:

Drop test

A 1.8 m drop test onto an unyielding surface in four different orientations:

- .1 Vertically, on the end containing the shut-off valve assembly;
- .2 Vertically, on the end opposite to the shut-off valve assembly;
- .3 Horizontally, onto a steel apex with a diameter of 38 mm, with the steel apex in the upward position; and
- .4 At a 45° angle on the end containing the shut-off valve assembly.

There shall be no leakage, determined by using a soap bubble solution or other equivalent means on all possible leak locations, when the cartridge is charged to its rated charging pressure. The fuel cell cartridge shall then be hydrostatically pressurized to destruction. The recorded burst pressure shall exceed 85% of the minimum shell burst pressure.

Fire test

A fuel cell cartridge filled to rated capacity with hydrogen shall be subjected to a fire engulfment test. The cartridge design, which may include a vent feature integral to it, is deemed to have passed the fire test if:

- .1 The internal pressure vents to zero gauge pressure without rupture of the cartridge; or
- .2 The cartridge withstands the fire for a minimum of 20 minutes without rupture.

Hydrogen cycling test

This test is intended to ensure that a fuel cell cartridge design stress limits are not exceeded during use.

The fuel cell cartridge shall be cycled from not more than 5% rated hydrogen capacity to not less than 95% rated hydrogen capacity and back to not more than 5% rated hydrogen capacity. The rated

charging pressure shall be used for charging and temperatures shall be held within the operating temperature range. The cycling shall be continued for at least 100 cycles.

Following the cycling test, the fuel cell cartridge shall be charged and the water volume displaced by the cartridge shall be measured. The cartridge design is deemed to have passed the hydrogen cycling test if the water volume displaced by the cycled cartridge does not exceed the water volume displaced by an uncycled cartridge charged to 95% rated capacity and pressurized to 75% of its minimum shell burst pressure.

Production leak test

Each fuel cell cartridge shall be tested for leaks at $15^{\circ}\text{C} \pm 5^{\circ}\text{C}$, while pressurized to its rated charging pressure. There shall be no leakage, determined by using a soap bubble solution or other equivalent means on all possible leak locations.

Each fuel cell cartridge shall be permanently marked with the following information:

- .1 The rated charging pressure in megapascals (MPa);
- .2 The manufacturer's serial number of the fuel cell cartridges or unique identification number; and
- .3 The date of expiry based on the maximum service life (year in four digits; month in two digits).

340 Chemical kits, first aid kits and polyester resin kits containing dangerous substances in inner packagings which do not exceed the quantity limits for excepted quantities applicable to individual substances as specified in column 7b of the Dangerous Goods List may be transported in accordance with chapter 3.5. Class 5.2 substances, although not individually authorized as excepted quantities in the Dangerous Goods List, are authorized in such kits and are assigned code E2 (see 3.5.1.2).

341 Bulk transport of infectious substances in BK2 bulk containers is only permitted for infectious substances contained in animal material as defined in 1.2.1 (see 4.3.2.4.1).

342 Glass inner receptacles (such as ampoules or capsules) intended only for use in sterilization devices, when containing less than 30 mL of ethylene oxide per inner packaging with not more than 300 mL per outer packaging, may be transported in accordance with the provisions in chapter 3.5, irrespective of the indication of "E0" in column 7b of the Dangerous Goods List provided that:

- .1 After filling, each glass inner receptacle has been determined to be leak tight by placing the glass inner receptacle in a hot water bath at a temperature, and for a period of time, sufficient to ensure that an internal pressure equal to the vapour pressure of ethylene oxide at 55°C is achieved. Any glass inner receptacle showing evidence of leakage, distortion or other defect under this test shall not be transported under the terms of this special provision;
- .2 In addition to the packaging required by 3.5.2, each glass inner receptacle is placed in a sealed plastics bag compatible with ethylene oxide and capable of containing the contents in the event of breakage or leakage of the glass inner receptacle; and
- .3 Each glass inner receptacle is protected by a means of preventing puncture of the plastics bag (e.g. sleeves or cushioning) in the event of damage to the packaging (e.g. by crushing).

343 This entry applies to crude oil containing hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard. The packing group assigned shall be determined by the flammability hazard and inhalation hazard, in accordance with the degree of danger presented.

344 The provisions of 6.2.4 shall be met.

345 This gas contained in open cryogenic receptacles with a maximum capacity of 1 L constructed with glass double walls having the space between the inner and outer wall evacuated (vacuum insulated) is not subject to the provisions of this Code provided each receptacle is transported in an outer packaging with suitable cushioning or absorbent materials to protect it from impact damage.

346 Open cryogenic receptacles conforming to the requirements of packing instruction P203 and containing no dangerous goods except for UN 1977, nitrogen, refrigerated liquid, which is fully absorbed in a porous material, are not subject to any other provisions of this Code.

347 This entry shall only be used if the results of test series 6(d) of part I of the *Manual of Tests and Criteria* have demonstrated that any hazardous effects arising from functioning are confined within the package.

348 Batteries manufactured after 31 December 2011 shall be marked with the Watt hour rating on the outside case.

349 Mixtures of a hypochlorite with an ammonium salt are not to be accepted for transport. UN 1791 hypochlorite solution is a substance of class 8.

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

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

- 352 Ammonium chlorite and its aqueous solutions and mixtures of a chlorite with an ammonium salt are not to be accepted for transport.
- 353 Ammonium permanganate and its aqueous solutions and mixtures of a permanganate with an ammonium salt are not to be accepted for transport.
- 354 This substance is toxic by inhalation.
- 355 Oxygen cylinders for emergency use transported under this entry may include installed actuating cartridges (cartridges, power device of class 1.4, compatibility group C or S), without changing the classification of class 2.2 provided the total quantity of deflagrating (propellant) explosives does not exceed 3.2 g per oxygen cylinder. The cylinders with the installed actuating cartridges as prepared for transport shall have an effective means of preventing inadvertent activation.
- △ 356 Metal hydride storage systems installed in vehicles, vessels, machinery, engines or aircraft or in completed components or intended to be installed in vehicles, vessels, machinery, engines or aircraft shall be approved by the competent authority before acceptance for transport. The transport document shall include an indication that the package was approved by the competent authority or a copy of the competent authority approval shall accompany each consignment.
- 357 Petroleum crude oil containing hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard shall be consigned under the entry UN 3494 PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC.
- 358 Nitroglycerin solution in alcohol with more than 1% but not more than 5% nitroglycerin may be classified in class 3 and assigned to UN 3064 provided all the requirements of packing instruction P300 are complied with.
- 359 Nitroglycerin solution in alcohol with more than 1% but not more than 5% nitroglycerin shall be classified in class 1 and assigned to UN 0144 if not all the requirements of packing instruction P300 are complied with.
- △ 360 Vehicles only powered by lithium metal batteries or lithium ion batteries shall be assigned to the entry UN 3171 BATTERY POWERED VEHICLE. Lithium batteries installed in cargo transport units, designed only to provide power external to the transport unit shall be assigned to entry UN 3536 LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT.
- 361 This entry applies to electric double layer capacitors with an energy storage capacity greater than 0.3 Wh. Capacitors with an energy storage capacity of 0.3 Wh or less are not subject to the provisions of this Code. Energy storage capacity means the energy held by a capacitor, as calculated using the nominal voltage and capacitance. All capacitors to which this entry applies, including capacitors containing an electrolyte that does not meet the classification criteria of any class or division of dangerous goods, shall meet the following conditions:
- .1 Capacitors not installed in equipment shall be transported in an uncharged state. Capacitors installed in equipment shall be transported either in an uncharged state or protected against short circuit;
 - .2 Each capacitor shall be protected against a potential short circuit hazard in transport as follows:
 - .1 when a capacitor's energy storage capacity is less than or equal to 10 Wh or when the energy storage capacity of each capacitor in a module is less than or equal to 10 Wh, the capacitor or module shall be protected against short circuit or be fitted with a metal strap connecting the terminals; and
 - .2 when the energy storage capacity of a capacitor or a capacitor in a module is more than 10 Wh, the capacitor or module shall be fitted with a metal strap connecting the terminals;
 - .3 Capacitors containing dangerous goods shall be designed to withstand a 95 kPa pressure differential;
 - .4 Capacitors shall be designed and constructed to safely relieve pressure that may build up in use, through a vent or a weak point in the capacitor casing. Any liquid which is released upon venting shall be contained by the packaging or by the equipment in which a capacitor is installed; and
 - .5 Capacitors manufactured after 31 December 2013 shall be marked with the energy storage capacity in Wh.
- Capacitors containing an electrolyte not meeting the classification criteria of any class or division of dangerous goods, including when installed in equipment, are not subject to other provisions of this Code.
- Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, with an energy storage capacity of 10 Wh or less are not subject to other provisions of this Code when they are capable of withstanding a 1.2 m drop test unpackaged on an unyielding surface without loss of contents.

Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods that are not installed in equipment and with an energy storage capacity of more than 10 Wh are subject to the provisions of this Code.

Capacitors installed in the equipment and containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, are not subject to other provisions of this Code provided the equipment is packaged in a strong outer packaging constructed of suitable material and of adequate strength and design, in relation to the packaging's intended use and in such a manner as to prevent accidental functioning of capacitors during transport. Large robust equipment containing capacitors may be offered for transport unpackaged or on pallets when capacitors are afforded equivalent protection by the equipment in which they are contained.

Note: Capacitors which by design maintain a terminal voltage (e.g. asymmetrical capacitors) do not belong to this entry.

- 362 This entry applies to liquids, pastes or powders, pressurized with a propellant which meets the definition of a gas in 2.2.1.1 and 2.2.1.2.1 or 2.2.1.2.2.

Note: A chemical under pressure in an aerosol dispenser shall be transported under UN 1950.

The following provisions shall apply:

- .1 the chemical under pressure shall be classified based on the hazard characteristics of the components in the different states:
 - the propellant;
 - the liquid; or
 - the solid.

If one of these components, which can be a pure substance or a mixture, needs to be classified as flammable, the chemical under pressure shall be classified as flammable in class 2.1. Flammable components are flammable liquids and liquid mixtures, flammable solids and solid mixtures or flammable gases and gas mixtures meeting the following criteria:

- .1 a flammable liquid is a liquid having a flashpoint of not more than 93°C;
- .2 a flammable solid is a solid which meets the criteria in 2.4.2.2 of this Code;
- .3 a flammable gas is a gas which meets the criteria in 2.2.2.1 of this Code;
- .2 gases of class 2.3 and gases with a subsidiary hazard of 5.1 shall not be used as a propellant in a chemical under pressure;
- .3 where the liquid or solid components are classified as dangerous goods of class 6.1, packing groups II or III, or class 8, packing groups II or III, the chemical under pressure shall be assigned a subsidiary hazard of class 6.1 or class 8 and the appropriate UN number shall be assigned. Components classified in class 6.1, packing group I, or class 8, packing group I, shall not be used for transport under this proper shipping name;
- .4 in addition, chemicals under pressure with components meeting the properties of: class 1, explosives; class 3, liquid desensitized explosives; class 4.1, self-reactive substances and solid desensitized explosives; class 4.2, substances liable to spontaneous combustion; class 4.3, substances which, in contact with water, emit flammable gases; class 5.1, oxidizing substances; class 5.2, organic peroxides; class 6.2, Infectious substances or class 7, Radioactive material, shall not be used for transport under this proper shipping name;
- .5 substances to which PP86 or TP7 are assigned in column 9 and column 14 of the Dangerous Goods List in chapter 3.2 and therefore require air to be eliminated from the vapour space, shall not be used for transport under this UN number but shall be transported under their respective UN numbers as listed in the Dangerous Goods List of chapter 3.2.

- 363 This entry may only be used when the conditions of this special provision are met. No other provisions of this Code apply, except for special provision 972, chapter 5.4, part 7 and column 16a and 16b of the Dangerous Goods List.

- .1 This entry applies to engines or machinery, powered by fuels classified as dangerous goods via internal combustion systems or fuel cells (e.g. combustion engines, generators, compressors, turbines, heating units, etc.), except those which are assigned under UN 3166 or UN 3363;
- .2 Engines or machinery which are empty of liquid or gaseous fuels and which do not contain other dangerous goods, are not subject to this Code.

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

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

- .3 Engines and machinery containing fuels meeting the classification criteria of class 3, shall be consigned under the entries UN No. 3528 ENGINE, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED or UN 3528 ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or UN 3528 MACHINERY, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED or UN 3528 MACHINERY, FUEL CELL, FLAMMABLE LIQUID POWERED, as appropriate.
- .4 Engines and machinery containing fuels meeting the classification criteria of class 2.1, shall be consigned under the entries UN 3529 ENGINE, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or UN 3529 ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3529 MACHINERY, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or UN 3529 MACHINERY, FUEL CELL, FLAMMABLE GAS POWERED, as appropriate.
Engines and machinery powered by both a flammable gas and a flammable liquid shall be consigned under the appropriate UN 3529 entry.
- .5 Engines and machinery containing liquid fuels meeting the classification criteria of 2.9.3 for environmentally hazardous substances and not meeting the classification criteria of any other class or division, shall be consigned under the entries UN 3530 ENGINE, INTERNAL COMBUSTION or UN 3530 MACHINERY, INTERNAL COMBUSTION, as appropriate.
- .6 Engines or machinery may contain other dangerous goods than fuels (e.g. batteries, fire extinguishers, compressed gas accumulators or safety devices) required for their functioning or safe operation without being subject to any additional requirements for these other dangerous goods, unless otherwise specified in this Code.
- .7 The engine or machinery, including the means of containment containing dangerous goods, shall be in compliance with the construction requirements specified by the competent authority.
- .8 Any valves or openings (e.g. venting devices) shall be closed during transport.
- .9 The engines or machinery shall be oriented to prevent inadvertent leakage of dangerous goods and secured by means capable of restraining the engines or machinery to prevent any movement during transport which would change the orientation or cause them to be damaged.
- .10 For UN 3528 and UN 3530:
- where the engine or machinery contains more than 60 L of liquid fuel and has a capacity of not more than 450 L, the labelling requirements of 5.2.2 shall apply;
 - where the engine or machinery contains more than 60 L of liquid fuel and has a capacity of more than 450 L but not more than 3,000 L, it shall be labelled on two opposing sides in accordance with 5.2.2;
 - △ – where the engine or machinery contains more than 60 L of liquid fuel and has a capacity of more than 3,000 L, it shall be placarded on two opposing sides. Placards shall correspond to the class indicated in column 3 of the Dangerous Goods List of chapter 3.2 and shall conform to the specifications given in 5.3.1.2.1;
 - in addition to the above requirements, for UN 3530, where the engine or machinery contains more than 60 L of liquid fuel and the capacity does not exceed 3,000 L, the marking requirements of 5.2.1.6 apply; and where the engine or machinery contains more than 60 L of liquid fuel and the capacity exceeds 3,000 L, the marking requirements of 5.3.2.3.2 apply.
- .11 For UN 3529:
- where the fuel tank of the engine or machinery has a water capacity of not more than 450 L, the labelling requirements of 5.2.2 shall apply;
 - where the fuel tank of the engine or machinery has a water capacity of more than 450 L but not more than 1,000 L, it shall be labelled on two opposing sides in accordance with 5.2.2; and
 - △ – where the fuel tank of the engine or machinery has a water capacity of more than 1,000 L, it shall be placarded on two opposing sides. Placards shall correspond to the class indicated in Column 3 of the Dangerous Goods List in Chapter 3.2 and shall conform to the specifications given in 5.3.1.2.1.
- .12 The transport document shall contain the following additional statement “Transport in accordance with special provision 363”.
- .13 The requirements specified in packing instruction P005 of 4.1.4.1 shall be met.
- 364 This article may only be transported under the provisions of chapter 3.4 if, as presented for transport, the package is capable of passing the test in accordance with test series 6(d) of part I of the *Manual of Tests and Criteria* as determined by the competent authority.
- 365 For manufactured instruments and articles containing mercury, see UN 3506.

- 366 Manufactured instruments and articles containing not more than 1 kg of mercury are not subject to the provisions of this Code.
- 367 For the purposes of documentation and package marking:
 The proper shipping name "PAINT RELATED MATERIAL" may be used for consignments of packages containing "PAINT" and "PAINT RELATED MATERIAL" in the same package;
 The proper shipping name "PAINT RELATED MATERIAL, CORROSIVE, FLAMMABLE" may be used for consignments of packages containing "PAINT, CORROSIVE, FLAMMABLE" and "PAINT RELATED MATERIAL, CORROSIVE, FLAMMABLE" in the same package;
 The proper shipping name "PAINT RELATED MATERIAL, FLAMMABLE, CORROSIVE" may be used for consignments of packages containing "PAINT, FLAMMABLE, CORROSIVE" and "PAINT RELATED MATERIAL, FLAMMABLE, CORROSIVE" in the same package; and
 The proper shipping name "PRINTING INK RELATED MATERIAL" may be used for consignments of packages containing "PRINTING INK" and "PRINTING INK RELATED MATERIAL" in the same package.
- 368 In the case of non-fissile or fissile-excepted uranium hexafluoride, the material shall be classified under UN 3507 or UN 2978.
- 369 In accordance with 2.0.3.5, this radioactive material in an excepted package possessing toxic and corrosive properties is classified in class 6.1 with radioactivity and corrosivity subsidiary hazards.
 Uranium hexafluoride may be classified under this entry only if the conditions of 2.7.2.4.1.2, 2.7.2.4.1.5, 2.7.2.4.5.2 and, for fissile-excepted material, of 2.7.2.3.5 are met.
 In addition to the provisions applicable to the transport of class 6.1 substances with a corrosivity subsidiary hazard, the provisions of 5.1.3.2, 5.1.5.2.2, 5.1.5.4.1.2, 7.1.4.5.9, 7.1.4.5.10, 7.1.4.5.12, and 7.8.4.1 to 7.8.4.6 shall apply.
 No class 7 label is required to be displayed.
- △ 370 This entry only applies to ammonium nitrate that meets one of the following criteria:
- △ – ammonium nitrate with more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any added substance; or
 - ammonium nitrate with not more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any added substance, that gives a positive result when tested in accordance with test series 2 (see *Manual of Tests and Criteria*, part I). See also UN 1942.
- This entry shall not be used for ammonium nitrate for which a proper shipping name already exists in the Dangerous Goods List of chapter 3.2 including ammonium nitrate mixed with fuel oil (ANFO) or any of the commercial grades of ammonium nitrate.
- 371 .1 This entry also applies to articles, containing a small pressure receptacle with a release device. Such articles shall comply with the following requirements:
- .1 the water capacity of the pressure receptacle shall not exceed 0.5 L and the working pressure shall not exceed 25 bar at 15°C;
 - .2 the minimum burst pressure of the pressure receptacle shall be at least four times the pressure of the gas at 15°C;
 - .3 each article shall be manufactured in such a way that unintentional firing or release is avoided under normal conditions of handling, packing, transport and use. This may be fulfilled by an additional locking device linked to the activator;
 - .4 each article shall be manufactured in such a way as to prevent hazardous projections of the pressure receptacle or parts of the pressure receptacle;
 - .5 each pressure receptacle shall be manufactured from material which will not fragment upon rupture;
 - .6 the design type of the article shall be subjected to a fire test. For this test, the provisions of paragraphs 16.6.1.2 except subparagraph (g), 16.6.1.3.1 to 16.6.1.3.6, 16.6.1.3.7 (b) and 16.6.1.3.8 of the *Manual of Tests and Criteria* shall be applied. It shall be demonstrated that the article relieves its pressure by means of a fire degradable seal or other pressure relief device, in such a way that the pressure receptacle will not fragment and that the article or fragments of the article do not rocket more than 10 m; and
 - .7 the design type of the article shall be subjected to the following test. A stimulating mechanism shall be used to initiate one article in the middle of the packaging. There shall be no hazardous effects outside the package such as disruption of the package, metal fragments or a receptacle which passes through the packaging.
- .2 The manufacturer shall produce technical documentation of the design type, manufacture as well as the tests and their results. The manufacturer shall apply procedures to ensure that articles produced in series are made of good quality, conform to the design type and are able to

meet the requirements in .1. The manufacturer shall provide such information to the competent authority on request.

- 372 This entry applies to asymmetric capacitors with an energy storage capacity greater than 0.3 Wh. Capacitors with an energy storage capacity of 0.3 Wh or less are not subject to the provisions of this Code.

Energy storage capacity means the energy stored in a capacitor, as calculated according to the following equation:

$$Wh = \frac{1}{2} \frac{C_N(U_R^2 - U_L^2)}{3,600}$$

using the nominal capacitance (C_N), rated voltage (U_R) and rated lower limit voltage (U_L).

All asymmetric capacitors to which this entry applies shall meet the following conditions:

- .1 capacitors or modules shall be protected against short circuit;
- .2 capacitors shall be designed and constructed to safely relieve pressure that may build up in use, through a vent or a weak point in the capacitor casing. Any liquid which is released upon venting shall be contained by packaging or by equipment in which a capacitor is installed;
- .3 capacitors manufactured after 31 December 2015 shall be marked with the energy storage capacity in Wh;
- .4 capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods shall be designed to withstand a 95 kPa pressure differential;

Capacitors containing an electrolyte not meeting the classification criteria of any class or division of dangerous goods, including when configured in a module or when installed in equipment are not subject to other provisions of this Code. Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, with an energy storage capacity of 20 Wh or less, including when configured in a module, are not subject to other provisions of this Code when the capacitors are capable of withstanding a 1.2 m drop test unpackaged on an unyielding surface without loss of contents.

Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods that are not installed in equipment and with an energy storage capacity of more than 20 Wh are subject to this Code.

Capacitors installed in equipment and containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, are not subject to other provisions of **this Code** provided that the equipment is packaged in a strong outer packaging constructed of suitable material, and of adequate strength and design, in relation to the packaging's intended use and in such a manner as to prevent accidental functioning of capacitors during transport. Large robust equipment containing capacitors may be offered for transport unpackaged or on pallets when capacitors are afforded equivalent protection by the equipment in which they are contained.

Note: Notwithstanding the provisions of this special provision, nickel-carbon asymmetric capacitors containing class 8 alkaline electrolytes shall be transported as UN 2795, BATTERIES, WET, FILLED WITH ALKALI, electric storage.

- 373 Neutron radiation detectors containing non-pressurized boron trifluoride gas may be transported under this entry provided that the following conditions are met:

- .1 Each radiation detector shall meet the following conditions:
 - .1 the pressure in each detector shall not exceed 105 kPa absolute at 20°C;
 - .2 the amount of gas shall not exceed 13 g per detector;
 - .3 each detector shall be manufactured under a registered quality assurance programme;

Note: The application of ISO 9001:2008 may be considered acceptable for this purpose.

 - .4 each neutron radiation detector shall be of welded metal construction with brazed metal to ceramic feed through assemblies. These detectors shall have a minimum burst pressure of 1,800 kPa as demonstrated by design type qualification testing; and
 - .5 each detector shall be tested to a 1×10^{-10} cm³/s leak tightness standard before filling.
- .2 Radiation detectors transported as individual components shall be transported as follows:
 - .1 detectors shall be packed in a sealed intermediate plastics liner with sufficient absorbent or adsorbent material to absorb or adsorb the entire gas contents;
 - .2 they shall be packed in strong outer packaging. The completed package shall be capable of withstanding a 1.8 m drop test without leakage of gas contents from detectors; and
 - .3 the total amount of gas from all detectors per outer packaging shall not exceed 52 g.
- .3 Completed neutron radiation detection systems containing detectors meeting the conditions of .1 shall be transported as follows:
 - .1 the detectors shall be contained in a strong sealed outer casing;

- .2 the casing shall contain sufficient absorbent or adsorbent material to absorb or adsorb the entire gas contents; and
- .3 the completed systems shall be packed in strong outer packagings capable of withstanding a 1.8 m drop test without leakage unless a system's outer casing affords equivalent protection.

Packing instruction P200 of 4.1.4.1 is not applicable.

The transport document shall include the statement "Transport in accordance with special provision 373".

Neutron radiation detectors containing not more than 1 g of boron trifluoride, including those with solder glass joints, are not subject to this Code provided they meet the requirements in paragraph .1 and are packed in accordance with paragraph .2. Radiation detection systems containing such detectors are not subject to this Code provided they are packed in accordance with paragraph .3.

Neutron radiation detectors shall be stowed in accordance with stowage Category A.

- 376 Lithium ion cells or batteries and lithium metal cells or batteries identified as being damaged or defective such that they do not conform to the type tested according to the applicable provisions of the *Manual of Tests and Criteria* shall comply with the requirements of this special provision.

For the purposes of this special provision, these may include, but are not limited to:

- Cells or batteries identified as being defective for safety reasons;
- Cells or batteries that have leaked or vented;
- Cells or batteries that cannot be diagnosed prior to transport; or
- Cells or batteries that have sustained physical or mechanical damage.

△ **Note:** In assessing a cell or battery as damaged or defective, an assessment or evaluation shall be performed based on safety criteria from the cell, battery or product manufacturer or by a technical expert with knowledge of the cell's or battery's safety features. An assessment or evaluation may include, but is not limited to, the following criteria:

- .1 acute hazard, such as gas, fire or electrolyte leaking;
- .2 the use or misuse of the cell or battery;
- .3 signs of physical damage, such as deformation to cell or battery casing, or colours on the casing;
- .4 external and internal short circuit protection, such as voltage or isolation measures;
- .5 the condition of the cell or battery safety features; or
- .6 damage to any internal safety components, such as the battery management system.

Cells and batteries shall be transported according to the provisions applicable to UN 3090, UN 3091, UN 3480 and UN 3481, except special provision 230 and as otherwise stated in this special provision.

Cells and batteries shall be packed in accordance with packing instructions P908 of 4.1.4.1 or LP904 of 4.1.4.3, as applicable.

Cells and batteries identified as damaged or defective and liable to rapidly disassemble, dangerously react, produce a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours under normal conditions of transport shall be packed and transported in accordance with packing instruction P911 of 4.1.4.1 or LP906 of 4.1.4.3, as applicable. Alternative packing and/or transport conditions may be authorized by the competent authority.

Packages shall be marked "DAMAGED/DEFECTIVE" in addition to the proper shipping name, as stated in 5.2.1.

The transport document shall include the following statement "Transport in accordance with special provision 376".

If applicable, a copy of the competent authority approval shall accompany the transport.

- 377 Lithium ion and lithium metal cells and batteries and equipment containing such cells and batteries transported for disposal or recycling, either packed together with or packed without non-lithium batteries, may be packaged in accordance with packing instruction P909 of 4.1.4.1.

These cells and batteries are not subject to the requirements of section 2.9.4.

Packages shall be marked "LITHIUM BATTERIES FOR DISPOSAL" or "LITHIUM BATTERIES FOR RECYCLING".

△ Identified damaged or defective batteries shall be transported in accordance with special provision 376.

The transport document shall include the following statement: "Transport in accordance with special provision 377".

- 378 Radiation detectors containing this gas in non-refillable pressure receptacles not meeting the requirements of chapter 6.2 and packing instruction P200 of 4.1.4.1 may be transported under this entry provided:
- .1 The working pressure in each receptacle does not exceed 50 bar;
 - .2 The receptacle capacity does not exceed 12 L;
 - .3 Each receptacle has a minimum burst pressure of at least 3 times the working pressure when a relief device is fitted and at least 4 times the working pressure when no relief device is fitted;
 - .4 Each receptacle is manufactured from material which will not fragment upon rupture;
 - .5 Each detector is manufactured under a registered quality assurance programme;
Note: ISO 9001:2008 may be used for this purpose.
 - .6 Detectors are transported in strong outer packagings. The complete package shall be capable of withstanding a 1.2 metre drop test without breakage of the detector or rupture of the outer packaging. Equipment that includes a detector shall be packed in a strong outer packaging unless the detector is afforded equivalent protection by the equipment in which it is contained; and
 - .7 The transport document includes the following statement “Transport in accordance with special provision 378”.

Radiation detectors, including detectors in radiation detection systems, are not subject to any other requirements of this Code if the detectors meet the requirements in .1 to .6 above and the capacity of detector receptacles does not exceed 50 ml.

- 379 Anhydrous ammonia adsorbed on a solid or absorbed in a solid contained in ammonia dispensing systems or receptacles intended to form part of such systems are not subject to the other provisions of this Code if the following conditions are observed:
- .1 The adsorption or absorption presents the following properties:
 - .1 the pressure at a temperature of 20°C in the receptacle is less than 0.6 bar;
 - .2 the pressure at a temperature of 35°C in the receptacle is less than 1 bar;
 - .3 the pressure at a temperature of 85°C in the receptacle is less than 12 bar;
 - .2 The adsorbent or absorbent material shall not have dangerous properties listed in classes 1 to 8;
 - .3 The maximum contents of a receptacle shall be 10 kg of ammonia; and
 - .4 Receptacles containing adsorbed or absorbed ammonia shall meet the following conditions:
 - △.1 receptacles shall be made of a material compatible with ammonia as specified in ISO 11114-1:2012 + Amd 1:2017;
 - .2 receptacles and their means of closure shall be hermetically sealed and able to contain the generated ammonia;
 - .3 each receptacle shall be able to withstand the pressure generated at 85°C with a volumetric expansion no greater than 0.1%;
 - .4 each receptacle shall be fitted with a device that allows for gas evacuation once pressure exceeds 15 bar without violent rupture, explosion or projection; and
 - .5 each receptacle shall be able to withstand a pressure of 20 bar without leakage when the pressure relief device is deactivated.

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

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

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

- 381 Large packagings conforming to the packing group III performance level used in accordance with packing instruction LP02 of 4.1.4.3, as prescribed in the IMDG Code (amendment 37-14), may be used until 31 December 2022.
- 382 Polymeric beads may be made from polystyrene, poly(methyl methacrylate) or other polymeric material. When it can be demonstrated that no flammable vapour, resulting in a flammable atmosphere, is evolved according to test U1 (Test method for substances liable to evolve flammable vapours) of part III, subsection 38.4.4 of the *Manual of Tests and Criteria*, polymeric beads, expandable, need not be classified under this UN number. This test should only be performed when declassification of a substance is considered.
- 383 Table tennis balls manufactured from celluloid are not subject to this Code where the net mass of each table tennis ball does not exceed 3.0 g and the total net mass of table tennis balls does not exceed 500 g per package.

- 384 The label to be used is Model No. 9A, see 5.2.2.2.2. However, for placarding of cargo transport units, the placard shall correspond to Model No. 9.
- 386 When substances are stabilized by temperature control, the provisions of 7.3.7 apply. When chemical stabilization is employed, the person offering the packaging, IBC or tank for transport shall ensure that the level of stabilization is sufficient to prevent the substance in the packaging, IBC or tank from dangerous polymerization at a bulk mean temperature of 50°C, or, in the case of a portable tank, 45°C. Where chemical stabilization becomes ineffective at lower temperatures within the anticipated duration of transport, temperature control is required. In making this determination factors to be taken into consideration include, but are not limited to, the capacity and geometry of the packaging, IBC or tank and the effect of any insulation present, the temperature of the substance when offered for transport, the duration of the journey and the ambient temperature conditions typically encountered in the journey (considering also the season of year), the effectiveness and other properties of the stabilizer employed, applicable operational controls imposed by regulation (e.g. requirements to protect from sources of heat, including other cargo transported at a temperature above ambient) and any other relevant factors.
- 387 Lithium batteries in conformity with 2.9.4.6 containing both primary lithium metal cells and rechargeable lithium ion cells shall be assigned to UN 3090 or 3091 as appropriate. When such batteries are transported in accordance with special provision 188, the total lithium content of all lithium metal cells contained in the battery shall not exceed 1.5 g and the total capacity of all lithium ion cells contained in the battery shall not exceed 10 Wh.
- 388 UN 3166 entries apply to vehicles powered by flammable liquid or gas internal combustion engines or fuel cells.
- Vehicles powered by a fuel cell engine shall be assigned to the entries UN 3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED, as appropriate. These entries include hybrid electric vehicles powered by both a fuel cell and an internal combustion engine with wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed.
- Other vehicles which contain an internal combustion engine shall be assigned to the entries UN 3166 VEHICLE, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FLAMMABLE LIQUID POWERED, as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed.
- If a vehicle is powered by a flammable liquid and a flammable gas internal combustion engine, it shall be assigned to UN 3166 VEHICLE, FLAMMABLE GAS POWERED.
- Entry UN 3171 only applies to vehicles powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries and equipment powered by wet batteries or sodium batteries transported with these batteries installed.
- For the purpose of this special provision, vehicles are self-propelled apparatus designed to carry one or more persons or goods. Examples of such vehicles are cars, motorcycles, scooters, three- and four-wheeled vehicles or motorcycles, trucks, locomotives, bicycles (pedal cycles with a motor) and other vehicles of this type (e.g. self-balancing vehicles or vehicles not equipped with at least one seating position), wheelchairs, lawn tractors, self-propelled farming and construction equipment, boats and aircraft. This includes vehicles transported in a packaging. In this case some parts of the vehicle may be detached from its frame to fit into the packaging.
- △ Examples of equipment are lawnmowers, cleaning machines or model boats and model aircraft. Equipment powered by lithium metal batteries or lithium ion batteries shall be assigned to the entries UN 3091 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or UN 3091 LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT or UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or UN 3481 LITHIUM ION BATTERIES PACKED WITH EQUIPMENT, as appropriate. Lithium ion batteries or lithium metal batteries installed in a cargo transport unit and designed only to provide power external to the cargo transport unit shall be assigned to the entry UN 3536 LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT lithium ion batteries or lithium metal batteries.
- Dangerous goods, such as batteries, airbags, fire extinguishers, compressed gas accumulators, safety devices and other integral components of the vehicle that are necessary for the operation of the vehicle or for the safety of its operator or passengers, shall be securely installed in the vehicle and are not otherwise subject to this Code.
- 389 This entry only applies to lithium ion batteries or lithium metal batteries installed in a cargo transport unit and designed only to provide power external to the cargo transport unit. The lithium batteries shall meet the requirements of 2.9.4.1 to .7 and contain the necessary systems to prevent overcharge and overdischarge between the batteries.

The batteries shall be securely attached to the interior structure of the cargo transport unit (e.g. by means of placement in racks, cabinets, etc.) in such a manner as to prevent short circuits, accidental operation, and significant movement relative to the cargo transport unit under the shocks, loadings and vibrations normally incident to transport. Dangerous goods necessary for the safe and proper operation of the cargo transport unit (e.g. fire-extinguishing systems and air-conditioning systems), shall be properly secured to or installed in the cargo transport unit and are not otherwise subject to this Code. Dangerous goods not necessary for the safe and proper operation of the cargo transport unit shall not be transported within the cargo transport unit.

The batteries inside the cargo transport unit are not subject to marking or labelling requirements. The cargo transport unit shall display the UN number in accordance with 5.3.2.1.2 and be placarded on two opposing sides in accordance with 5.3.1.1.2.

- 390 When a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment, the following requirements apply for the purposes of package marking and documentation:
- .1 the package shall be marked “UN 3091 Lithium metal batteries packed with equipment”, or “UN 3481 Lithium ion batteries packed with equipment”, as appropriate. If a package contains both lithium ion batteries and lithium metal batteries packed with and contained in equipment, the package shall be marked as required for both battery types. However, button cell batteries installed in equipment (including circuit boards) need not be considered.
 - .2 the transport document shall indicate “UN 3091 Lithium metal batteries packed with equipment” or “UN 3481 Lithium ion batteries packed with equipment”, as appropriate. If a package contains both lithium metal batteries and lithium ion batteries packed with and contained in equipment, then the transport document shall indicate both “UN 3091 Lithium metal batteries packed with equipment” and “UN 3481 Lithium ion batteries packed with equipment”
- 391 Articles containing dangerous goods of class 2.3, or class 4.2, or class 4.3, or class 5.1, or class 5.2 or class 6.1 for substances of inhalation toxicity requiring packing group I and articles containing more than one of the hazards listed in 2.0.3.4.2 to 2.0.3.4.4 shall be transported under conditions approved by the competent authority.
- 392 For the transport of fuel gas containment systems designed and approved to be fitted in motor vehicles containing this gas, the provisions of subsection 4.1.4.1 and chapter 6.2 of this Code need not be applied when transported for disposal, recycling, repair, inspection, maintenance or from where they are manufactured to a vehicle assembly plant, provided the following conditions are met:
- .1 The fuel gas containment systems shall meet the requirements of the standards or regulations for fuel tanks for vehicles, as applicable. Examples of applicable standards and regulations are:

LPG tanks	
ECE Regulation No. 67 Revision 2	Uniform provisions concerning: I. Approval of specific equipment of vehicles of category M and N using liquefied petroleum gases in their propulsion system; II. Approval of vehicles of category M and N fitted with specific equipment for the use of liquefied petroleum gases in their propulsion system with regard to the installation of such equipment
ECE Regulation No. 115	Uniform provisions concerning the approval of: I. Specific LPG (liquefied petroleum gases) retrofit systems to be installed in motor vehicles for the use of LPG in their propulsion systems; II. Specific CNG (compressed natural gas) retrofit systems to be installed in motor vehicles for the use of CNG in their propulsion system
CNG tanks	
ECE Regulation No. 110	Uniform provisions concerning the approval of: I. Specific components of motor vehicles using compressed natural gas (CNG) and/or liquefied natural gas (LNG) in their propulsion system; II. Vehicles with regard to the installation of specific components of an approved type for the use of compressed natural gas (CNG) and/or liquefied natural gas (LNG) in their propulsion system

ECE Regulation No. 115	(Uniform provisions concerning the approval of: I. Specific LPG (liquefied petroleum gases) retrofit systems to be installed in motor vehicles for the use of LPG in their propulsion systems; II. Specific CNG (compressed natural gas) retrofit systems to be installed in motor vehicles for the use of CNG in their propulsion system)
ISO 11439:2013	Gas cylinders – High pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles
ISO 15500-Series	ISO 15500: Road vehicles – Compressed natural gas (CNG) fuel system components – several parts as applicable
ANSI NGV 2	Compressed natural gas vehicle fuel containers
CSA B51 Part 2: 2014	Boiler, pressure vessel, and pressure piping code Part 2 Requirements for high-pressure cylinders for on board storage of fuels for automotive vehicles
Hydrogen pressure tanks	
Global Technical Regulation (GTR) No. 13	Global technical regulation on hydrogen and fuel cell vehicles (ECE/TRANS/180/Add.13)
ISO/TS 15869:2009	Gaseous hydrogen and hydrogen blends – Land vehicle fuel tanks
Regulation (EC) No.79/2009	Regulation (EC) No. 79/2009 of the European Parliament and of the Council of 14 January 2009 on type approval of hydrogen-powered motor vehicles, and amending Directive 2007/46/EC
Regulation (EU) No. 406/2010	Commission Regulation (EU) No. 406/2010 of 26 April 2010 implementing Regulation (EC) No. 79/2009 of the European Parliament and of the Council on type-approval of hydrogen-powered motor vehicles.
ECE Regulation No. 134	Uniform provisions concerning the approval of motor vehicles and their components with regards to the safety-related performance of hydrogen-fuelled vehicles (HFCV)
CSA B51 Part 2: 2014	Boiler, pressure vessel, and pressure piping code Part 2 Requirements for high-pressure cylinders for on-board storage of fuels for automotive vehicles

Gas tanks designed and constructed in accordance with previous versions of relevant standards or regulations for gas tanks for motor vehicles, which were applicable at the time of the certification of the vehicles for which the gas tanks were designed and constructed may continue to be transported;

- .2 The fuel gas containment systems shall be leakproof and shall not exhibit any signs of external damage which may affect their safety;

Note 1: Criteria may be found in standard ISO 11623:2015 *Gas cylinders – Composite construction – Periodic inspection and testing* (or ISO 19078:2013 *Gas cylinders – Inspection of the cylinder installation, and requalification of high pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles*).

Note 2: If the fuel gas containment systems are not leakproof or are overfilled or if they exhibit damage that could affect their safety (e.g. in case of a safety-related recall), they shall only be carried in salvage pressure receptacles in conformity with this Code.

- .3 If a fuel gas containment system is equipped with two valves or more integrated in line, the two valves shall be closed as to be gastight under normal conditions of transport. If only one valve exists or only one valve works, all openings with the exception of the opening of the pressure relief device shall be closed as to be gastight under normal conditions of transport;
- .4 Fuel gas containment systems shall be transported in such a way as to prevent obstruction of the pressure relief device or any damage to the valves and any other pressurised part of the fuel gas containment systems and unintentional release of the gas under normal conditions of

transport. The fuel gas containment system shall be secured in order to prevent slipping, rolling or vertical movement;

- .5 Valves shall be protected by one of the methods described in 4.1.6.1.8.1 to 4.1.6.1.8.5;
- .6 Except for the case of fuel gas containment systems removed for disposal, recycling, repair, inspection or maintenance, they shall be filled with not more than 20% of their nominal filling ratio or nominal working pressure, as applicable;
- .7 Notwithstanding the provisions of chapter 5.2, when fuel gas containment systems are consigned in a handling device, markings and labels may be affixed to the handling device; and
- .8 Notwithstanding the provisions of 5.4.1.5, the information on the total quantity of dangerous goods may be replaced by the following information:
 - .1 the number of fuel gas containment systems; and
 - .2 in the case of liquefied gases the total net mass (kg) of gas of each fuel gas containment system and, in the case of compressed gases, the total water capacity (l) of each fuel gas containment system followed by the nominal working pressure.

Examples for information in the transport document:

Example 1: “UN 1971 natural gas, compressed, 2.1, 1 fuel gas containment system of 50 l in total, 200 bar”.

Example 2: “UN 1965 hydrocarbon gas mixture, liquefied, n.o.s., 2.1, 3 fuel gas containment systems, each of 15 kg net mass of gas”.

- 393 The nitrocellulose shall meet the criteria of the Bergmann-Junk test or methyl violet paper test in the *Manual of Tests and Criteria* Appendix 10. Tests of type 3 (c) need not be applied.
- 394 The nitrocellulose shall meet the criteria of the Bergmann-Junk test or methyl violet paper test in the *Manual of Tests and Criteria* Appendix 10.
- 395 This entry shall only be used for solid medical waste of category A transported for disposal.
- 399 **For articles that meet the definition for DETONATORS, ELECTRONIC as described in appendix B and assigned to UN Nos. 0511, 0512 and 0513, the entries for DETONATORS, ELECTRIC (UN Nos. 0030, 0255 and 0456) may continue to be used until 30 June 2025.”**

- 900 The transport of the following substances is prohibited:
- AMMONIUM HYPOCHLORITE
 - AMMONIUM NITRATE liable to self-heating sufficient to initiate decomposition
 - AMMONIUM NITRITES and mixtures of an inorganic nitrite with an ammonium salt
 - CHLORIC ACID, AQUEOUS SOLUTION with more than 10% chloric acid
 - ETHYL NITRITE pure
 - HYDROCYANIC ACID, AQUEOUS SOLUTION (HYDROGEN CYANIDE, AQUEOUS SOLUTION) with more than 20% hydrogen cyanide
 - HYDROGEN CHLORIDE, REFRIGERATED LIQUID
 - HYDROGEN CYANIDE SOLUTION, IN ALCOHOL with more than 45% hydrogen cyanide
 - MERCURY OXYCYANIDE pure
 - METHYL NITRITE
 - PERCHLORIC ACID with more than 72% acid, by mass
 - SILVER PICRATE, dry or wetted with less than 30% water by mass
 - ZINC AMMONIUM NITRITE
- See also special provisions 349, 350, 351, 352 and 353.
- 903 HYPOCHLORITE MIXTURES with 10% or less available CHLORINE are not subject to the provisions of this Code.
- 904 The provisions of this Code, except for the marine pollution aspects, do not apply to these substances if they are completely miscible with water, except when transported in receptacles with a capacity greater than 250 L and in tanks.
- 905 May only be shipped as an 80% solution in TOLUENE. The pure product is shock-sensitive and decomposes with explosive violence and the possibility of detonation when heated under confinement. Can be ignited by impact.
- 907 The consignment shall be accompanied by a certificate from a recognized authority stating:
- moisture content;
 - fat content;
 - details of anti-oxidant treatment for meals older than 6 months (for UN 2216 only);
 - anti-oxidant concentration at the time of shipment, see special provision 308 (for UN 2216 only);
 - packing, number of bags and total mass of the consignment;
 - temperature of fish meal at the time of despatch from the factory;
 - date of production.

No weathering/curing is required prior to loading. Fish meal under UN 1374 shall have been weathered for not less than 28 days before shipment.

When fish meal is packed into containers, the containers shall be packed in such a way that the free air space has been restricted to the minimum.

- 912 This entry also covers solutions in water with concentrations above 70%.
- 916 The provisions of this Code do not apply to this substance when:
- mechanically produced, with a particle size of 53 microns or greater; or
 - chemically produced, with a particle size of 840 microns or greater.
- 917 Scrap with rubber content below 45% or exceeding 840 microns and fully vulcanized hard rubber are not subject to the provisions of this Code.
- 920 Bars, ingots or sticks are not subject to the provisions of this Code.
- 921 Zirconium, dry, 254 microns or thicker is not subject to the provisions of this Code.
- 922 LEAD PHOSPHITE, DIBASIC which is accompanied by the certificate from the shipper stating that the substance, as offered for shipment, has been stabilized in such a way that it does not possess the properties of class 4.1 is not subject to the provisions of this Code.
- 923 The temperature shall be checked regularly.
- 925 The provisions of this Code do not apply to:
- non-activated carbon blacks of mineral origin;
 - a consignment of carbon if it passes the tests for self-heating substances as reflected in the *Manual of Tests and Criteria* (see 33.4.3.3), and is accompanied by a certificate from a laboratory accredited by the competent authority, stating that the product to be loaded has been correctly sampled by trained staff from that laboratory and that the sample was correctly tested and has passed the test; and
 - carbons made by a steam activation process.
- 926 This substance shall preferably have been weathered for not less than one month before shipment unless a certificate from a person recognized by the competent authority of the country of shipment states a maximum moisture content of 5%.
- 927 *p*-Nitrosodimethylaniline, wetted with more than 50% water is not subject to the provisions of this Code.
- 928 The provisions of this Code shall not apply to:
- fish meal when acidified and wetted with more than 40% water, by mass, irrespective of other factors;
 - consignments of fish meal which are accompanied by a certificate issued by a recognized competent authority of the country of shipment or other recognized authority stating that the product has no self-heating properties when transported in packaged form; or
 - fish meal manufactured from “white” fish with a moisture content of not more than 12% and a fat content of not more than 5% by mass.
- 929 If satisfied, as a result of tests, that such relaxation is justified, the competent authority may permit:
- the seed cakes described as “SEED CAKE, containing vegetable oil (a) mechanically expelled seeds, containing more than 10% of oil or more than 20% of oil and moisture combined” to be transported under conditions governing “SEED CAKE, containing vegetable oil (b) solvent extractions and expelled seeds, containing not more than 10% of oil and, when the amount of moisture is higher than 10% not more than 20% of oil and moisture combined”, and
 - the seed cakes described as “SEED CAKE, containing vegetable oil (b) solvent extractions and expelled seeds, containing not more than 10% of oil and, when the amount of moisture is higher than 10% not more than 20% of oil and moisture combined” to be transported under conditions governing SEED CAKE, UN 2217.
- Certificates from the shipper shall state oil content and moisture content and shall accompany the shipment.
- 930 All pesticides can only be carried under the provisions of this class if accompanied by a certificate supplied by the shipper stating that, when in contact with water, it is not combustible and does not show tendency to autoignition, and that the mixture of gases evolved is not flammable. Otherwise, the provisions of class 4.3 shall be applicable.
- 931 A consignment of this substance which is accompanied by a declaration from the shipper stating that it has no self-heating properties is not subject to the provisions of this Code.
- 932 Requires a certificate from the maker or shipper, stating that the shipment was stored under cover, but in the open air, in the size in which it was packaged, for not less than 3 days prior to shipment.
- 934 Requires the percentage range of calcium carbide impurity to be shown on the shipping documents.

- 935 Substances which do not evolve flammable gases when wet, which are accompanied by a certificate from the shipper stating that the substance, as offered for shipment, does not evolve flammable gases when wet, are not subject to the provisions of this Code.
- 937 The solid hydrated form of this substance is not subject to the provisions of this Code.
- 939 A consignment of this substance that is accompanied by a shipper's certificate stating that it does not contain more than 0.05% maleic anhydride is not subject to the provisions of this Code.
- 942 The concentration and temperature of the solution at the time of loading, its percentage of combustible material and of chlorides as well as the contents of free acid shall be certified.
- 943 Water-activated articles shall bear a subsidiary hazard label of class 4.3.
- 946 Requires certification from the shipper that the substance is not of class 4.2.
- 948 These substances may be transported in bulk in cargo transport units only if their melting point is 75°C or above.
- ⊗
- 952 UN 1942 may be transported in bulk container if approved by the competent authority.
- 954 The provisions of this Code shall not apply to consignments of compressed baled hay with a moisture content of less than 14% shipped in closed cargo transport units and accompanied by a certificate from the shipper stating that the product does not present any class 4.1, UN 1327, hazard in transport and that its moisture content is less than 14%.
- 955 If a viscous substance and its packaging fulfils the provisions of 2.3.2.5, the packing provisions of chapter 4.1, the marking and labelling provisions of chapter 5.2 and the package testing provisions of chapter 6.1 are not applicable.
- 958 This entry also covers articles, such as rags, cotton waste, clothing or sawdust, containing polychlorinated biphenyls, polyhalogenated biphenyls or polyhalogenated terphenyls where no free visible liquid is present.
- △ 959 Waste aerosols or waste gas cartridges authorized for transport under special provision 327 shall only be transported on short international voyages. Long international voyages are authorized only with the approval of the competent authority. Packagings shall be marked and labelled and cargo transport units shall be marked and placarded for appropriate sub-division of class 2 and, if applicable, the subsidiary hazard(s).
- 960 Not subject to the provisions of this Code but may be subject to provisions governing the transport of dangerous goods by other modes.
- 961 Vehicles are not subject to the provisions of this Code if any of the following conditions are met:
- .1 vehicles are stowed on the vehicle, special category and ro-ro spaces or on the weather deck of a ro-ro ship or a cargo space designated by the Administration (flag State) in accordance with SOLAS 74, chapter II-2, regulation 20 as specifically designed and approved for the carriage of vehicles, and there are no signs of leakage from the battery, engine, fuel cell, compressed gas cylinder or accumulator, or fuel tank when applicable. When packed in a cargo transport unit the exception does not apply to container cargo spaces of a ro-ro ship.
In addition, for vehicles powered solely by lithium batteries and hybrid electric vehicles powered by both an internal combustion engine and lithium metal or ion batteries, the lithium batteries shall meet the provisions of 2.9.4, except that 2.9.4.1 and 2.9.4.7 do not apply when pre-production prototype batteries or batteries of a small production run, consisting of not more than 100 batteries, are installed in the vehicle and the vehicle is manufactured and approved according to the provisions applied in the country of manufacture or country of use. Where a lithium battery installed in a vehicle is damaged or defective, the battery shall be removed.
 - .2 vehicles powered by a flammable liquid fuel with a flashpoint of 38°C or above, there are no leaks in any portion of the fuel system, the fuel tank(s) contains 450 L of fuel or less and installed batteries are protected from short-circuit;
 - .3 vehicles powered by a flammable liquid fuel with a flashpoint less than 38°C, the fuel tank(s) are empty and installed batteries are protected from short circuit. Vehicles are considered to be empty of flammable liquid fuel when the fuel tank has been drained and the vehicles cannot be operated due to a lack of fuel. Engine components such as fuel lines, fuel filters and injectors do not need to be cleaned, drained or purged to be considered empty. The fuel tank does not need to be cleaned or purged;
 - .4 vehicles powered by a flammable gas (liquefied or compressed), the fuel tank(s) are empty and the positive pressure in the tank does not exceed 2 bar, the fuel shut-off or isolation valve is closed and secured, and installed batteries are protected from short circuit;
 - .5 vehicles solely powered by a wet or dry electric storage battery or a sodium battery, and the battery is protected from short circuit.

- 3
- 962 Vehicles, not meeting the conditions of special provision 961 shall be assigned to class 9 and shall meet the following requirements:
- .1 vehicles shall not show signs of leakage from batteries, engines, fuel cells, compressed gas cylinders or accumulators, or fuel tank(s) when applicable;
 - .2 for flammable liquid powered vehicles the fuel tank(s) containing the flammable liquid shall not be more than one fourth full and in any case the flammable liquid shall not exceed 250 L unless otherwise approved by the competent authority;
 - .3 for flammable gas powered vehicles, the fuel shut-off valve of the fuel tank(s) shall be securely closed;
 - .4 installed batteries shall be protected from damage, short circuit, and accidental activation during transport. Lithium batteries shall meet the provisions of 2.9.4, except that 2.9.4.1 and 2.9.4.7 do not apply when pre-production prototype batteries or batteries of a small production run, consisting of not more than 100 batteries, are installed in the vehicle and the vehicle is manufactured and approved according to the provisions applied in the country of manufacture or country of use. Where a lithium battery installed in a vehicle is damaged or defective, the battery shall be removed and transported according to SP 376, unless otherwise approved by the competent Authority.
- The provisions of this Code relevant to marking, labelling, placarding and marine pollutants shall not apply.
- 963 Nickel-metal hydride cells or batteries packed with or contained in equipment and nickel-metal hydride button cells are not subject to the provisions of this Code.
- All other nickel-metal hydride cells or batteries shall be securely packed and protected from short circuit. They are not subject to other provisions of this Code provided that they are loaded in a cargo transport unit in a total quantity of less than 100 kg gross mass. When loaded in a cargo transport unit in a total quantity of 100 kg gross mass or more, they are not subject to other provisions of this Code except those of 5.4.1, 5.4.3 and columns 16a and 16b of the Dangerous Goods List in chapter 3.2.
- 964 This substance is not subject to the provisions of this Code when transported in non friable prills or granules form and if it passes the test for oxidizing solid substances as reflected in the *Manual of Tests and Criteria* (see 34.4.1) and is accompanied by a certificate from a laboratory accredited by a competent authority, stating that the product has been correctly sampled by trained staff from the laboratory and that the sample was correctly tested and has passed the test.
- 965
- .1 When transported in cargo transport units, the cargo transport units shall provide an adequate exchange of air in the unit (e.g. by using a ventilated container, open-top container or container in one door off operation) to prevent the build-up of an explosive atmosphere. Alternatively, these entries shall be transported under temperature control in refrigerated cargo transport units that comply with the provisions of 7.3.7.6. When cargo transport units with venting devices are used, these devices shall be kept clear and operable. When mechanical devices are used for ventilation, they shall be explosion-proof to prevent ignition of flammable vapours from the substances.
 - .2 The provisions of .1 do not apply if:
 - .1 the substance is packed in hermetically sealed packagings or IBCs, which conform to packing group II performance level for liquid dangerous goods according to the provisions of 6.1 or 6.5, respectively; and
 - .2 the marked hydraulic test pressure exceeds 1.5 times the total gauge pressure in the packagings or IBCs determined at 55°C for the respective filling goods according to 4.1.1.10.1.
 - .3 Where the substance is loaded in closed cargo transport units, the provisions of 7.3.6.1 shall be met.
 - .4 Cargo transport units shall be marked with a warning mark including the words “CAUTION – MAY CONTAIN FLAMMABLE VAPOUR” with lettering not less than 25 mm high. This mark shall be affixed at each access point in a location where it will be easily seen by persons prior to opening or entering the cargo transport unit and shall remain on the cargo transport unit until the following provisions are met:
 - .1 the cargo transport unit has been completely ventilated to remove any hazardous concentration of vapour or gas;
 - .2 the immediate vicinity of the cargo transport unit is clear of any source of ignition; and
 - .3 the goods have been unloaded.
- 966 Sheeted bulk containers (BK1) are only permitted in accordance with 4.3.3.
- 967 Flexible bulk containers (BK3) are only permitted in accordance with 4.3.4.

- 968 This entry shall not be used for sea transport. Discarded packaging shall meet the requirements of 4.1.1.11.
- 969 Substances classified in accordance to 2.9.3 are subject to the provisions for marine pollutants. Substances which are transported under UN 3077 and UN 3082 but which do not meet the criteria of 2.9.3 (see 2.9.2.2) are not subject to the provisions for marine pollutants. However for substances that are identified as marine pollutants in this Code (see Index) but which no longer meet the criteria of 2.9.3, the provisions of 2.10.2.6 apply.
- 971 Battery powered equipment may only be transported provided that the battery shows no sign of leakage and is protected from short-circuit. In this case, no other provisions of this Code apply.
- 972 Lithium batteries shall meet the provisions of 2.9.4, except that 2.9.4.1 and 2.9.4.7 do not apply when pre-production prototype batteries or batteries of a small production run, consisting of not more than 100 batteries, are installed in the engine or machinery. Where a lithium battery installed in an engine or machinery is damaged or defective, the battery shall be removed.
- 973 Packages, with the exception of bales, shall also display the proper shipping name and the UN number of the substance that they contain in accordance with 5.2.1. In any case, the packages, including bales, are exempt from class marking provided that they are loaded in a cargo transport unit and that they contain goods to which only one UN number has been assigned. The cargo transport units in which the packages, including bales, are loaded shall display any relevant labels, placards and marks in accordance with chapter 5.3.
- 974 These substances may be transported in IMO type 9 tanks.
- 975 MEDICAL WASTE, CATEGORY A, AFFECTING HUMANS, solid or MEDICAL WASTE, CATEGORY A, AFFECTING ANIMALS only, solid shall only be transported on short international voyages. Long international voyages are authorized only with the approval of the competent authorities of the port State of departure, port State of arrival and flag State.
- 976 The transport of this substance shall be prohibited except with the approval of the competent authorities of the port State of departure, port State of arrival and flag State.