International Civil Aviation Organization

DGP-WG/17-WP/13
22/3/17

WORKING PAPER

DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/17)

Montreal, 24 to 28 April 2017

Agenda Item 2: Development of recommendations for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2019-2020 Edition

2.3: Part 3 — Dangerous Goods List, Special Provisions and Limited and Excepted Quantities

DRAFT AMENDMENTS TO THE TECHNICAL INSTRUCTIONS TO ALIGN WITH THE UN RECOMMENDATIONS — PART 3

(Presented by the Secretary)

SUMMARY

This working paper contains draft amendments to Part 3 of the Technical Instructions to reflect the decisions taken by the UN Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals at its eighth session (Geneva, 9 December 2016). It also reflects amendments agreed by DGP-WG16 (Montréal, 17 to 21 October 2017).

Action by the DGP-WG: The DGP-WG is invited to agree to the draft amendments in this working paper.

Part 3

DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND LIMITED AND EXCEPTED QUANTITIES

Chapter 1

GENERAL

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1.2.7 Generic or "not otherwise specified" (n.o.s.) names

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ICAO translators and editors of versions other than English: There may be a need for amendment to 1;1.2.7.1.1 for the sake of alignment with 3.1.2.8.1 of the UN Model Regulations (see ST/SG/AC.10/44/Add.1)

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

UN Model Regulations, 3.1.2.8.1.2 (see ST/SG/AC.10/44/Add.1)

1.2.7.1.2 When a mixture of dangerous goods ~~is~~ or articles containing dangerous goods are described by one of the "n.o.s." or "generic" entries where an asterisk is indicated in column 1 of the Dangerous Goods List, not more than the two constituents which most predominantly contribute to the hazard or hazards of ~~a~~ the mixture or of the articles need to be shown, excluding controlled substances when their disclosure is prohibited by national law or international convention. If a package containing a mixture is labelled with any subsidiary ~~risk~~ hazard label, one of the two technical names as shown in parentheses must be the name of the constituent which compels the use of the subsidiary ~~risk~~ hazard label.

UN Model Regulations, 3.1.2.8.1.3 (see ST/SG/AC.10/44/Add.1)

1.2.7.1.3 Examples illustrating the selection of the proper shipping name supplemented with the technical name of the dangerous goods for such n.o.s. entries are:

UN 3540 **Articles containing flammable liquids n.o.s.** (pyrrolidine)
UN 3394 **Organometallic substance, liquid, pyrophoric, water-reactive** (Trimethylgallium)
UN 2902 **Pesticide, liquid, toxic, n.o.s.** (Drazoxolon)**.**

Note. — As an aid to choosing the most appropriate n.o.s. or generic name, all the n.o.s. entries and the main generic entries of Table 3-1 are listed in Attachment 1, Chapter 2.

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1.3 MIXTURES OR SOLUTIONS

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1.3.2 A mixture or solution meeting the classification criteria of these Instructions composed of a single predominant substance identified by name in Table 3-1 and one or more substances not subject to these Instructions and/or traces of one or more substances identified by name in Table 3-1 must be assigned the UN number and proper shipping name of the predominant substance named in Table 3-1, unless:

a) the mixture or solution is specifically identified by name in Table 3-1 in which case this name must be applied; or

b) the name and description of the substance named in Table 3-1 specifically indicates that it applies only to the pure substance; or

UN Model Regulations, 3.1.3.2 (c) (see ST/SG/AC.10/44/Add.1)

c) the hazard class or division, subsidiary ~~risk~~ hazard(s), physical state or packing group of the solution or mixture is different from that of the substance named in Table 3-1; or

d) the hazard characteristics and properties of the mixture or solution necessitate emergency response measures that are different from those required for the substance identified by name in Table 3-1.

If b), c) or d) is applicable, the mixture or solution must be treated as a substance not specifically listed by name in Table 3-1.

Note.— Although traces of substances may not need to be taken into account for classification purposes, those traces may affect the properties of the substance and do need to be taken into account when considering the compatibility requirements of 4;1.1.3.

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UN Model Regulations, 3.1.3.3 (see ST/SG/AC.10/44/Add.1)

1.3.4 A mixture or solution meeting the classification criteria of these Instructions that is not identified by name in Table 3-1 and that is composed of two or more dangerous goods must be assigned to an entry that has the proper shipping name, description, hazard class or division, subsidiary ~~risk~~ hazard(s) and packing group that most precisely describe the solution or mixture.

Chapter 2

ARRANGEMENT OF THE DANGEROUS GOODS LIST (TABLE 3-1)

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2.1 ARRANGEMENT OF THE DANGEROUS GOODS LIST (TABLE 3-1)

UN Model Regulations, 3.2.1, description of Column 4 (see ST/SG/AC.10/44/Add.1)

Column 4 "Subsidiary ~~risk~~ hazard" — this column contains the class or division number of any important subsidiary ~~risks~~ hazards which have been identified by applying the classification found in Part 2; Chapters 1 to 9. Requirements for the labelling of dangerous goods which have subsidiary ~~risks~~ hazards are given in 5;3.2.

The Model Regulations do not contain a column for labels. The amendments proposed is in accordance with the agreement by the UN Sub-Committee that the word "risk" was inappropriately used in many paragraphs of the Model Regulations and should be replaced by the word "hazard" (see ST/SG/AC.10/C.3/98).

Column 5 "Labels" — this column specifies the class hazard label followed by the subsidiary ~~risk~~ hazard label(s) (after the symbol "&") to be applied to each outside packaging and overpack. Subsidiary ~~risk~~ hazard labels are not shown for all n.o.s. or generic articles and substances which possess more than one hazard. When such an article or substance has more than one hazard and no subsidiary ~~risk~~ hazard label is indicated in column 5 of Table 3-1, subsidiary ~~risk~~ hazard labels must be applied in accordance with 5;3.2.2 and 5;3.2.3. For magnetized material the required handling label is also shown. In the instances where no label is required the word "None" will appear.

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Table 3-1. Dangerous Goods List

UN Model Regulations, Dangerous goods list (see ST/SG/AC.10/44/Add.1)

								Passenger and cargo aircraft		Cargo aircraft only	
Name	*UN No.*	*Class or division*	*Subsidiary ~~risk~~ hazard*	*State variations*	*Special provisions*	*UN packing group*	*Excepted quantity*	*Packing instruction*	*Max. net quantity per package*	*Packing instruction*	*Max. net quantity per package*
1	*2*	*3*	*4*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*

See Appendix A for proposed amendments to Table 3-1

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Chapter 3

SPECIAL PROVISIONS

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Table 3-2. Special provisions

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UN Model Regulations, Special Provision 240 (see ST/SG/AC.10/44/Add.1)

A21 ~~(≈240)~~ Not used.~~This entry 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 which are 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 vehicles are electrically-powered cars, motorcycles, scooters, three- and four-wheeled vehicles or motorcycles, trucks, locomotives, bicycles (pedal cycles with an electric 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. Examples of equipment are lawnmowers, cleaning machines or model boats and model aircraft.~~

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UN Model Regulations, Special Provision 251 (see ST/SG/AC.10/44/Add.1)

A44 (≈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 or testing or repair purposes. Components must not react dangerously (see 4;1.1.8). The packing group assigned to the kit as a whole must be the most stringent packing group assigned to any individual substance in the kit. The assigned packing group must be shown on the dangerous goods transport document. Where the kit contains only dangerous goods to which no packing group is assigned, a packing group must not be indicated on the dangerous goods transport document.

Table 3-3 (excepted quantities) refers to maximum quantity per inner packaging or maximum quantity per outer packaging. The UN table refers to maximum NET quantity per inner packaging or maximum NET quantity per out packing. It is suggested that either Table 3-3 needs to be aligned with the UN or the text below needs to be modified to align with the TIs

~~The only dangerous goods which are permitted in the kits are substances which may be transported as~~ Such kits must only contain dangerous goods that are permitted as:

a) excepted quantities not exceeding the quantity indicated by the code ~~as specified~~ in column 9 of Table 3-1, provided ~~the inner packagings and quantities~~ that the net quantity per inner packaging and net quantity per package are as prescribed in 5.1.2 and 5.1.3 and the inner packagings are as prescribed in 5.2.~~1~~ a); or

TIs *UN*

b) limited quantities as prescribed under 3;4.1.2.

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DGP-WG/16-WP/54 (see paragraph 3.2.3.2):

A59 A tire assembly unserviceable or damaged is not subject to these Instructions if the tire is ~~completely~~ deflated to a gauge pressure of less than 200 kPa at 20ºC. A tire assembly with a serviceable tire is not subject to these Instructions provided the tire is not inflated to a gauge pressure exceeding the maximum rated pressure for that tire. However, such tires (including valve assemblies) must be protected from damage during transport, which may require the use of a protective cover.

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DGP-WG/16-WP/54 (see paragraph 3.2.1.6):

A72 (163) A substance specifically listed by name in Table 3-1 must not be transported under this entry. ~~Materials~~ Substances transported under this entry may contain 20 per cent or less nitrocellulose provided the nitrocellulose contains not more than 12.6 per cent nitrogen.

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UN Model Regulations, Special Provision 172 (see ST/SG/AC.10/44/Add.1)

A78 (≈172) Where a radioactive material has a subsidiary ~~risk~~ hazard(s):

a) The substance must 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 ~~risk~~ hazard.

b) Packages must be labelled with subsidiary ~~risk~~ hazard labels corresponding to each subsidiary ~~risk~~ hazard exhibited by the material in accordance with the relevant provisions of 5;3.2; corresponding placards must be affixed to cargo transport units in accordance with the relevant provisions of 5;3.6.

c) For the purposes of documentation and package marking, the proper shipping name must be supplemented with the name of the constituents which most predominantly contribute to this subsidiary ~~risk~~ hazard(s) and which must be enclosed in parenthesis.

d) The dangerous goods transport document must indicate the subsidiary class or division and, where assigned, the packing group as required by 5;4.1.4.1 d) and e).

For packing, see also 4;9.1.5.

Radioactive material with a subsidiary ~~risk~~ hazard of Division 4.2 (Packing Group I) must be transported in Type B packages. Radioactive material with a subsidiary ~~risk~~ hazard of Division 2.1 is forbidden from transport on passenger aircraft, and radioactive material with a subsidiary ~~risk~~ hazard of Division 2.3 is forbidden from transport on passenger or cargo aircraft except with the prior approval of the appropriate authority of the State of Origin and the State of the Operator under the conditions established by those authorities. A copy of the document of approval, showing the quantity limitations and the packaging requirements, must accompany the consignment.

TIs *UN*

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UN Model Regulations, Special Provision 307 (see ST/SG/AC.10/44/Add.1)

A79 (307) This entry may only be used for ~~uniform mixtures containing~~ ammonium nitrate fertilizers. They must be classified in accordance with the procedure as set out in the *Manual of Tests and Criteria*, Part III, Section 39. ~~as the main ingredient within the following composition limits:~~

~~a) not less than 90 per cent ammonium nitrate with not more than 0.2 per cent total combustible/organic material calculated as carbon and with added matter, if any, which is inorganic and inert towards ammonium nitrate; or~~

~~b) less than 90 per cent but more than 70 per cent ammonium nitrate with other inorganic materials or more than 80 per cent but less than 90 per cent ammonium nitrate mixed with calcium carbonate and/or dolomite and/or mineral calcium sulphate and not more than 0.4 per cent total combustible/organic material calculated as carbon; or~~

~~c) nitrogen type ammonium nitrate based fertilizers containing mixtures of ammonium nitrate and ammonium sulphate with more than 45 per cent but less than 70 per cent ammonium nitrate and not more than 0.4 per cent total combustible/organic material calculated as carbon such that the sum of the percentage composition of ammonium nitrate and ammonium sulphate exceeds 70 per cent.~~

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UN Model Regulations, Special Provision 310 (see ST/SG/AC.10/44/Add.1)

A88 Pre-production prototypes of lithium batteries or cells, when these prototypes are transported for testing, or low production runs (i.e. annual production runs consisting of not more than 100 lithium batteries ~~and~~ or cells) of lithium batteries or cells that have not been tested to the requirements in Part III, subsection 38.3 of the UN *Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the requirements in Packing Instruction 910 of the Supplement are met.

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UN Model Regulations, Special Provision 186 (see ST/SG/AC.10/44/Add.1)

A89 (186) ~~In determining the ammonium nitrate content, all nitrate ions for which a molecular equivalent of ammonium ions is present in the mixture must be calculated as ammonium nitrate.~~Not used.

UN Model Regulations, Special Provision 193 (see ST/SG/AC.10/44/Add.1)

A90 (193) This entry may only be used for ~~uniform~~ ammonium nitrate based compound fertilizers ~~mixtures of the nitrogen, phosphate or potash type, containing not more than 70 per cent ammonium nitrate and not more than 0.4 per cent total combustible/organic material calculated as carbon or with not more than 45 per cent ammonium nitrate and unrestricted combustible material. Fertilizers within these composition limits are not subject to these Instructions if shown by a Trough Test (see UN *Manual of Tests and Criteria*, Part III, subsection 38.2) not to be liable to self-sustaining decomposition~~. They must be classified in accordance with the procedure as set out in the UN *Manual of Tests and Criteria*, Part III, Section 39.

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ICAO translators and editors of versions other than English: There may be a need for amendment to A92 for the sake of alignment with Special Provision 199 of the UN Model Regulations (see ST/SG/AC.10/44/Add.1)

A92 (199) Lead compounds which, when mixed in a ratio of 1:1000 with 0.07 M hydrochloric acid and stirred for 1 hour at a temperature of 23°C ±2°C, exhibit a solubility of 5 per cent 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 these Instructions unless they meet the criteria for inclusion in another hazard class or division.

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A106 This entry may only be used for samples of chemicals taken for analysis in connection with the implementation of the Chemical Weapons Convention.

They may be transported on a passenger or cargo aircraft providing prior approval has been granted by the appropriate authority of the State of Origin or the Director General of the Organization for the Prohibition of Chemical Weapons and providing the samples comply with the requirements shown against the entry for chemical samples in Table S-3-1 of the Supplement.

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The Model Regulations do not contain the following provision (in SP 250). The amendment proposed is in accordance with the agreement by the UN Sub-Committee that the word "risk" was inappropriately used in many paragraphs of the Model Regulations and should be replaced by the word "hazard" (see ST/SG/AC.10/C.3/98).

The substance is assumed to meet the criteria of Packing Group I for Division 6.1. Subsidiary ~~risk~~ hazard labelling is not required.

A copy of the document of approval showing the quantity limitations and the packing requirements must accompany the consignment.

Note.— The transport of substances under this description must be in accordance with chain of custody and security procedures specified by the Organization for the Prohibition of Chemical Weapons.

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The Model Regulations do not contain the following provision (in SP 250). The amendment proposed is in accordance with the agreement by the UN Sub-Committee that the word "risk" was inappropriately used in many paragraphs of the Model Regulations and should be replaced by the word "hazard" (see ST/SG/AC.10/C.3/98).

A112 Consumer commodities may only include substances of Class 2 (non-toxic aerosols only), Class 3, Packing Group II or III, Division 6.1 (Packing Group III only), UN 3077, UN 3082, UN 3175, UN 3334 and UN 3335 provided such substances do not have a subsidiary ~~risk~~ hazard. Dangerous goods that are forbidden for transport aboard passenger aircraft must not be transported as consumer commodities.

TIs *UN*

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ICAO translators and editors of versions other than English: There may be a need for amendment to A115 for the sake of alignment with Special Provision 280 of the UN Model Regulations (see ST/SG/AC.10/44/Add.1)

A115 (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 and which contain dangerous goods of Class 1 or dangerous goods of other classes and 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 UN *Manual of Tests and Criteria*, with no explosion of the device, no fragmentation of the device casing or pressure receptacle, and no projection hazard or thermal effect which would significantly hinder firefighting or other emergency response efforts in the immediate vicinity.

This entry does not apply to life saving appliances described in Packing Instruction 955 (UN Nos. 2990 and 3072).

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UN Model Regulations, Chapter 3.3, Special Provision 293 (see ST/SG/AC.10/44/Add.1)

There may be an error in ST/SG/AC.10/44/Add.1 — says to insert "matches that" after "Safety matches are", believe it should be "matches that *are*" as proposed below.

A125 (293) The following definitions apply to matches:

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

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

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

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

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UN Model Regulations, Chapter 3.3, Special Provision 290 (see ST/SG/AC.10/44/Add.1)

There may be an error in ST/SG/AC.10/44/Add.1 — refers to replacing "risk" by "hazard" in (a) and (b), but there is no reference to "risk" in (a).

A130 (290) When this radioactive material meets the definitions and criteria of other classes or divisions as defined in Part 2, it must be classified in accordance with the following:

a) Where the substance meets the criteria for dangerous goods in excepted quantities as set out in 3;5, the packagings must 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;6.1.5 apply without reference to the other class or division;

TIs *UN*

b) Where the quantity exceeds the limits specified in 3;5.1.2, the substance must be classified in accordance with the predominant subsidiary ~~risk~~ hazard. The dangerous goods transport document must describe the substance with the proper shipping name and UN number applicable to the other class supplemented with the name applicable to the radioactive excepted package according to column 1 of the Dangerous Goods List, and must 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

The radioactive material, excepted package label (Figure 5-33) is not required on packages meeting the conditions set out in this sub-paragraph. To aid acceptance, it is recommended that "A130" be indicated on the dangerous goods transport document. In addition, the requirements of 2;7.2.4.1.1 apply;

c) The provisions of 3;4 for the transport of dangerous goods packed in limited quantities do not apply to substances classified in accordance with sub-paragraph b);

d) When the substance meets a special provision that excepts this substance from all dangerous goods provisions of the other classes, it must be classified in accordance with the applicable UN number of Class 7 and all requirements specified in 1;6.1.5 apply.

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UN Model Regulations, Special Provision 204 (see ST/SG/AC.10/44/Add.1)

A132 (204) Articles containing smoke-producing substance(s) corrosive according to the criteria for Class 8 must be labelled with a "Corrosive" subsidiary ~~risk~~ hazard label. Articles containing smoke-producing substance(s) toxic by inhalation according to the criteria for Division 6.1 must be labelled with a "TOXIC" subsidiary ~~risk~~ hazard label (Figure 5-18), except that those manufactured before 31 December 2016 may be offered for transport until 31 December 2018 without a "TOXIC" subsidiary label.

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UN Model Regulations, Special Provision 312 (see ST/SG/AC.10/44/Add.1)

A134 ~~(312) Vehicles powered by a fuel cell engine must be consigned under 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.~~ Not used.

. . .

The Model Regulations do not contain the following provision. The amendment proposed is in accordance with the agreement by the UN Sub-Committee that the word "risk" was inappropriately used in many paragraphs of the Model Regulations and should be replaced by the word "hazard" (see ST/SG/AC.10/C.3/98).

A150 An additional subsidiary ~~risk~~ hazard hazard label may be required by a Note found adjacent to the technical name entry in Table 2-7.

TIs UN

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ICAO translators and editor of versions other than English: There may be a need for amendments to A162 for the sake of alignment with Special Provision 339 b) of the UN Model Regulations, (see ST/SG/AC.10/44/Add.1)

A162 (339) Fuel cell cartridges containing hydrogen in a metal hydride transported under this entry must have a water capacity less than or equal to 120 mL.

The pressure in the fuel cell cartridge must not exceed 5 MPa at 55°C. The design type must 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 must be filled in accordance with procedures provided by the manufacturer. The manufacturer must provide the following information with each fuel cell cartridge:

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b) safety precautions and potential hazards to be aware of;

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ICAO translators and editor of versions other than English: There may be a need for amendments to A162 for the sake of alignment with Special Provision 361 b) of the UN Model Regulations, (see ST/SG/AC.10/44/Add.1)

A186 (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 these Instructions. 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, must meet the following conditions:

a) capacitors not installed in equipment must be transported in an uncharged state. Capacitors installed in equipment must be transported either in an uncharged state or protected against a short circuit;

b) each capacitor must be protected against a potential short circuit hazard in transport as follows:

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UN Model Regulations, Special Provision 362 (see ST/SG/AC.10/44/Add.1)

A187 (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 a) or b).

Note.— A chemical under pressure in an aerosol dispenser must be transported under UN 1950.

The following provisions must apply:

a) The chemical under pressure must be classified based on the hazard characteristics of the components in the different states:

i) the propellant;

ii) the liquid; or

iii) 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 must be classified as flammable in Division 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:

i) a flammable liquid is a liquid having a flashpoint of not more than 93°C;

ii) a flammable solid is a solid which meets the criteria in 2;4.2.2 of these Instructions;

iii) a flammable gas is a gas which meets the criteria in 2;2.2.1 of these Instructions;

b) gases of Division 2.3 and gases with a subsidiary ~~risk~~ hazard of 5.1 must not be used as a propellant in a chemical under pressure;

c) where the liquid or solid components are classified as dangerous goods of Division 6.1, Packing Groups II or III, or Class 8, Packing Groups II or III, the chemical under pressure must be assigned a subsidiary ~~risk~~ hazard of Division 6.1 or Class 8 and the appropriate UN number must be assigned. Components classified in Division 6.1, Packing Group I, or Class 8, Packing Group I, must not be used for transport under this proper shipping name;

d) in addition, chemicals under pressure with components meeting the properties of: Class 1, explosives; Class 3, liquid desensitized explosives; Division 4.1, self-reactive substances and solid desensitized explosives; Division 4.2, substances liable to spontaneous combustion; Division 4.3, substances which, in contact with water, emit flammable gases; Division 5.1, oxidizing substances; Division 5.2, organic peroxides; Division 6.2, infectious substances; or Class 7, radioactive material, must not be used for transport under this proper shipping name;

e) Chemicals under pressure containing components forbidden for transport on both passenger and cargo aircraft (columns 10 to 13 of Table 3-1) must not be transported by air.

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The Model Regulations do not contain the following provision. The amendment proposed is in accordance with the agreement by the UN Sub-Committee that the word “risk” was inappropriately used in many paragraphs of the Model Regulations and should be replaced by the word “hazard” (see ST/SG/AC.10/C.3/98).

A191 Notwithstanding the Division 6.1 subsidiary ~~risk~~ hazard shown in column 4 of Table 3-1, the toxic subsidiary ~~risk~~ hazard label and an indication of this subsidiary ~~risk~~ hazard on the dangerous goods transport document are not required when the manufactured articles contain not more than 5 kg of mercury. Transport in accordance with this special provision must be noted on the dangerous goods transport document.

TIs *UN*

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UN Model Regulations, Special Provision 369 (see ST/SG/AC.10/44/Add.1) and Corrigendum 1 to UN Model Regulations, Chapter 3.3, special provision 369 (see ST/SG/AC.10/1/Rev.19/Corr.1)

A194 (369) In accordance with Part 2, Introductory Chapter, paragraph 4, this radioactive material in an excepted package possessing toxic and corrosive properties is classified in Division 6.1 with ~~radioactive material~~ radioactivity and corrosive subsidiary ~~risks~~ hazards.

Uranium hexafluoride may be classified under this entry only if the conditions of 2;7.2.4.1.1.2, 2;7.2.4.1.1.5, 2;7.2.4.5.2 and, for fissile-excepted material, of 2;7.2.3.6 are met.

In addition to the provisions applicable to the transport of Division 6.1 substances with a corrosive subsidiary ~~risk~~ hazard, the provisions of 5;1.2.2.2, 5;1.6.3, 7;1.6 and 7;3.2.1 to 7;3.2.4 apply.

No Class 7 label is required to be displayed.

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UN Model Regulations, Special Provision 380 (see ST/SG/AC.10/44/Add.1)

A203 ~~(380)~~ ~~If a vehicle is powered by a flammable liquid and a flammable gas internal combustion engine, it must be assigned to UN 3166 — **Vehicle, flammable gas powered**.~~ Not used.

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UN Model Regulations, Special Provision 385 (see ST/SG/AC.10/44/Add.1)

A207 ~~(≈385)~~ Not used. ~~This entry applies to vehicles powered by flammable liquid or gas internal combustion engines or fuel cells.~~

~~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 batteries installed must be consigned under this entry. Vehicles powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the batteries installed, must be consigned under the entry UN 3171 — **Battery-powered vehicle** (see Special Provision A21).~~

~~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, trucks, locomotives, scooters, three and four wheeled vehicles or motorcycles, lawn tractors, self propelled farming and construction equipment, boats and aircraft.~~

TIs UN

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UN Model Regulations, Special Provision 363 (see ST/SG/AC.10/44/Add.1)

DGP-WG/17 is invited to consider the following:

The following provision has been added to SP 363 of the UN Model Regulations:

> "This entry may only be used when the conditions of this special provision are met. No other requirements of these Regulations apply."

It has not been proposed for inclusion in Special Provision A208 of the Technical Instructions as Special Provision A70, assigned to 3528 (flammable liquid powered internal combustion or fuel cell machinery or engines) and 3529 (Flammable gas powered internal combustion or fuel cell machinery or engines), provides an exception from the Instructions under certain circumstances.

However, there is no exception applied to UN 3530 (internal combustion machinery or engine assigned to Class 9)

The amendment to SP 363 (f) was also not made as A70 does not except other batteries or other dangerous goods contained in the machinery or engine.

A208 (≈363) a) 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).

b) Engines and machinery containing fuels meeting the classification criteria of Class 3 must be consigned under the entries UN 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.

c) Engines and machinery containing fuels meeting the classification criteria of Division 2.1 must 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 must be consigned under the appropriate UN 3529 entry.

d) Engines and machinery containing liquid fuels meeting the classification criteria for environmentally hazardous substances and not meeting the classification criteria of any other class or division, must be consigned under the entries UN 3530 — **Engine, internal combustion** or UN 3530 — **Machinery, internal combustion**, as appropriate.

Note.— Until 31 March 2017, shippers may identify engines as Class 9, UN 3166 using the proper shipping names and Packing Instruction 950 or 951 as shown in the 2015-2016 Edition of these Instructions. In that instance the dangerous goods transport document must indicate the packing instruction number and the UN number and proper shipping name in effect in the 2015-2016 Edition of these Instructions. The marks and labels applied, when required, must be consistent with the information shown on the dangerous goods transport document.

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UN Model Regulations, Special Provision 387 (see ST/SG/AC.10/44/Add.1)

DGP-WG/17 is invited to consider the quantity limitations incorporated in the UN Model Regulations which are highlighted below and determine whether they are appropriate for the Technical Instructions.

A213	(387)	Lithium batteries in conformity with 2;9.3.1 f) containing both primary lithium metal cells and rechargeable lithium ion cells must be assigned to UN Nos. 3090 or 3091 as appropriate. When such batteries are transported in accordance with Section II of Packing Instruction 968, 969 or 970, the total lithium content of all lithium metal cells contained in the battery not exceed 1.5 g and the total capacity of all lithium ion cells contained in the battery shall not exceed 10 Wh.

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UN Model Regulations, Special Provision 388 (see ST/SG/AC.10/44/Add.1)

A214	(388)	UN No. 3166 entries apply to vehicles powered by flammable liquid or gas internal combustion engines or fuel cells. Vehicles powered by a fuel cell engine must be consigned under 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 must be consigned under 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 must 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 must be consigned under 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.

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UN Model Regulations, Special Provision 388 (see ST/SG/AC.10/44/Add.1)

The following UN text is struck out in alignment with current Special Provision A207. DGP/25 decided not to add this text to the special provision as the provisions were already adequately addressed in Packing Instructions 950 and 951.

~~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, must be securely installed in the vehicle and are not otherwise subject to these Instructions. However, lithium batteries must meet the provisions of 2;9.3.1, except that 2;9.3.1 a) does not apply when pre-production prototype batteries or batteries of a small production run, consisting of not more than 100 batteries, are installed in vehicles or equipment.~~

~~Where a lithium battery installed in a vehicle or equipment is damaged or defective, the vehicle or equipment shall be transported as defined by the competent authority.~~

UN Model Regulations, Special Provision 3891 (see ST/SG/AC.10/44/Add.1)

It is proposed that the following new UN Special Provision 389 should not be included in the Instructions:

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 (a) to (e) and contain the necessary systems to prevent overcharge and over discharge 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 these Regulations. 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.

A215 (391) Articles containing dangerous goods of Division 2.3, or Division 4.2, or Division 4.3, or Division 5.1, or Division 5.2 or Division 6.1 for substances of inhalation toxicity requiring Packing Group I and articles containing more than one of the hazards listed in Part 2, Introductory Chapter, paragraph 4.1 b), c), or d) must be transported under conditions approved by the appropriate national authority.

UN Model Regulations, Special Provision 392 (see ST/SG/AC.10/44/Add.1)

DGP-WG/17 is invited to consider whether the following provision should be included in the Technical Instructions.

A216 (392) For the transport of fuel gas containment systems designed and approved to be fitted in motor vehicles containing this gas the provisions of Part 4, Chapter 3 to 11 and Part 6;5 of these Instructions 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:

a) The fuel gas containment systems must meet the requirements of the standards or regulations for fuel tanks for vehicles, as applicable. Examples of applicable standards and regulations are:

TIs	*UN*	
	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: I. Specific components of motor vehicles using compressed natural gas (CNG) 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) 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

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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	Hydrogen and fuel cell 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;

b) The fuel gas containment systems must be leakproof and must not exhibit any signs of external damage which may affect their safety;

Note 1.— Criteria may be found in standard ISO 11623:2015 Transportable gas cylinders — Periodic inspection and testing of composite gas cylinders (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 must only be carried in salvage pressure receptacles in conformity with these Instructions.

c) If a fuel gas containment system is equipped with two valves or more integrated in line, the two valves must 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, it must be closed as to be gastight under normal conditions of transport;

d) Fuel gas containment systems must 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 must be secured in order to prevent slipping, rolling or vertical movement;

e) Valves must be protected by one of the methods described in 2;4.1.1.8 a) to e);

f) Except for the case of fuel gas containment systems removed for disposal, recycling, repair, inspection or maintenance, they must be filled with not more than 20 per cent of their nominal filling ratio or nominal working pressure, as applicable;

g) Notwithstanding the provisions of Parts 5;2 and 5;3, when fuel gas containment systems are consigned in a handling device, markings and labels may be affixed to the handling device; and

h) Notwithstanding the provisions of 5;4.1.5 the information on the total quantity of dangerous goods may be replaced by the following information:

i) The number of fuel gas containment systems; and

ii) 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.

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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".".

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Chapter 4

DANGEROUS GOODS IN LIMITED QUANTITIES

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4.1 APPLICABILITY

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4.1.2 Only dangerous goods which are permitted on passenger aircraft and which meet the criteria of the following classes, divisions and packing groups (if appropriate) may be carried under these provisions for dangerous goods in limited quantities:

The Model Regulations do not contain the text being proposed for amendment below. The amendments proposed are in accordance with the agreement by the UN Sub-Committee that the word "risk" was inappropriately used in many paragraphs of the Model Regulations and should be replaced by the word "hazard" (see ST/SG/AC.10/C.3/98).

Class 2	Only UN 1950 in Divisions 2.1 and 2.2, UN 2037 in Divisions 2.1 and 2.2 without a subsidiary ~~risk~~ hazard, UN 3478 (**Fuel cell cartridges**, containing liquefied flammable gas) and UN 3479 (**Fuel cell cartridges**, containing hydrogen in metal hydride)

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Note.— Many articles or substances, including the following, are NOT permitted under these limited quantity provisions:

a) those permitted only on cargo aircraft;

b) those in Packing Group I;

c) those in Class 1 or 7 or Divisions 2.1 (except as permitted above), 2.3 or 6.2;

d) those in Division 4.2 or with a subsidiary ~~risk~~ hazard of 4.2.

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Chapter 5

DANGEROUS GOODS PACKED IN EXCEPTED QUANTITIES

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DGP-WG/16-WP/54 (see paragraph 3.2.4.2):

5.1 EXCEPTED QUANTITIES

5.1.2.1 For gases, the volume indicated for inner packagings refers to the water capacity of the inner receptacle and the volume indicated for outer packagings refers to the combined water capacity of all inner packagings within a single outer ~~package~~ packaging.

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5.3 TESTS FOR PACKAGES

5.3.1 The complete package as prepared for transport, with inner packagings filled to not less than 95 per cent of their capacity for solids or 98 per cent for liquids, must be capable of withstanding, as demonstrated by testing which is appropriately documented, without breakage or leakage of any inner packaging and without significant reduction in effectiveness:

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DGP-WG/16-WP/54 (see paragraph 3.2.3.3):

b) a force applied to the top surface for a duration of 24 hours, equivalent to the total weight of identical packages if stacked to a height of 3 m (including the ~~drop~~ sample).

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ICAO translators and editors of versions other than English: There may be a need for amendment to 3;5.4 for the sake of alignment with 3.5.4.1 of the UN Model Regulations (see ST/SG/AC.10/44/Add.1)

5.4 MARKING OF PACKAGES

5.4.1 Packages containing excepted quantities of dangerous goods prepared in accordance with this chapter must be durably and legibly marked with the mark shown in Figure 3-2. The primary hazard class or, when assigned, the division of each of the dangerous goods contained in the package must be shown in the mark. Where the name of the shipper or consignee is not shown elsewhere on the package, this information must be included within the mark.

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5.6 DE MINIMIS QUANTITIES

Dangerous goods assigned to codes E1, E2, E4 or E5 are not subject to these Instructions when carried as cargo provided that:

DGP-WG/16-WP/54 (see paragraph 3.2.1.6):

a) the maximum net quantity ~~of material~~ per inner packaging is limited to 1 mL for liquids and gases and 1 g for solids;

b) the provisions of 5.2 are met, except that an intermediate packaging is not required if the inner packagings are securely packed in an outer packaging with cushioning material in such a way that, under normal conditions of transport, they cannot break, be punctured, or leak their contents; and for liquid dangerous goods, the outer packaging contains sufficient absorbent material to absorb the entire contents of the inner packagings;

c) the provisions of 5.3 are complied with; and

d) the maximum net quantity of dangerous goods per outer packaging does not exceed 100 g for solids or 100 mL for liquids and gases.

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