International Civil Aviation Organization

DGP/26-WP/16
21/6/17

WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-SIXTH MEETING

Montréal, 16 to 27 October 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

DRAFT AMENDMENTS TO THE TECHNICAL INSTRUCTIONS TO ALIGN WITH THE UN RECOMMENDATIONS — PART 6

(Presented by the Secretary)

SUMMARY

This working paper contains draft amendments to Part 6 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-WG/17 (Montréal, 24 to 28 April 2017).

The DGP is invited to agree to the draft amendments in this working paper.

Part 6

PACKAGING NOMENCLATURE, MARKING, REQUIREMENTS AND TESTS

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Chapter 2

MARKING OF PACKAGINGS OTHER THAN INNER PACKAGINGS

Introductory Notes

Note 1.— The marks indicate that the packaging which bears them corresponds to a successfully tested design type and that it complies with the provisions of Chapters 3 and 4 which are related to the manufacture, but not to the use, of the packaging. In itself, therefore, the marks do not necessarily confirm that the packaging may be used for any particular substance.

Note 2.— The marks are intended to be of assistance to packaging manufacturers, reconditioners, packaging users, operators and appropriate authorities. In relation to the use of a new packaging, the original marks are a means for its manufacturer(s) to identify the type and to indicate those performance test regulations that have been met.

ICAO translators and editors of versions other than English: There may be a need for amendment to Note 3 for the sake of alignment with 6.1.3, Note 3 of the UN Model Regulations (see ST/SG/AC.10/44/Add.1)

Note 3.— The marks do not always provide full details of the test levels, etc., and these may need to be taken further into account, e.g. by reference to a test certificate, test reports or register of successfully tested packagings. For example, a packaging having an X or Y mark may be used for substances to which a packing group having a lesser degree of danger has been assigned with the relevant maximum permissible value of the relative density, determined by taking into account the factor 1.5 or 2.25 indicated in the test requirements for packagings in Chapter 4 as appropriate, i.e. a Packing Group I packaging tested for products with a relative density of 1.2 could be used as a Packing Group II packaging for products with a relative density of 1.8 or a Packing Group III packaging for products with a relative density of 2.7, provided of course that all the performance criteria can still be met with the higher relative density.

2.1 MARKING REQUIREMENTS FOR PACKAGINGS OTHER THAN INNER PACKAGINGS

2.1.1 Each packaging intended for use according to these Instructions must bear marks which are durable, legible and placed in a location and of such a size relative to the packaging as to be readily visible. For packages with a gross mass of more than 30 kg the marks, or a duplicate thereof, must appear on the top or on a side of the packaging. Letters, numerals and symbols must be at least 12 mm high, except for packagings of 30 L or 30 kg capacity or less, when they must be at least 6 mm in height and for packagings of 5 L or 5 kg or less when they must be of an appropriate size. The marks must show:

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UN Model Regulations, 6.1.3.1 f) (see ST/SG/AC.10/44/Add.1)

f) the State authorizing the allocation of the mark, indicated by the distinguishing sign ~~for motor~~ used on vehicles in international road traffic;

Note.— The distinguishing sign used on vehicles in international road traffic is the distinguishing sign of the State of registration used on motor vehicles and trailers in international road traffic, e.g. in accordance with the Geneva Convention on Road Traffic of 1949 or the Vienna Convention on Road Traffic of 1968.

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UN Model Regulations, 6.1.3.8 (h) (see ST/SG/AC.10/44/Add.1)

2.1.8 After reconditioning a packaging, the reconditioner must apply to it, in sequence, durable marks showing:

h) the State in which the reconditioning was carried out, indicated by the distinguishing sign ~~for motor~~ used on vehicles in international road traffic;

Note.— The distinguishing sign used on vehicles in international road traffic is the distinguishing sign of the State of registration used on motor vehicles and trailers in international road traffic, e.g. in accordance with the Geneva Convention on Road Traffic of 1949 or the Vienna Convention on Road Traffic of 1968.

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Chapter 4

PACKAGING PERFORMANCE TESTS

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4.7 TEST REPORT

4.7.1 A test report containing at least the following particulars must be drawn up and must be available to the users of the packaging:

a) name and address of the test facility;

b) name and address of the applicant (where appropriate);

c) a unique test report identification;

d) date of the test report;

e) manufacturer of the packaging;

f) description of the packaging type (e.g. dimensions, materials, closures, thickness, etc.), including method of manufacture (e.g. blow moulding); drawings and/or photographs may be included;

g) maximum capacity;

UN Model Regulations, 6.1.5.7.1 (see ST/SG/AC.10/44/Add.1)

h) characteristics of the test contents (e.g. the viscosity and relative density for liquids and the particle size for solids) (for plastics packagings subject to the internal pressure test in 4.5, the temperature of the water used);

i) test descriptions and results;

j) a signature and name and status of the signatory.

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Chapter 5

REQUIREMENTS FOR THE CONSTRUCTION AND TESTING OF CYLINDERS AND CLOSED CRYOGENIC RECEPTACLES, AEROSOL DISPENSERS AND SMALL RECEPTACLES CONTAINING GAS (GAS CARTRIDGES) AND FUEL CELL CARTRIDGES CONTAINING LIQUEFIED FLAMMABLE GAS

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5.1.6 Periodic inspection and testing

5.1.6.1 Refillable cylinders other than cryogenic receptacles must be subjected to periodic inspections and tests by a body authorized by the appropriate national authority, in accordance with the following:

a) check of the external conditions of the cylinder and verification of the equipment and the external marks;

b) check of the internal conditions of the cylinder (e.g. internal inspection, verification of minimum wall thickness);

c) check of the threads if there is evidence of corrosion or if the fittings are removed;

d) a hydraulic pressure test and, if necessary, verification of the characteristics of the material by suitable tests;

UN Model Regulations, 6.2.1.6.1 d) (see ST/SG/AC.10/44/Add.1)
"and tubes" is struck out below since they are not permitted for transport by air (reference to tubes was excluded from the existing text as well).

Note 1.— With the agreement of the appropriate national authority, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.

Note 2.— ~~With the agreement of the appropriate national authority, the hydraulic pressure test of cylinders may be replaced by an equivalent method based on acoustic emission testing or a combination of acoustic emission testing and ultrasound examination. ISO 16148:2006 may be used as a guide for acoustic emission testing procedures.~~ For seamless steel cylinders ~~and tubes~~ the check of 5.1.6.1 b) and hydraulic pressure test of 5.1.6.1 d) may be replaced by a procedure conforming to ISO 16148:2016 "Gas cylinders — Refillable seamless steel gas cylinders and tubes — Acoustic emission examination (AT) and follow-up ultrasonic examination (UT) for periodic inspection and testing".

Note 3.— The check of 5.1.6.1 b) and ~~T~~the hydraulic pressure test of 5.1.6.1 d) may be replaced by ultrasonic examination carried out in accordance with ISO 10461:2005 + A1:2006 for seamless aluminium alloy gas cylinders and in accordance with ISO 6406:2005 for seamless steel gas cylinders.

e) check of service equipment, other accessories and pressure-relief devices, if to be reintroduced into service.

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5.2 REQUIREMENTS FOR UN CYLINDERS AND CLOSED CRYOGENIC RECEPTACLES

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5.2.1 Design, construction and initial inspection and testing

5.2.1.1 The following standards apply for the design, construction and initial inspection and test of UN cylinders, except that inspection requirements related to the conformity assessment system and approval must be in accordance with 5.2.5:

Reference	*Title*	*Applicable for manufacture*
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+ ~~ISO~~ ISO 7866: 2012+ Cor 1:2014	Gas cylinders — Refillable seamless aluminium alloy gas cylinders — Design, construction and testing *Note.— Aluminium alloy 6351A or equivalent must not be used.*	Until further notice
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UN Model Regulations, 6.2.2.1.1 (see ST/SG/AC.10/44/Add.1)

ISO 11118:1999	Gas cylinders — Non-refillable metallic gas cylinders — Specification and test methods.	~~Until further notice~~Until 31 December 2020
ISO 11118:2015	Gas cylinders — Non-refillable metallic gas cylinders — Specification and test methods	Until further notice

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UN Model Regulations, 6.2.2.1.8 (see ST/SG/AC.10/44/Add.1)

5.2.1.8 Not used.

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5.2.3 Service equipment

The following standards apply to closures and their protection:

Reference	*Title*	*Applicable for manufacture*
ISO 11117:1998	Gas cylinders — Valve protection caps and valve guards for industrial and medical gas cylinders — Design, construction and tests.	Until 31 December 2014
ISO 11117:2008+ Cor 1:2009	Gas cylinders — Valve protection caps and valve guards — Design, construction and tests.	Until further notice
ISO 10297:1999	Gas cylinders – Refillable gas cylinder valves – Specification and type testing.	Until 31 December 2008
ISO 10297:2006	Gas cylinders — Refillable gas cylinder valves — Specification and type testing.	Until 31 December 2020
ISO 10297:2014	Gas cylinders — Cylinder valves — Specification and type testing	Until further notice

UN Model Regulations, 6.2.2.3 (see ST/SG/AC.10/44/Add.1)

ISO 13340:2001	Transportable gas cylinders — Cylinder valves for non-refillable cylinders — Specification and prototype testing.	~~Until further notice~~Until 31 December 2020
ISO 14246:2014	Gas cylinders — Cylinder valves — Manufacturing tests and examination	Until further notice
ISO 17871:2015	Gas cylinders — Quick-release cylinders valves- Specification and type testing	Until further notice

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5.2.4 Periodic inspection and test

UN Model Regulations, 6.2.2.4 (see ST/SG/AC.10/44/Add.1)

5.2.4.1 The following standards apply to the periodic inspection and testing of UN cylinders ~~and UN metal hydride storage systems~~ and their closures:

Reference	*Title*	*Applicable for manufacture*
ISO 6406:2005	Seamless steel gas cylinders — Periodic inspection and testing.	Until further notice
ISO 10460:2005	Gas cylinders – Welded carbon-steel gas cylinders – Periodic inspection and testing. *Note.— The repair of welds described in clause 12.1 of this standard must not be permitted. Repairs described in clause 12.2 require the approval of the appropriate national authority which approved the periodic inspection and test body in accordance with 5.2.6.*	Until further notice
ISO 10461:2005/A1:2006	Seamless aluminium-alloy gas cylinders — Periodic inspection and testing.	Until further notice
ISO 10462:2005	Transportable cylinders for dissolved acetylene — Periodic inspection and maintenance.	Until 31 December 2018
ISO 10462:2013	Gas cylinders — Acetylene cylinders — Periodic inspection and maintenance.	Until further notice
ISO 11513:2011	Gas cylinders — Refillable welded steel cylinders containing materials for sub-atmospheric gas packaging (excluding acetylene) — Design, construction, testing, use and periodic inspection.	Until further notice
ISO 11623:2002	Transportable gas cylinders — Periodic inspection and testing of composite gas cylinders.	~~Until further notice~~ Until 31 December 2020
ISO 11623:2015	Gas cylinders — Composite construction — Periodic inspection and testing	Until further notice
ISO 22434:2006	Transportable gas cylinders — Inspection and maintenance of cylinder valves *Note.— These requirements may be met at times other than at the periodic inspection and test of UN cylinders.*	Until further notice

5.2.4.2 The following standard applies to the periodic inspection and testing of UN metal hydride storage systems:

ISO 16111:2008	Transportable gas storage devices — Hydrogen absorbed in reversible metal hydride.	Until further notice

Editorial amendment (redundant text, it appears under 5.2.4.1, ISO 10460:2005)

~~*Note. The repair of welds described in clause 12.1 of this standard must not be permitted. Repairs described in clause 12.2 require the approval of the appropriate national authority which approved the periodic inspection and test body in accordance with 5.2.6.*~~

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5.2.7 Marking of UN refillable cylinders and closed cryogenic receptacles

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UN Model Regulations, 6.2.2.7.2 (c) (see ST/SG/AC.10/44/Add.1)

c) The character(s) identifying the country of approval, as indicated by the distinguishing sign ~~of motor~~ used on vehicles in international road traffic;

Note.— The distinguishing sign used on vehicles in international road traffic is the distinguishing sign of the State of registration used on motor vehicles and trailers in international road traffic, e.g. in accordance with the Geneva Convention on Road Traffic of 1949 or the Vienna Convention on Road Traffic of 1968.

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UN Model Regulations, 6.2.2.7.4 (see ST/SG/AC.10/44/Add.1)

5.2.7.4 The following manufacturing marks must be applied:

m) Identification of the cylinder thread (e.g. 25E). This mark is not required for closed cryogenic receptacles;

Note.— Information on marks that may be used for identifying threads for cylinders is given in ISO/TR 11364, Gas cylinders — Compilation of national and international valve stem/gas cylinder neck threads and their identification and marking system.

n) The manufacturer's mark registered by the appropriate national authority. When the country of manufacture is not the same as the country of approval, then the manufacturer's mark must be preceded by the character(s) identifying the country of manufacture, as indicated by the distinguishing sign~~s of motor~~ used on vehicles in international road traffic. The country mark and the manufacturer's mark must be separated by a space or slash;

Note.— The distinguishing sign used on vehicles in international road traffic is the distinguishing sign of the State of registration used on motor vehicles and trailers in international road traffic, e.g. in accordance with the Geneva Convention on Road Traffic of 1949 or the Vienna Convention on Road Traffic of 1968.

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5.2.7.5 The above marks must be placed in three groups:

a) Manufacturing marks must be the top grouping and must appear consecutively in the sequence given in 5.2.7.4 except for the marks described in 5.2.7.4 q) and r) which must be adjacent to the periodic inspection and test marks of 5.2.7.8;

b) The operational marks in 5.2.7.3 must be the middle grouping and the test pressure f) which must be immediately preceded by the working pressure (i) when the latter is required;

c) Certification marks must be the bottom grouping and must appear in the sequence given in 5.2.7.2.

The following is an example of marking a cylinder:

m) 25E	n) D MF	o) 765432	p) H	
i) PW200PH	f) 300BAR	g) 62.1KG	j) 50L	h) 5.8MM
(un) a)	b) ISO 9809-1	c) F	d) IB	e) 2000/12

5.2.7.6 Other marks are allowed in areas other than the side wall, provided they are made in low stress areas and are not of a size and depth that will create harmful stress concentrations. In the case of closed cryogenic receptacles, such marks may be on a separate plate attached to the outer jacket. Such marks must not conflict with required marks.

DGP is invited to consider deleting 5.2.7.7 and renumbering subsequent paragraphs as shown below as requirements for composite cylinders are included in 5.2.7.4 q) and r)

~~5.2.7.7 Cylinders of composite construction with limited life must be marked with the letters "FINAL" followed by the expiry date, the year (four digits) and the month (two digits).~~

5.2.7.~~8~~7 In addition to the preceding marks, each refillable cylinder and closed cryogenic receptacle that meets the periodic inspection and test requirements of 5.2.4 must be marked indicating:

UN Model Regulations, 6.2.2.7.7 (a) (see ST/SG/AC.10/44/Add.1)
Reference to distinguishing signs for motor vehicles is included in the 19th revised edition of the Model Regulations but not the 2017-2018 Edition of the Technical Instructions. It is added here as amended for the 20th revised edition.

a) the character(s) identifying the country authorizing the body performing the periodic inspection and test as indicated by the distinguishing sign used on vehicles in international road traffic. This mark is not required if this body is approved by the appropriate national authority of the country approving manufacture;

Note.— The distinguishing sign used on vehicles in international road traffic is the distinguishing sign of the State of registration used on motor vehicles and trailers in international road traffic, e.g. in accordance with the Geneva Convention on Road Traffic of 1949 or the Vienna Convention on Road Traffic of 1968.

b) the registered mark of the body authorized by the appropriate national authority for performing the periodic inspection and test;

c) the date of the periodic inspection and test, the year (two digits) followed by the month (two digits) separated by a slash (i.e. "/"). Four digits may be used to indicate the year.

The above marks must appear consecutively in the sequence given.

5.2.7.~~9~~.8 For acetylene cylinders, with the agreement of the national authority, the date of the most recent periodic inspection and the stamp of the body performing the periodic inspection and test may be engraved on a ring held on the cylinder by the valve. The ring must be configured so that it can be removed only by disconnecting the valve from the cylinder.

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5.2.9 Marking of UN metal hydride storage systems

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5.2.9.2 The following marks must be applied:

a) The UN packaging symbol (un)

This symbol must not be used for any purpose other than for certifying that a packaging complies with the relevant requirements in Chapters 1 to 6;

b) "ISO 16111" (the technical standard used for design, manufacture and testing);

UN Model Regulations, 6.2.2.9.2 (c) (see ST/SG/AC.10/44/Add.1)

c) The character(s) identifying the country of approval, as indicated by the distinguishing sign~~s of motor~~ used on vehicles in international road traffic;

Note.— The distinguishing sign used on vehicles in international road traffic is the distinguishing sign of the State of registration used on motor vehicles and trailers in international road traffic, e.g. in accordance with the Geneva Convention on Road Traffic of 1949 or the Vienna Convention on Road Traffic of 1968.

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UN Model Regulations, 6.2.2.9.2 (h) (see ST/SG/AC.10/44/Add.1)

h) The manufacturer's mark registered by the appropriate national authority. When the country of manufacture is not the same as the country of approval, then the manufacturer's mark must be preceded by the character(s) identifying the country of manufacture, as indicated by the distinguishing sign~~s of motor~~ used on vehicles in international road traffic. The country mark and the manufacturer's mark must be separated by a space or slash;

Note.— The distinguishing sign used on vehicles in international road traffic is the distinguishing sign of the State of registration used on motor vehicles and trailers in international road traffic, e.g. in accordance with the Geneva Convention on Road Traffic of 1949 or the Vienna Convention on Road Traffic of 1968.

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UN Model Regulations, 6.2.2.9.4 (a) (see ST/SG/AC.10/44/Add.1)

5.2.9.4 In addition to the preceding marks, each metal hydride storage system that meets the periodic inspection and test requirements of 5.2.4 must be marked indicating:

a) the character(s) identifying the country authorizing the body performing the periodic inspection and test, as indicated by the distinguishing sign ~~of motor~~ used for vehicles in international road traffic. This mark is not required if this body is approved by the appropriate national authority of the country approving manufacture;

Note.— The distinguishing sign used on vehicles in international road traffic is the distinguishing sign of the State of registration used on motor vehicles and trailers in international road traffic, e.g. in accordance with the Geneva Convention on Road Traffic of 1949 or the Vienna Convention on Road Traffic of 1968.

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Chapter 6

PACKAGINGS FOR INFECTIOUS SUBSTANCES OF CATEGORY A

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6.4 MARKING

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6.4.2 A packaging that meets the requirements of this section and of 6.5 shall be marked with:

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UN Model Regulations, 6.3.4.2 (e) (see ST/SG/AC.10/44/Add.1)

e) the State authorizing the allocation of the mark, indicated by the distinguishing sign ~~for motor~~ used on vehicles in international road traffic;

Note.— The distinguishing sign used on vehicles in international road traffic is the distinguishing sign of the State of registration used on motor vehicles and trailers in international road traffic, e.g. in accordance with the Geneva Convention on Road Traffic of 1949 or the Vienna Convention on Road Traffic of 1968.

f) the name of the manufacturer or other identification of the packaging specified by the competent authority; and

g) for packagings meeting the requirements of 6.5.1.6, the letter “U”, inserted immediately following the mark required in b) above.

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Chapter 8

REQUIREMENTS FOR INTERMEDIATE BULK CONTAINERS

8.1 MARKING OF PACKAGING FOR INTERMEDIATE BULK CONTAINERS

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8.1.2 The packaging mark consists of:

UN Model Regulations, 6.5.2.1 (e) (see ST/SG/AC.10/44/Add.1)

e) the State authorizing the allocation of the mark; indicated by the distinguishing sign ~~for motor~~ used on vehicles in international road traffic;

Note.— The distinguishing sign used on vehicles in international road traffic is the distinguishing sign of the State of registration used on motor vehicles and trailers in international road traffic, e.g. in accordance with the Geneva Convention on Road Traffic of 1949 or the Vienna Convention on Road Traffic of 1968.

f) the name or symbol of the manufacturer and other identification of the IBC, as specified by the appropriate national authority;

g) the stacking test load in kg. For IBCs not designed for stacking, the figure “0” must be shown;

h) the maximum permissible gross mass in kg.

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— END —