



**WORKING PAPER**

**DANGEROUS GOODS PANEL (DGP)**

**TWENTY-THIRD MEETING**

**Montréal, 11 to 21 October 2011**

**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 2013-2014 Edition**

**DRAFT AMENDMENTS OF THE TECHNICAL INSTRUCTIONS TO ALIGN TO THE UN RECOMMENDATIONS — PART 2**

(Presented by the Secretary)

**SUMMARY**

This working paper contains draft amendments to Part 2 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 fifth session (Geneva, 10 December 2010). It also reflects amendments agreed by DGP-WG/10 (Abu Dhabi, United Arab Emirates, 7 to 11 November 2010) and DGP-WG/11 (Atlantic City, United States, 4 to 8 April 2011).

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

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DGP/23-WP/3, paragraph 3.2.7:

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**Part 2**

**CLASSIFICATION OF DANGEROUS GOODS**

**INTRODUCTORY CHAPTER**

*Parts of this Chapter are affected by State Variations DE 5, NL 4; see Table A-1*

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3.5 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 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
- c) the hazard class or division, subsidiary risk(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.

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3.9 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(s) and packing group that most precisely describe the mixture or solution.

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DGP/23-WP/3, paragraph 3.2.8:

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#### 5. Transport of samples

5.3 Samples of the substance must be transported in accordance with the requirements applicable to the tentative assigned proper shipping name provided:

- a) the substance is not considered to be a substance ~~prohibited~~ forbidden for transport by 1;2.1;

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DGP/23-WP/3, paragraph 3.2.7:

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## Chapter 1

### CLASS 1 — EXPLOSIVES

*Parts of this Chapter are affected by State Variations BE 2, DQ 2, GB 1, HK 3, US 5; see Table A-1*

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#### 1.1 DEFINITIONS AND GENERAL PROVISIONS

Class 1 comprises:

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- b) explosive articles, except devices containing explosive substances in such quantity or of such a character that their inadvertent or accidental ignition or initiation during transport will not cause any effect external to the device either by projection, fire, smoke, heat or loud noise (see 1.5.2); and

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1.3 DIVISIONS

1.3.1 Class 1 is divided into six divisions:

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f) Division 1.6 — Extremely insensitive articles which do not have a mass explosion hazard.

This division comprises articles which contain only extremely insensitive ~~detonating~~ substances and which demonstrate a negligible probability of accidental initiation or propagation.

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Table 2-2. Classification codes

Description of substance or article to be classified	Compatibility group	Classification code
...		
Articles containing only extremely insensitive <del>detonating</del> substances	N	1.6N
...		

...

1.5 CLASSIFICATION OF EXPLOSIVES

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Insert new paragraph 1.5.2.4

1.5.2.4 An article may be excluded from Class 1 when three unpackaged articles, each individually activated by its own means of initiation or ignition or external means to function in the designed mode, meet the following test criteria:

- a) no external surface has a temperature of more than 65°C. A momentary spike in temperature up to 200°C is acceptable;
- b) no rupture or fragmentation of the external casing or movement of the article or detached parts thereof of more than one metre in any direction;  
Note.— Where the integrity of the article may be affected in the event of an external fire, these criteria must be examined by a fire test, such as described in ISO 12097-3.
- c) no audible report exceeding 135 dB(C) peak at a distance of one metre;
- d) no flash or flame capable of igniting a material such as a sheet of 80 ± 10 g/m<sup>2</sup> paper in contact with the article; and
- e) no production of smoke, fumes or dust in such quantities that the visibility in a one cubic metre chamber equipped with appropriately sized blow out panels is reduced more than 50 per cent as measured by a calibrated light (lux) meter or radiometer located one metre from a constant light source located at the midpoint on opposite walls. The general guidance on optical density testing in ISO 5659-1 and the general guidance on the photometric system described in Section 7.5 in ISO 5659-2 may be used or similar optical density measurement methods designed to accomplish the same purpose may also be employed. A suitable hood cover surrounding the back and sides of the light meter must be used to minimize effects of scattered or leaking light not emitted directly from the source.

Note 1.— If during the tests addressing criteria a), b), c) and d) no or very little smoke is observed, the test described in e) may be waived.

Note 2.— The appropriate national authority may require testing in packaged form if it is determined that, as packaged for transport, the article may pose a greater risk.

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## Chapter 2

### CLASS 2 — GASES

*Parts of this Chapter are affected by State Variation US 6;  
see Table A-1*

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#### 2.2 DIVISIONS

2.2.1 Substances of Class 2 are assigned to one of three divisions based on the primary hazard of the gas during transport.

*Note.— UN 1950 — **Aerosols**, UN 2037 — **Receptacles, small, containing gas** and UN 2037 — **Gas cartridges** must be regarded as being in Division 2.1 when the criteria in 2.5.1 a) are met.*

a) Division 2.1 — Flammable gases.

Gases which at 20°C and a standard pressure of 101.3 kPa:

- i) are ignitable when in a mixture of 13 per cent or less by volume with air; or
- ii) have a flammable range with air of at least 12 percentage points regardless of the lower flammable limit. Flammability must be determined by tests or by calculation in accordance with methods adopted by ISO (see ~~ISO Standard 10156:1996~~ [ISO 10156:2010](#)). Where insufficient data are available to use these methods, tests by a comparable method recognized by the appropriate national authority must be used.

*Note.— UN 1950 — **Aerosols** and UN 2037 — **Receptacles, small, containing gas** must be regarded as being in Division 2.1 when the criteria in 2.5.1 a) are met.*

b) Division 2.2 — Non-flammable, non-toxic gases.

Gases which:

- i) are asphyxiant — gases which dilute or replace the oxygen normally in the atmosphere; or
- ii) are oxidizing — gases which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does; or
- iii) do not come under the other divisions.

*Note.— In 2.2.1 b) ii), “gases which cause or contribute to the combustion of other material more than air does” means pure gases or gas mixtures with an oxidizing power greater than 23.5 per cent as determined by a method specified in ~~ISO 10156:1996 or 10156-2:2005~~ [ISO 10156:2010](#).*

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#### 2.4 MIXTURES OF GASES

For the classification of gas mixtures into one of the three divisions (including vapours of substance from other classes), the following principles must be used:

- a) Flammability must be determined by tests or by calculation in accordance with methods adopted by ISO (see ~~ISO Standard 10156:1996~~ [ISO 10156:2010](#)). Where insufficient data are available to use these methods, tests by a comparable method recognized by the appropriate national authority may be used.

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- d) Oxidizing ability is determined either by tests or by calculation methods adopted by the International Standards Organization (see the Note in 2.2.1 b) and ~~ISO 10156:1996~~ [ISO 10156:2010](#), and ~~ISO 10156-2:2005~~).

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DGP/23-WP/3, paragraph 3.2.8:

#### 2.5 AEROSOLS

2.5.1 For aerosols, the division of Class 2 and the subsidiary risks depend on the nature of the contents of the aerosol dispenser. The following provisions must apply:

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- f) aerosols with contents meeting the criteria of Packing Group I for toxicity or corrosivity are ~~prohibited~~ forbidden from transport.

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DGP/23-WP/3, paragraph 3.2.7:

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**Table 2-7. List of currently assigned organic peroxides in packages**

*Note.— Peroxides to be transported must fulfil the classification and the control and emergency temperatures (derived from the self-accelerating decomposition temperature (SADT)) as listed.*

Organic peroxide	Concentration (per cent)	Diluent type A (per cent)	Diluent type B (per cent) (Note 1)	Inert solid (per cent)	Water (per cent)	Control tempera- ture (°C)	Emergency tempera- ture (°C)	UN generic entry	Notes
...									
<a href="#">([3r-(3r,5as,6s,8as,9r,10r,12s,12ar**)]-Decahydro-10-methoxy-3,6,9-trimethyl-3,12-epoxy-12h-pyrano[4,3-j]-1,2-benzodioxepin)</a>	≤ 100							3106	
Diacetone alcohol peroxides	≤57		≥26		≥8	+40	+45	3115	6
...									
Diisopropyl peroxydicarbonate	<del>≤28</del> ≤32		<del>≥72</del> ≥68			-15	-5	3115	
...									
<a href="#">3,6,9-Triethyl-3,6,9-trimethyl-1,4,7-triperoxonane</a>	≤ 17		≥ 18		≥ 65			3110	
3,6,9-Triethyl-3,6,9-trimethyl -1,4,7-triperoxonane	≤42		≥58					3105	28

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## Chapter 6

### CLASS 6 — TOXIC AND INFECTIOUS SUBSTANCES

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#### 6.3 DIVISION 6.2 — INFECTIOUS SUBSTANCES

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##### 6.3.2 Classification of infectious substances

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6.3.2.3.3 Substances in a form that any present pathogens have been neutralized or inactivated such that they no longer pose a health risk are not subject to these Instructions unless they meet the criteria for inclusion in another class.

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DGP/23-WP/3, paragraph 3.2.7 and  
Corrigendum to the UN Model Regulations  
(Seventeenth revised Edition)  
(ST/SG/AC.10/1/Rev.17, July 2011):

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Note.— Medical equipment which has been drained of free liquid is deemed to meet the requirements of this paragraph and is not subject to these Instructions.

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DGP/23-WP/3, paragraph 3.2.7:

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Insert new paragraph 6.3.2.2.7

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6.3.2.3.7 Except for:

a) medical waste (UN 3291);

b) medical devices or equipment contaminated with or containing infectious substances in Category A (UN 2814 or UN 2900); and

c) medical devices or equipment contaminated with or containing other dangerous goods that meet the definition of another hazard class,

medical devices or equipment potentially contaminated with or containing infectious substances which are being transported for disinfection, cleaning, sterilization, repair, or equipment evaluation are not subject to the provisions of these Instructions if packed in packagings designed and constructed in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents. Packagings must be designed to meet the construction requirements listed in 6:6.

6.3.2.3.7.1 These packagings must meet the general packing requirements of 4:1.1.1 and 4:1.1.3.1 and be capable of retaining the medical devices and equipment when dropped from a height of 1.2 m. [For air transport, additional requirements may apply].

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DGP/23-WP/3, paragraph 3.2.7.1 c):

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6.3.2.3.7.2 Packages must be marked "Used medical device" or "Used medical equipment". When an overpack used, it must be marked with the words "Used medical device" or "Used medical equipment" unless the markings are visible.

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**Table 2-16. Summary of criteria for assigning packing groups to corrosive substances**

<u>Packing Group</u>	<u>Exposure Time</u>	<u>Observation Period</u>	<u>Effect</u>
<u>I</u>	<u>≤ 3 min</u>	<u>≤ 60 min</u>	<u>Full thickness destruction of intact skin</u>
<u>II</u>	<u>&gt; 3 min ≤ 1 h</u>	<u>≤ 14 d</u>	<u>Full thickness destruction of intact skin</u>
<u>III</u>	<u>&gt; 1 h ≤ 4 h</u>	<u>≤ 14 d</u>	<u>Full thickness destruction of intact skin</u>
<u>III</u>	<u>—</u>	<u>—</u>	<u>Corrosion rate on either steel or aluminium surfaces exceeding 6.25 mm a year at a test temperature of 55 °C when tested on both materials</u>

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## Chapter 9

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# CLASS 9 — MISCELLANEOUS DANGEROUS SUBSTANCES AND ARTICLES, INCLUDING ENVIRONMENTALLY HAZARDOUS SUBSTANCES

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### 9.2 ASSIGNMENT TO CLASS 9

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DGP/23-WP/3, paragraph 3.2.3:

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9.2.1 Class 9 includes, inter alia:

- a) Environmentally hazardous substances (aquatic environment) are those that meet the criteria in 2.9.3 of the UN Model Regulations, 15th revised edition, or that meet criteria in international regulations or national regulations established by the appropriate national authority in the State of Origin, transit or destination of the consignment.

Substances or mixtures dangerous to the aquatic environment not otherwise classified under these Instructions must be assigned to Packing Group III and designated:

UN 3077 Environmentally hazardous substance, solid, n.o.s.; or  
UN 3082 Environmentally hazardous substance, liquid, n.o.s.

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DGP/23-WP/3, paragraph 3.2.23.1 c) and  
Corrigendum to the UN Model Regulations  
(Seventeenth revised Edition)  
(ST/SG/AC.10/1/Rev.17, July 2011):

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### 9.3 LITHIUM BATTERIES

9.3.1 Cells and batteries, cells and batteries contained in equipment, or cells and batteries packed with equipment, containing lithium in any form must be assigned to UN Nos. 3090, 3091, 3480 or 3481 as appropriate. They may be transported under these entries if they meet the following provisions:

- a) each cell or battery is of the type proved to meet the requirements of each test of the UN *Manual of Tests and Criteria*, Part III, sub-section 38.3. Batteries and cells manufactured before 1 January 2014 conforming to a design type tested according to the requirements of the fifth revised edition of the UN *Manual of Tests and Criteria*, Part II, sub-section 38.3 may continue to be transported;

*Note 1.— Batteries must be of a design type proved to meet the testing requirements of the UN Manual of Tests and Criteria, Part III, sub-section 38.3, irrespective of whether the cells of which they are composed are of a tested design type.*

- b) each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under conditions normally incident to transport;

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

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

- e) cells and batteries must be manufactured under a quality management programme that includes:

- 1) a description of the organizational structure and responsibilities of personnel with regard to design and product quality;
- 2) the relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;
- 3) process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;

- 4) quality records, such as inspection reports, test data, calibration data and certificates. Test data must be kept and made available to the appropriate national authority upon request;
- 5) management reviews to ensure the effective operation of the quality management programme;
- 6) a process for control of documents and their revision;
- 7) a means for control of cells or batteries that are not conforming to the type tested in accordance with Part III, section 38.3 of the UN *Manual of Tests and Criteria*;
- 8) training programmes and qualification procedures for relevant personnel; and
- 9) procedures to ensure that there is no damage to the final product.

*Note.— In-house quality management programmes may be accepted. Third party certification is not required, but the procedures listed in 1) to 9) above must be properly recorded and traceable. A copy of the quality management programme must be made available to the appropriate authority upon request.*

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