



WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-EIGHTH MEETING

Virtual, 15 to 19 November 2021

Agenda Item 1: Harmonizing ICAO dangerous goods provisions with UN Recommendations on the Transport of Dangerous Goods (Ref: REC-A-DGS-2023)

1.2: Develop proposals, if necessary, for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2023-2024 Edition

1.3: Develop proposals, if necessary, for amendments to the *Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284SU) for incorporation in the 2023-2024 Edition

REVIEW OF DGP/28 WORKING PAPERS ON UN HARMONIZATION BY THE DGP-WG/UN HARMONIZATION

(Presented by Rapporteur of DGP-WG/UN Harmonization)

SUMMARY

This working paper proposes revisions to the amendments proposed in the working papers on UN harmonization to address inconsistencies identified by the DGP Working Group on UN Harmonization (DGP-WG/UN Harmonization).

Action by the DGP: The DGP is invited to consider the revisions to:

- a) the proposed amendments to Parts 2, 5 and 6 of the Technical Instructions contained in DGP/28-WPs/12, 15 and 16 as shown in Appendix A (Part 2), Appendix B (Part 5) and Appendix C (Part 6) to this working paper;
- b) the proposed amendments to the Supplement contained in DGP/28-WP/19 as shown in Appendix D to this working paper.

1. INTRODUCTION

1.1 The DGP Working Group on UN Harmonization (DGP-WG/UN Harmonization) has continued to review the changes proposed to the Technical Instructions arising from the revisions to the

22nd revised edition of the UN Model Regulations, which resulted in the content of working papers DGP/28-WP/11 to DGP/28-WP/16 and DGP/28-WP/19 and DGP/28-WP/21.

1.2 This review was to address questions raised by the Secretariat in DGP/28-WP/16 as well as other concerns that had been identified by members of the DGP-WG/UN Harmonization but that had not been resolved before the deadline for the working papers for DGP/28.

1.3 This working paper identifies the specific issues that have been identified and the proposals to resolve those issues.

1.4 **DGP/28-WP/12 — Draft Amendments to Part 2 of the Technical Instructions.**

1.4.1 During the review of the changes to the 22nd revised edition of the UN Model Regulations it was identified that the UN Subcommittee had adopted text into paragraph 2.5.3.2.4 (equivalent to Part 2;5.3.2.4) that identified that organic peroxides not listed in the equivalent to Table 2-7 in the UN Model Regulations but that are listed in packing instruction IBC520 may also be transported in packages as per packing instruction P520 in the UN Model Regulations.

1.4.2 As dangerous goods are not permitted in intermediate bulk containers in air transport, this change was not applied to Part 2;5.3.2.4. What has taken time though is for a review of all the organic peroxides listed in packing instruction IBC520 against the organic peroxides listed in Table 2-7 to determine if there are entries in IBC520 that do not appear in Table 2-7. This review identified that there is one organic peroxide, 3,6,9-Triethyl-3,6,9-trimethyl-1,4,7 triperoxonane in a concentration not exceeding 27 per cent with not less than 83 per cent diluent type A, which is assigned to UN 3109. It is therefore proposed that this entry be added to Table 2-7 as shown with yellow-highlighted text in Appendix A to this working paper.

1.5 **DGP/28-WP/15 — Draft Amendments to Part 6 of the Technical Instructions**

1.5.1 Included in the changes proposed to Part 5 is the addition of “Note 2” under the lithium battery mark, Figure 5-3, to adopt the text from the UN Model Regulations for a transitional period until 31 December 2026 during which time the mark shown in the 2021-2022 edition of the Technical Instructions may continue to be applied.

1.5.2 It is proposed to add this note and to retain the existing note as “Note 1”. The existing note under Figure 5-3 was added by the DGP to facilitate the transition from the rectangular mark that was in place prior to 1 January 2021. The DGP-WG-UN Harmonization is of the view that having both notes would create confusion and as there will have been two years of use of the square lithium battery mark, that Note 1 shown in DGP/28-WP/15 should be deleted as shown with yellow-highlighted text in Appendix B to this working paper.

1.6 **DGP/28-WP/16 — Draft Amendments to Part 6 of the Technical Instructions**

1.6.1 This working paper contains a number of questions from the Secretariat on the changes proposed for adoption from the UN Model Regulations. There is also instances of text shown in square brackets that require the panel to decide if the text should be adopted as shown.

1.6.2 DGP-WG/UN Harmonization considered the questions and the text shown in square brackets. The consensus of the DGP-WG-UN Harmonization is as follows:

- a) Note at the end of the definitions in paragraph 5.2.5.1.1. The note identifies that the term “pressure receptacle”, when used refers to the specific terms shown and it is questioned whether given that the Technical Instructions always refers to “cylinder”, “cylinder shell” and “inner vessel of closed cryogenic receptacle” if the note is needed. The DGP-WG-UN Harmonization believes that the note is not needed and can be deleted.
- b) In paragraph 5.2.5.1.2 there are two sets of square brackets. The first are around “cylinders and closed cryogenic receptacles”, the second are around “cylinders”. The DGP-WG-UN Harmonization believes that the first set of square brackets should be removed, and the text adopted as shown. For the second the view of the WG is that the text should correctly be “cylinders and closed cryogenic receptacles” based on what is addressed by paragraph 5.4.1.3.
- c) There is a question above subparagraph b) of 5.2.5.1.2 asking if this subparagraph should be shown as “not used”? The WG supports that as bundles of cylinders are not permitted in air transport and provisions addressing bundles of cylinders are not included in the Technical Instructions.
- d) There is a question asking if the heading to the new paragraph 5.2.11 should be “Marking of closures for refillable UN cylinders and closed cryogenic receptacles”? The WG agrees that the heading should be amended as proposed. This is consistent with the wording of the heading of paragraph 5.2.7 in which reference is made to the new paragraph 5.2.11.

Revisions to address the above are shown as yellow-highlighted text in Appendix C to this working paper.

1.7 DGP/28-WP/19 — Draft Amendments to the Supplement to the Technical Instructions

1.7.1 This working paper proposes changes to the Supplement to the Technical Instructions, in part because the changes to the UN Model Regulations would apply to dangerous goods that may be transported only under an approval or exemption.

1.7.2 Included in the changes proposed to the Supplement is a change to add additional text into Packing Instruction 200 in Special packing provision “z”. The new text identifies that cylinders containing pyrophoric gases or flammable gases containing more than 1 per cent pyrophoric compounds that special packing provision “q” must be met.

1.7.3 In reviewing packing instruction P200 in the UN Model Regulations it was identified that special packing provision “q” is assigned to UN 2192 — Germane, UN 2199 — Phosphine and UN 2203 — Silane. These three gases are not listed in Packing instruction 200 in the Supplement. UN 2192 and UN 2199, being toxic gases, are assigned to Packing Instruction 210 in the Supplement. UN 2203 — Silane while being shown in Table S-3-1 as having Packing Instruction 200 assigned is not listed in the packing instruction. In addition, special packing provision “q” is also not included in Packing Instruction 200 in the Supplement.

1.7.4 For these reasons DGP-WG/UN-Harmonization is of the opinion that at this time the additional text should not be adopted into special packing provision “z” and deleted from the proposed text in DGP/28-WP/19 as shown with yellow-highlighted text in Appendix D to this working paper. It is believed that there is more work that should be undertaken over the next biennium by DGP-WG/Supplement with DGP-WG/UN Harmonization to resolve these issues, which may require a comprehensive review of the provisions for toxic gases to ensure that the provisions in packing instruction P200 from the UN Model Regulations are adequately addressed by provisions in the Supplement.

2. ACTION BY THE DGP

2.1 The DGP is invited to consider the revisions to:

- a) the proposed amendments to Parts 2, 5 and 6 of the Technical Instructions contained in DGP/28-WPs/12, 15 and 16 as shown in Appendix A (Part 2), Appendix B (Part 5) and Appendix C (Part 6) to this working paper; and
- b) the proposed amendments to the Supplement contained in DGP/28-WP/19 as shown in Appendix D to this working paper.

APPENDIX A

PROPOSED REVISIONS TO DGP/28-WP/12

Revisions to amendments proposed in DGP/28-WP/12 are highlighted in yellow

Part 2

CLASSIFICATION OF DANGEROUS GOODS

Chapter 5

CLASS 5 — OXIDIZING SUBSTANCES; ORGANIC PEROXIDES

...

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

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	Sub- sidiary hazards and notes
UN Model Regulations, 2.5.3.2.4 (see ST/SG/AC.10/48/Add.1)									
Acetyl acetone peroxide	≤42	≥48			≥8			3105	2
<u>Acetyl acetone peroxide</u>	<u>≤35</u>	<u>≥57</u>			<u>≥8</u>			<u>3107</u>	<u>32</u>
tert-Butylperoxy isopropylcarbonate	≤77	≥23						3103	
1-(2-tert-Butylperoxyisopropyl)-3-isopropenylbenzene	≤77	≥23						3105	
<u>tert-Butylperoxy isopropylcarbonate</u>	<u>≤62</u>		<u>≥38</u>					<u>3105</u>	
...									
tert-Hexyl Peroxypivalate	≤72		≥28			+10	+15	3115	
<u>tert-Hexyl peroxypivalate</u>	<u>≤52 as a stable dispersion in water</u>					<u>+15</u>	<u>+20</u>	<u>3117</u>	
...									
<u>3,6,9-Triethyl-3,6,9-trimethyl-1,4,7 triperxonane</u>	<u>≤27</u>	<u>≥83</u>						<u>3109</u>	

...

APPENDIX B

PROPOSED REVISIONS TO DGP/28-WP/15

Part 5

SHIPPER'S RESPONSIBILITIES

Revisions to amendments proposed in DGP/28-WP/15 are highlighted in yellow:

...



Figure 5-3. Lithium battery mark

~~Note 1.— The mark illustrated in Figure 5-3 of the 2019-2020 Edition of the Technical Instructions with minimum dimensions of 120 mm x 110 mm may continue to be used.~~

Note 2.— The mark shown in Figure 5-3 of the 2021-2022 Edition of the Technical Instructions may continue to be applied until 31 December 2026.

...

APPENDIX C

PROPOSED REVISIONS TO AMENDMENTS TO DGP/28-WP/16

Revisions to amendments proposed in DGP/28-WP/16 are highlighted in yellow

Part 6

PACKAGING NOMENCLATURE, MARKING, REQUIREMENTS AND TESTS

...

5.2.5.1.1 Definitions

___ For the purposes of this section:

Conformity assessment system: a system for appropriate national authority approval of a manufacturer, by cylinder and closed cryogenic receptacle design type approval, approval of manufacturer's quality system and approval of inspection bodies.

Design type: a cylinder and closed cryogenic receptacle design as specified by a particular cylinder and closed cryogenic receptacle standard.

Verify: confirm by examination or provision of objective evidence that specified requirements have been fulfilled.

Paragraph 3.1.2.9.1 a) of the DGP-WG/21 report (To be considered: The Technical Instructions refer specifically to cylinder, cylinder shells and inner vessel of closed cryogenic receptacles receptacle. Is the note needed in the Technical Instructions?):

~~— Note. — In this subsection when separate assessment is used the term pressure receptacle must refer to pressure receptacle, pressure receptacle shell, inner vessel of the closed cryogenic receptacle or closure, as appropriate.~~

5.2.5.1.2 The requirements of 5.2.5 must be used for the conformity assessments of [cylinders and closed cryogenic receptacles]. Paragraph 5.1.4.3 gives details of which parts of [cylinders] and closed cryogenic receptacles may be conformity assessed separately. However, the requirements of 5.2.5 may be replaced by requirements specified by the competent authority in the following cases:

- a) conformity assessment of closures;
- b) conformity assessment of the complete assembly of bundles of cylinders provided the cylinder shells have been conformity assessed in accordance with the requirements of 5.2.5; and Note used.

Paragraph 3.1.2.9 of the DGP-WG/21 report:

- c) conformity assessment of the complete assembly of closed cryogenic receptacles provided the inner vessel has been conformity assessed in accordance with the requirements of 5.2.5.

...

5.2.11 Marking of closures for refillable UN cylinders and closed cryogenic receptacles

5.2.11.1 For closures the following permanent marks must be applied clearly and legibly (e.g. stamped, engraved or etched):

- a) manufacturer's identification mark;
- b) design standard or design standard designation;
- c) date of manufacture (year and month or year and week); and
- d) the identity mark of the inspection body responsible for the initial inspection and test, if applicable.

5.2.11.2 The valve test pressure must be marked when it is less than the test pressure which is indicated by the rating of the valve filling connection.

APPENDIX D

PROPOSED REVISIONS TO DGP/28-WP/19

Revisions to amendments proposed in DGP/28-WP/19 are highlighted in yellow

Part S-4

PACKING INSTRUCTIONS

...

Chapter 4

CLASS 2 — GASES

Packing Instruction 200

For cylinders, the general packing requirements of 4;1.1 and 4;4.1.1 must be met.

...

6) "Special packing provisions":

Material compatibility

- a) Aluminium alloy cylinders are forbidden.
- b) Copper valves are forbidden.
- c) Metal parts in contact with the contents must not contain more than 65 per cent copper.
- d) When steel cylinders or composite cylinders with steel liners are used, only those bearing the "H" mark in accordance with 6;5.2.7.4 p) are permitted.

...

- z) The construction materials of the cylinders and their accessories must be compatible with the contents and must not react to form harmful or dangerous compounds therewith.

The test pressure and filling ratio must be calculated in accordance with the relevant requirements of PI 200.

For cylinders containing pyrophoric gases or flammable mixtures of gases containing more than 1 per cent pyrophoric compounds, the requirements of special packing provision "q" must be met.

The necessary steps must be taken to prevent dangerous reactions (i.e. polymerization or decomposition) during transport. If necessary, stabilization or addition of an inhibitor may be required.

Note.— For the carriage of oxygen to provide life support to aquatic animals, see Note 7 of the Introductory Notes to this Part.

...

— END —