



WORKING PAPER

**DANGEROUS GOODS PANEL (DGP)
MEETING OF THE WORKING GROUP OF THE WHOLE**

Montréal, 15 to 19 October 2012

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 2015-2016 Edition

2.4: Part 4 — Packing Instructions

PROVISIONS FOR CYLINDERS

(Presented by D. Brennan)

SUMMARY

This working paper raises an issue with respect to the alignment between Part 4;2.7 and the equivalent text in the UN Model Regulations with respect to the use of cylinders.

Action by the DGP-WG is in paragraph 2.

1. INTRODUCTION

1.1 The UN Subcommittee updated the provisions for cylinders and introduced Packing Instruction P200 into the 14th revised edition of the UN Model Regulations. The changes adopted into this edition of the Model Regulations were then brought into the 2007–2008 edition of the Technical Instructions.

1.2 In adopting the changes from the UN the DGP made some alterations to the UN text and in considering the new UN P200 not all of content of P200 was brought into Packing Instruction 200 in the Technical Instructions as UN P200, Table 3 includes substances other than those in Class 2.

1.3 It has been identified that there is text in the Model Regulations that was not brought into Part 4;2.7 of the Technical Instructions and there is one substance, UN 2983, **Ethylene oxide and propylene oxide mixture**, in Table 3 of P200, which the UN permits only in pressure receptacles (cylinders), whereas the Technical Instructions has assigned this substance to Packing Instruction 361 which has both combination and single packagings, which includes cylinders.

1.4 The UN text that was not adopted into the Technical Instructions is as highlighted below:

“4.1.3.6 Pressure receptacles for liquids and solids

4.1.3.6.1 Unless otherwise indicated in these Regulations, pressure receptacles conforming to:

- (a) The applicable requirements of Chapter 6.2; or
- (b) The national or international standards on the design, construction, testing, manufacturing and inspection, as applied by the country in which the pressure receptacles are manufactured, provided that the provisions of 4.1.3.6 and 6.2.3.3 are met;

are authorized for the transport of any liquid or solid substance other than explosives, thermally unstable substances, organic peroxides, self-reactive substances, substances where significant pressure may develop by evolution of chemical reaction and radioactive material (unless permitted in 4.1.9).

This sub-section is not applicable to the substances mentioned in 4.1.4.1, packing instruction P200, Table 3.”

1.5 Since that time the DGP has reformatted packing instructions in Part 4 of the Technical Instructions and in doing so has largely aligned the packagings in the packing instruction with those permitted in the Model Regulations, and cylinders are now included in most packing instructions when single packagings are permitted.

1.6 This raises the question as to whether the highlighted UN text should be considered for adoption into the Technical Instructions, or if the panel believes it is preferable to limit the permitted packagings as shown in each packing instruction. It should be noted that the applicable national authority of the State of Origin may permit packagings other than those shown in a packing instruction as set out in Part 4;2.8, which would achieve the same result as the UN text, albeit only with a formal approval.

1.7 It is believed that allowing less stringent packaging provisions in the Technical Instructions for UN 2983 than is permitted by the UN Model Regulations is inconsistent with multi-modal harmonization and also raises a question on the safety of allowing packagings other than cylinders for this substance.

1.8 Accordingly, it is proposed to create a new packing instruction specifically for UN 2983 with cylinders as the only permitted packaging. In addition, in reviewing the packaging provisions for this working paper it was identified that the UN permits cylinders as single packagings for UN 2881, **Metal catalyst, dry**. However, in Packing Instruction 473 where single packagings are permitted for UN 2881 in Packing Group III, cylinders are not listed as one of the permitted packaging types. It is proposed that this be amended.

2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to consider if Part 4;2.7 of the Technical Instructions should be amended to include the text from 4.1.3.6.1 of the UN Model Regulations as shown in the appendix to this working paper.

APPENDIX

PROPOSED AMENDMENT TO PART 4 OF THE TECHNICAL INSTRUCTIONS

PART 4

PACKING INSTRUCTIONS

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Chapter 2

GENERAL

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~~2.7~~ Cylinders may be used for liquids and solids when indicated in a packing instruction. The cylinder must meet the standards set out below.

2.7-4 Unless otherwise indicated in these Instructions, cylinders are permitted for the transport of any liquid or solid substance other than explosives, thermally unstable substances, organic peroxides, self-reactive substances, substances where significant pressure may develop by evolution of chemical reaction and radioactive material (unless permitted in 4;.9). Cylinders must cylinders conforming to:

- a) the applicable requirements of 6;5; or
- b) the national or international standards on the design, construction, testing, manufacturing and inspection, as applied by the country in which the cylinders are manufactured, provided that the provisions of 2.7 and 6;5.3.3 are met.

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Chapter 5

CLASS 3 — FLAMMABLE LIQUIDS

5.1 PACKING INSTRUCTIONS

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The DGP-WG is invited to assign UN 2983, Ethylene oxide and propylene oxide mixture to a new PI 3XX as follows:

Packing Instruction 3XX
Cargo aircraft only for UN 2983

General Requirements

Part 4, Chapter 1 requirements must be met, including:

1) Compatibility Requirements

- 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.

<u>UN Number and proper shipping name</u>	<u>Total quantity per package — cargo</u>	<u>SINGLE PACKAGINGS</u>
<u>UN 2983 Ethylene oxide and propylene oxide mixture</u>	<u>30 L</u>	<u>YES</u>

ADDITIONAL PACKING REQUIREMENTS

- The necessary steps must be taken to prevent dangerous reactions (i.e. polymerisation or decomposition) during transport. If necessary, stabilisation or addition of an inhibitor is required;
- Cylinders must be subjected to an initial test and periodic tests every five years at a pressure of not less than 1.0 Mpa (10 bar) (gauge pressure).

SINGLE PACKAGINGS

Appropriate cylinders as permitted by 4:2.7.

If accepted there is a need for a consequential amendment to Table 3-1 as follows:

Table 3-1. Dangerous Goods List

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max net quantity per package	Packing instruction	Max net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Ethylene oxide and propylene oxide mixture, not more than 30% ethylene oxide	2983	3	6.1	Liquid flammable & Toxic				E0	FORBIDDEN		364 3XX	30 L

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Chapter 6

CLASS 4 — FLAMMABLE SOLIDS; SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION; SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES

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6.2 PACKING INSTRUCTIONS

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To address the omission of cylinders as a single packaging for UN 2881 in PG III the DGP-WG is invited to amend Packing Instruction 473 as follows:

Packing Instruction 473

Passenger and cargo aircraft for UN 1378 and UN 2881 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

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1) Compatibility requirements

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) Closure requirements

— Closures must meet the requirements of 4;1.1.4.

SINGLE PACKAGINGS FOR PACKING GROUP III ONLYCylinders*Drums**Jerricans*See 4;2.7

Steel (1A1, 1A2)

Steel (3A1, 3A2)

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