



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

FOR CHEMICALS UNDER PRESSURE OF UN 3500, 3501, 3502, 3503, 3504 AND 3505

(Presented by CEFIC)

SUMMARY

This working paper proposes to introduce the applicable requirements for the new “Chemicals under pressure” (UN 3500, 3501, 3502, 3503, 3504 and 3505) entries.

Action by the DGP: The DGP is invited to agree to the proposals as presented in the Appendix.

1. INTRODUCTION

1.1 At the DGP Working Group of the Whole Meeting in Atlantic City (DGP-WG/09, 4 to 8 April 2011), “Amendments to the Technical Instructions to Align with the UN Recommendations — Part 3” (DGP/23-WP/3, paragraph 3.2.9) and “Amendments to the Technical Instructions to Align with the UN Recommendations — Part 4” (DGP/23-WP/3, paragraph 3.2.23) were discussed. It was agreed that additional effort was needed to address the six new entries (UN 3500, 3501, 3502, 3503, 3504 and 3505) that cover “Chemicals under pressure”. The adviser from CEFIC offered to submit a proposal to DGP/23 in order to propose appropriate requirements for these entries.

APPENDIX A

AMENDMENTS TO THE TECHNICAL INSTRUCTIONS

Part 3

DANGEROUS GOODS LIST,
SPECIAL PROVISIONS AND
LIMITED AND EXCEPTED QUANTITIES

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Chapter 2

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

Name 1	UN No. 2	Class or division 3	Subsidiary risk 4	Labels 5	State variations 6	Special provisions 7	UN packing group 8	Excepted quantity 9	Passenger aircraft		Cargo aircraft	
									Packing instruction 10	Max. net quantity per package 11	Packing instruction 12	Max. net quantity per package 13
<u>Chemical under pressure, n.o.s.*</u>	<u>3500</u>	<u>2.2</u>		<u>Gas non-flammable</u>		<u>Axx</u>		<u>E0</u>	<u>218</u>	<u>75 kg</u>	<u>218</u>	<u>150 kg</u>
<u>Chemical under pressure, flammable, n.o.s.*</u>	<u>3501</u>	<u>2.1</u>		<u>Gas flammable</u>		<u>Axx</u>		<u>E0</u>	<u>218</u>	<u>75 kg</u>	<u>218</u>	<u>150 kg</u>
<u>Chemical under pressure, toxic, n.o.s.* containing substances in Division 6.1, Packing Group II</u>	<u>3502</u>	<u>2.2</u>	<u>6.1</u>	<u>Gas non-flammable & Toxic</u>		<u>Axx</u>		<u>E0</u>	<u>218</u>	<u>25 kg</u>	<u>218</u>	<u>100 kg</u>

Name 1	UN No. 2	Class or division 3	Subsidiary risk 4	Labels 5	State variations 6	Special provisions 7	UN packing group 8	Excepted quantity 9	Passenger aircraft		Cargo aircraft	
									Packing instruction 10	Max. net quantity per package 11	Packing instruction 12	Max. net quantity per package 13
<u>Chemical under pressure, toxic, n.o.s.* containing substances in Division 6.1, Packing Group III</u>	<u>3502</u>	<u>2.2</u>	<u>6.1</u>	<u>Gas non-flammable & Toxic</u>		<u>Axx</u>		<u>E0</u>	<u>218</u>	<u>75 kg</u>	<u>218</u>	<u>100 kg</u>
<u>Chemical under pressure, corrosive, n.o.s.* containing substances in Class 8, Packing Group II</u>	<u>3503</u>	<u>2.2</u>	<u>8</u>	<u>Gas non-flammable & Corrosive</u>		<u>Axx</u>		<u>E0</u>	<u>218</u>	<u>20 kg</u>	<u>218</u>	<u>100 kg</u>
<u>Chemical under pressure, corrosive, n.o.s.* containing substances in Class 8, Packing Group III</u>	<u>3503</u>	<u>2.2</u>	<u>8</u>	<u>Gas non-flammable & Corrosive</u>		<u>Axx</u>		<u>E0</u>	<u>218</u>	<u>25 kg</u>	<u>218</u>	<u>100 kg</u>
<u>Chemical under pressure, flammable, toxic, n.o.s.* containing substances in Division 6.1, Packing Group II</u>	<u>3504</u>	<u>2.1</u>	<u>6.1</u>	<u>Gas flammable & Toxic</u>		<u>Axx</u>		<u>E0</u>	<u>218</u>	<u>20 kg</u>	<u>218</u>	<u>75 kg</u>
<u>Chemical under pressure, flammable, toxic, n.o.s.* containing substances in Division 6.1, Packing Group III</u>	<u>3504</u>	<u>2.1</u>	<u>6.1</u>	<u>Gas flammable & Toxic</u>		<u>Axx</u>		<u>E0</u>	<u>218</u>	<u>25 kg</u>	<u>218</u>	<u>75 kg</u>

Name 1	UN No. 2	Class or division 3	Subsidiary risk 4	Labels 5	State variations 6	Special provisions 7	UN packing group 8	Excepted quantity 9	Passenger aircraft		Cargo aircraft	
									Packing instruction 10	Max. net quantity per package 11	Packing instruction 12	Max. net quantity per package 13
<u>Chemical under pressure, flammable, corrosive, n.o.s.* containing substances in Class 8, Packing Group II</u>	<u>3505</u>	<u>2.1</u>	<u>8</u>	<u>Gas flammable & Corrosive</u>		<u>Axx</u>		<u>E0</u>	<u>218</u>	<u>20 kg</u>	<u>218</u>	<u>75 kg</u>
<u>Chemical under pressure, flammable, corrosive, n.o.s.* containing substances in Class 8, Packing Group III</u>	<u>3505</u>	<u>2.1</u>	<u>8</u>	<u>Gas flammable & Corrosive</u>		<u>Axx</u>		<u>E0</u>	<u>218</u>	<u>25 kg</u>	<u>218</u>	<u>75 kg</u>

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Chapter 3

SPECIAL PROVISIONS

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Table 3-2. Special provisions

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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 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 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;

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Part 4**PACKING INSTRUCTIONS**

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Packing Instruction 218

Passenger and cargo aircraft for UN 3500, UN 3501, UN 3502, UN 3503, UN 3504, and UN 3505 only

General requirements

The general requirements applicable to pressure receptacles of 4;2 must be met. Pressure receptacles constructed as specified 6;5 are authorized for the transport of UN 3500, UN 3501, UN 3502, UN 3503, UN 3504 and UN 3505. Pressure receptacles other than UN marked and certified cylinders may be used if the design, construction, testing, approval and markings conform to the requirements of the appropriate national authority of the State in which they are approved and filled. The substances contained must be permitted in pressure receptacles and permitted for air transport according to these Instructions. Pressure receptacles for which prescribed periodic tests have become due must not be charged and offered for transport until such retests have been successfully completed.

Compatibility requirements

The construction materials of the pressure receptacles and their accessories must be compatible with the contents and must not react to form harmful or dangerous compounds therewith. 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 must be required.

Periodic inspection

The maximum test period for periodic inspection of the pressure receptacles is five years.

ADDITIONAL PACKING REQUIREMENTS

- Pressure receptacles must be so filled that at 50°C the non-gaseous phase does not exceed 95 per cent of their water capacity and they are not completely filled at 60°C. When filled, the internal pressure at 65°C must not exceed the test pressure of the pressure receptacles. The vapour pressures and volumetric expansion of all substances in the cylinders and pressure drums must be taken into account.
- Spray application equipment (e.g. a hose and wand assembly) must not be connected during transport.
- The minimum test pressure must be in accordance with Packing Instruction 200 for the propellant but must not be less than 20 bar.

APPENDIX B

***PROPOSED AMENDMENTS TO THE EMERGENCY RESPONSE GUIDANCE FOR AIRCRAFT
INCIDENTS INVOLVING DANGEROUS GOODS***

<u>UN No.</u>	<u>Drill Code</u>	<u>Name</u>
<u>3500</u>	<u>2L</u>	<u>Chemical under pressure, n.o.s.*</u>
<u>3501</u>	<u>10L</u>	<u>Chemical under pressure, flammable, n.o.s.*</u>
<u>3502</u>	<u>2P</u>	<u>Chemical under pressure, toxic, n.o.s.*</u> <u>containing substances in Division 6.1,</u> <u>Packing Group II</u>
<u>3502</u>	<u>2P</u>	<u>Chemical under pressure, toxic, n.o.s.*</u> <u>containing substances in Division 6.1,</u> <u>Packing Group III</u>
<u>3503</u>	<u>2C</u>	<u>Chemical under pressure, corrosive,</u> <u>n.o.s.* containing substances in Class 8 ,</u> <u>Packing Group II</u>
<u>3503</u>	<u>2C</u>	<u>Chemical under pressure, corrosive,</u> <u>n.o.s.* containing substances in Class 8 ,</u> <u>Packing Group III</u>
<u>3504</u>	<u>10P</u>	<u>Chemical under pressure, flammable,</u> <u>toxic, n.o.s.* containing substances in</u> <u>Division 6.1, Packing Group II</u>
<u>3504</u>	<u>10P</u>	<u>Chemical under pressure, flammable,</u> <u>toxic, n.o.s.* containing substances in</u> <u>Division 6.1, Packing Group II</u>
<u>3505</u>	<u>10C</u>	<u>Chemical under pressure, flammable,</u> <u>corrosive, n.o.s.* containing substances in</u> <u>Class 8, Packing Group II</u>
<u>3505</u>	<u>10C</u>	<u>Chemical under pressure, flammable,</u> <u>corrosive, n.o.s.* containing substances in</u> <u>Class 8, Packing Group III</u>

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