



WORKING PAPER

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

Auckland, New Zealand, 4 to 8 May 2009

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 2011/2012 Edition

2.4: Part 4 — Packing Instructions

PACKING INSTRUCTIONS FOR CHLOROSILANES

(Presented by CEFIC)

SUMMARY

This working paper proposes to correct an omission in the new packing instructions for chlorosilanes.

Action by the DGP-WG is in paragraph 2.

1. INTRODUCTION

1.1 At the twenty-ninth session of the UN SCETDG, the International Council of Chemical Associations (ICCA) submitted document [ST/SG/AC.10/C.3/2006/11](#), which proposed several amendments to the provisions for chlorosilanes. This proposal, supplemented with additional information in [UN/SCETDG/30/INF.18](#), was adopted at the thirtieth session of the UNSCETDG. This resulted in the assignment of a new specific Packing Instruction P010 instead of P001 to chlorosilanes of Classes 3, 6.1 and 8 in the UN Model Regulations.

1.2 Unfortunately the proposal from industry omitted to take over in P010 the provision in P001 that cylinders may be used provided they meet the general provisions of subsection 4.1.3.6 of the Model Regulations.

1.3 IATA submitted document [DGP-WG/08-WP/2](#) to DGP/WG-08 in The Hague. The proposal to transpose the new Packing Instruction P010 into three new ICAO packing instructions was adopted ([DGP-WG/08-WP/68](#), paragraph 3.2.26). This means that these new packing instructions will become effective in the 2011-2012 Edition of the Technical Instructions.

1.4 According to current regulations, cylinders assigned to the different chlorosilanes concerned (see appendix) are permitted for the transport by air until the end of 2010. But they cannot be

used any longer if they are not approved as packaging type mentioned in P010. They are the safest type of packaging for these substances. Severely affected would be high purity chlorosilanes for applications in the electronics industry, where often cylinders are irreplaceable due to dedicated filling and emptying processes in clean-room manufacturing conditions.

1.5 For **Silicon tetrachloride** (UN 1818), the use of cylinders according to 4;2.7 is currently prohibited (see appendix). We haven't found any evidence for the need to prohibit cylinders for this entry. In our opinion this is not justified and we therefore propose to permit the use of cylinders for **Silicon tetrachloride** (UN 1818) as well.

2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to insert the references for the use of cylinders in the new packing instructions for chlorosilanes of Classes 3, 6.1 and 8 (see [DGP-WG/08-WP/68](#)), which become effective in the 2011-2012 Edition of the ICAO Technical Instructions.

SINGLE PACKAGINGS FOR CARGO AIRCRAFT ONLY

Add:

[Cylinders](#)

[See 4:2.7](#)

2.2 ICCA will submit a proposal to the UNSCETG in the current biennium as well in order to add the missing reference for the use of cylinders according. to 4.1.3.6 to UN Packing Instruction P010.

APPENDIX A
CHLOROSILANES

UN No.	Substance name	Class	PG	Danger label	UN Pack. instr.	ICAO Cargo PI	ICAO Cylind. 4;2.7	UN Tank instr.	UN Tank SP
1162	DIMETHYLDICHLOROSILANE	3	II	3+8	P010	307	Yes	T10	TP2 TP7
1196	ETHYLTRICHLOROSILANE	3	II	3+8	P010	304	Yes	T10	TP2 TP7
1250	METHYLTRICHLOROSILANE	3	II	3+8	P010	304	Yes	T10	TP2 TP7
1298	TRIMETHYLCHLOROSILANE	3	II	3+8	P010	304	Yes	T10	TP2 TP7
1305	VINYLTRICHLOROSILANE	3	II	3+8	P010	304	Yes	T10	TP2 TP7
1724	ALLYLTRICHLOROSILANE, STABILIZED	8	II	8+3	P010	813	Yes	T10	TP2 TP7
1728	AMYLTRICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
1747	BUTYLTRICHLOROSILANE	8	II	8+3	P010	813	Yes	T10	TP2 TP7
1753	CHLOROPHENYLTRICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
1762	CYCLOHEXENYLTRICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
1763	CYCLOHEXYLTRICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
1766	DICHLOROPHENYLTRICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
1767	DIETHYLDICHLOROSILANE	8	II	8+3	P010	813	Yes	T10	TP2 TP7
1769	DIPHENYLDICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
1771	DODECYLTRICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
1781	HEXADECYLTRICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
1784	HEXYLTRICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
1799	NONYLTRICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
1800	OCTADECYLTRICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
1801	OCTYLTRICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
1804	PHENYLTRICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
1816	PROPYLTRICHLOROSILANE	8	II	8+3	P010	813	Yes	T10	TP2 TP7
1818	SILICON TETRACHLORIDE	8	II	8	P010	813	No	T10	TP2 TP7
2434	DIBENZYLDICHLOROSILANE	8	II	8	P010	812	Yes	T10	TP2 TP7
2435	ETHYLPHENYLDICHLOROSILANE	8	II	8	P010	813	Yes	T10	TP2 TP7
2437	METHYLPHENYLDICHLOROSILANE	8	II	8	P010	812	Yes	T10	TP2 TP7
2985	CHLOROSILANES, FLAMMABLE, CORROSIVE, N.O.S.	3	II	3+8	P010	307	Yes	T14	TP2 TP7 TP27

UN No.	Substance name	Class	PG	Danger label	UN Pack. instr.	ICAO Cargo PI	ICAO Cylind. 4;2.7	UN Tank instr.	UN Tank SP
2986	CHLOROSILANES, CORROSIVE, FLAMMABLE, N.O.S.	8	II	8+3	P010	812	Yes	T14	TP2 TP7 TP27
2987	CHLOROSILANES, CORROSIVE, N.O.S.	8	II	8	P010	812	Yes	T14	TP2 TP7 TP27
3361	CHLOROSILANES TOXIC, CORROSIVE, N.O.S.	6.1	II	6.1+8	P010	611	Yes	T14	TP2 TP7 TP27
3362	CHLOROSILANES TOXIC, CORROSIVE, FLAMMABLE, N.O.S.	6.1	II	6.1+3+8	P010	611	Yes	T14	TP2 TP7 TP27

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