



WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-FOURTH MEETING

Montréal, 28 October to 8 November 2013

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

PROVISIONS FOR UN 2983 – ETHYLENE OXIDE AND PROPYLENE OXIDE MIXTURES

(Presented by J. McLaughlin)

SUMMARY

This working paper provides an update to an issue raised at the 2012 meeting of the Dangerous Goods Panel Working Group of the Whole (DGP-WG/12, Montreal, 15 to 19 October 2012) related to a discrepancy between the packagings permitted for UN 2983 — **Ethylene oxide and propylene oxide mixture** in the Technical Instructions (Packing Instruction 361) and those permitted in the UN Model Regulations (P001). The working group agreed to refer the issue to the UN Sub-Committee of Experts.

A paper was submitted to the 43rd Session of the UN Sub-Committee but was not considered due to time constraints. It is suggested that the provisions in the UN Model Regulations are more appropriate than those in the Technical Instructions, but no amendment is proposed at this time pending discussion at the UN Sub-Committee.

Action by the DGP: The DGP is invited to note the contents of this paper. Taking into account the technical assessment presented in UN/SCETDG/43/INF.28 confirming the acceptance of the packagings authorized in Packing Instruction 361 and that current Packing Instruction 361 is an existing packing instruction, an amendment to align the Technical Instructions with the latest edition of the UN Model Regulations is not proposed at this time.

1. INTRODUCTION

1.1 During the 2012 Meeting of the Dangerous Goods Panel Working Group of the Whole (DGP-WG/12, Montreal, 15 to 19 October 2012), a paper was introduced identifying a discrepancy between the packaging assigned to UN 2983 within the Technical Instructions (Packing Instruction 361) and the UN Model Regulations (P200) (see paragraph 3.2.18.3 of the DGP-WG/12 Report (DGP/24-WP/2)). It was suggested that Packing Instruction 361 of the Technical Instructions be amended to harmonize with P200 of the UN Model Regulations. The working group agreed to refer the question to the UN Sub-Committee to consider if the assignment of P200 authorizing the use of pressure receptacles only was appropriate (see paragraph 3.2.18.6 of the DGP-WG/12 Report (DGP/24-WP/2)).

1.2 The expert from the United States submitted informal paper UN/SCETDG/43/INF.28 to the 43rd session of the UN Sub-Committee (reproduced in the appendix to this working paper). The informal paper was not considered by the sub-committee due to time constraints. However, a review of the Model Regulations packaging provisions for similarly classed substances, specifically a comparison to other flammable liquids assigned to P001 of the Model Regulations with similar properties (i.e. flammable liquids with toxic subsidiary risks and similar vapour pressures) indicates that P001, corresponding to Packing Instruction 361 of the Technical Instructions, may be the more appropriate packing instruction.

1.3 Although the informal paper was not discussed at the 43rd UN TDG session, it has been added as a working paper for the 44th session. Any additional information coming forward from the UN session will be brought to the attention of the DGP for consideration.

APPENDIX

INFORMAL PAPER PRESENTED TO THE 43RD SESSION OF THE UN SUB-COMMITTEE
OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS

UN/SCETDG/43/INF.28

**Committee of Experts on the Transport of Dangerous Goods
and on the Globally Harmonized System of Classification
and Labelling of Chemicals**

Sub-Committee of Experts on the Transport of Dangerous Goods

18 June 2013

Forty-third session

Geneva, 24–28 June 2013

Item 5 (a) of the provisional agenda

Transport of gases: ethylene oxide and propylene oxide mixtures

**Provisions for the Transport of UN 2983 (Ethylene Oxide
and Propylene Oxide Mixtures)**

Submitted by the Expert from the United States

Background

1. At a recent Working Group of the Whole Meeting (Montréal, 15 to 19 October 2012), the ICAO Dangerous Goods Panel considered whether Packing Instruction 361 in the ICAO Technical Instructions was mistakenly assigned to UN 2983, Ethylene oxide and propylene oxide mixtures. It was noted that Packing Instruction 361 permits the use of both combination and single packagings (similar to P001 of the UN Model Regulations), whereas the Model Regulations permit only the use of pressure receptacles by assignment of P200.
2. In considering the issue, it was noted by some Panel members that while the UN Model Regulations restricted the transport of UN 2983 to pressure receptacles, other regulatory instruments (for example the U.S. Hazardous Materials Regulations and the ADR/RID), like the Technical Instructions, also provided for a number of packaging authorizations in addition to pressure receptacles.
3. A review of the current provisions of the Model Regulations for similarly classed substances has been conducted with a view to establishing the most appropriate multimodal packaging provisions for the transport of UN 2983 Ethylene oxide and propylene oxide mixtures. Currently, P200 is assigned to UN 2983 in the Model Regulations whereas other regional and modal regulations provide for a wider range of authorized packagings consistent with those provided for similarly classed materials. While P200 is used for certain liquids with unique properties (for example those that are

highly reactive to water and other materials etc.), it is suggested that P001 may be a more appropriate packing instruction based on a comparison to other flammable liquids assigned to P001 with similar properties (i.e. flammable liquids with toxic subsidiary risks and similar vapour pressures). It should be noted that the data provided for the mixture assumes the maximum allowable concentration of the more volatile component (i.e. a 30% ethylene oxide concentration in the mixture).

4. The Sub-Committee is invited to consider this matter and provide feedback that could be documented in the report of this session for consideration by the ICAO Dangerous Goods Panel at its upcoming Panel meeting to be held in October. Based on the feedback received at this session, the United States will submit a formal proposal for the December session to align the packaging provisions for UN 2983 with those of other substances with similar properties.

Annex

Material	UN Number	Boiling Point C	Flash Point C	Vapour Pressure kPa 25C	Hazard Class	Subsidiary risk	ICAO Packing Instruction	UN Packing Instruction
Ethylene oxide and propylene oxide mixture (with 30% ethylene oxide)	2983	24	<0	96.5	3	6.1	361	P200
Ethylene Oxide	1040	11	-20	174.0	2.3	None	200	P200
Propylene Oxide	1280	34	-37	71.7	3	None	361	P001
Flammable material.								
Butane	1011	-1	-60	242.8	2.3	None	200	P200
Diethyl ether	1155	35	-45	55.1	3	None	361	P001
Flammable and toxic materials								
Acetaldehyde	1089	20	-39	120.2	3	None	361	P001
Acetonitrile	1093	77	0	11.7	3	6.1	361	P001
Allyl chloride	1100	45	-32	49.1	3	6.1	361	P001
Chloroprene	1991	59	-16	28.9	3	6.1	361	P001

Note: In addition to the above, it should be noted that over 20 n.o.s. entries that meet the criteria of a flammable liquid in PGI and that are also toxic are assigned to P001 and to PI 361 in the ICAO Technical Instructions.

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