



**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****Forty-fourth session**

Geneva, 25 November – 4 December 2013

Item 4 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 of America¹****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 United Nations 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 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

¹ In accordance with the programme of work of the Sub-Committee for 2013–2014 approved by the Committee at its sixth session (see ST/SG/AC.10/C.3/84, para. 86 and ST/SG/AC.10/40, para. 14).

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.

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.