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**COMMITTEE OF EXPERTS ON THE  
TRANSPORT OF DANGEROUS GOODS**

**(Twentieth session,  
Geneva, 7-16 December 1998,  
agenda item 2 (b))**

**WORK OF THE SUB-COMMITTEE OF EXPERTS  
ON THE TRANSPORT OF DANGEROUS GOODS**

**Packing instructions**

**Receptacles with removable head for the transport of viscous liquids  
and solutions (such as preparations), Packing Group I**

**Transmitted by the Expert from Germany**

**Introduction**

At the 15th session of the Sub-Committee of Experts on the Transport of Dangerous Goods, discussions were held concerning the use of packagings with removable head for viscous liquids and solutions (such as preparations) of Packing Group I (see ST/SG/AC.10/C.3/1998/23 (United Kingdom, United States)).

The Sub-Committee of Experts on the Transport of Dangerous Goods laid down that removable head packagings may be used for the above substances exceeding the viscosity thresh value of  $> 200 \text{ mm}^2/\text{s}$ .

For safety reasons, Germany suggested that the viscosity limit should be  $> 2,680 \text{ mm}^2/\text{s}$  and that substances should be reviewed.

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**Assessment of substances listed according to hazard classes**

If the methods of transport were, as a whole, maintained for viscous liquids and solutions of liquids (such as preparations) in Packing Group I having a viscosity of  $>200 \text{ mm}^2/\text{s}$ , the substances having the following UN numbers would be allowed to be transported in removable head receptacles:

Class 3

- (a) DIVINYL ETHER, INHIBITED, UN No. 1167;
- (b) FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S., UN No. 3286, subsidiary risks of classes 6.1 and 8.  
For sea transport, this substance is identified as a MARINE POLLUTANT.

Class 4.2

- (a) ALUMINIUM BOROHYDRIDE, UN No. 2870, subsidiary risk of class 4.3;
- (b) tert-BUTYLHYPOCHLORITE, UN No. 3255, subsidiary risk of class 8.  
Currently the transport of this substance is not permitted except with special authorization from the competent authority of the country concerned.
- (c) DIETHYL ZINC, UN No. 1366;
- (d) DIMETHYL ZINC, UN No. 1370.

The above liquids have pyrophoric properties and partly decomposes in contact with air or water, evolving flammable gases such as methane or ethane.

Class 4.3

- (a) ALKALI METAL DISPERSION or ALKALINE EARTH METAL DISPERSION, UN No. 1391, subsidiary risk of class 3
- (b) BORON TRIFLUORIDE TRIMETHYL ETHERATE; UN No. 2965, subsidiary risks of classes 3 and 8;
- (c) ETHYLDICHLOROSILANE, UN No. 1183, subsidiary risks of classes 3 and 8;
- (d) LITHIUM ALUMINIUM HYDRIDE, ETHEREAL, UN No. 1411, subsidiary risk of class 3.

These substances react readily with water, evaporate readily to leave a residue which easily can be ignited by a spark or friction.

- (e) Grignard solutions such as:  
METHYLMAGNESIUM BROMIDE, IN ETHYL ETHER, UN No. 1928, subsidiary risk of class 3.

These Substances ignite spontaneously.

Most of the above preparations or substances currently have to be individually packed in hermetically sealed receptacles, packed in a drum or box.

Class 5.1

- (a) BROMINE PENTAFLUORIDE, UN No. 1745, subsidiary risks of classes 6.1 and 8;
- (b) BROMINE TRIFLUORIDE, UN No. 1746, subsidiary risks of classes 6.1 and 8;

#### Class 6.1

- (a) DIMETHYLHYDRAZINE, SYMMETRICAL, UN No. 2382, subsidiary risk of class 3;
- (b) DIMETHYLHYDRAZINE, UNSYMMETRICAL, UN No. 1163, subsidiary risks of classes 3 and 8;
- c) PERCHLOROMETHYL MERCAPTAN, UN No. 1670.

#### Class 8

- (a) HYDRAZINE, ANHYDROUS, UN No. 2029, subsidiary risks of classes 3 and 6.1;
- (b) CORROSIVE LIQUID, WATER-REACTIVE, N.O.S., UN No. 3094, subsidiary risk of class 4.3.

Currently packagings for these substances or classes may only be specifically designated by the competent authority of the country of origin.

From a safety point of view, there exist serious safety-related doubts about transporting, without any restrictions, viscous liquids - as listed above - in removable head packagings, packing group I.

#### **Proposal**

Removable head packagings should, for safety reasons, not be used for the transport of viscous liquids and solutions (such as preparations) of Packing Group I having one or more subsidiary risks or for substances that have to be transported in a stabilized condition.

From a safety point of view, only goods of class 3, UN Nos. 1133, 1139, 1169, 1197, 1210, 1263, 1266, 1286, 1287 and 1866, having a viscosity of  $>2680 \text{ mm}^2/\text{s}$  should be transported in removable head packagings, Packing Group I.

A special note should be added to the general packing requirements to read:

“Packagings with removable head for liquids of packing group I may only be used, if this is specifically permitted in the packing instructions”.

The liquids to be permitted for transport in packagings with removable head should clearly be identified.

For phosphorus, red, under water, a special situation exists for using packagings with removable head; this should be taken into account.

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