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**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**  
(Twenty –second session, 2-6 December 2002,  
agenda item 4(b))

**LISTING AND CLASSIFICATION**

**Comments on ST/SG/AC.10/C.3/2002/81 (Sweden) and ST/SG/AC.10/C.3/2002/8 (AEGPL)  
Specifications for Aerosols and Gas receptacles, small**

**Transmitted by the Expert from the United States of America**

Background

1. At the last meeting of the UN Transport of Dangerous Goods Sub-Committee, AEGPL proposed the inclusion of requirements for small, non-refillable receptacles (gas cartridges) for inclusion in the 12th revised edition of the UN Model Regulations (see ST/SG/AC.10/C.3/2002/8).

In ST/SG/AC.10/C.3/2002/81 Sweden has proposed to amend the proposal by AEGPL on the basis that the AEGPL text is not based on the latest version of the ADR. Neither of these proposals takes into account the requirements that apply for gas receptacles and aerosols in the ICAO TI, United States Hazardous Materials Regulations or the Canadian Transport of Dangerous Goods Regulations.

2. The ICAO TI includes requirements in PI 203 and in IP.7, IP.7A and IP.7B. On the basis of a proposal from the expert nominated by the United States, the ICAO Dangerous Goods Panel agreed that the 2003-2004 edition of the ICAO TI will require gas cartridges to conform to the requirements in PI 203 and in IP.7, IP.7A or IP.7B. In the United States and Canada we have adopted the following specifications for aerosols and gas cartridges:

Specification 2P; inner nonrefillable metal receptacles;

Specification 2Q; inner nonrefillable metal receptacles; and

For some commodities (e.g. foodstuffs and soap) non-specification receptacles not exceeding 1 liter are authorized.

These specifications are fairly consistent with IP.7 and IP.7A in the ICAO TI. The specifications proposed by AEGPL are basically aligned with IP.7B and are based on the European requirements. We are not opposed to including requirements for developing harmonized requirements for aerosol and gas cartridge specifications in the Model Regulations. However, the US does not support the proposals by AEGPL or Sweden because they do not take into account all of the existing standards. The Sub-Committee should consider all of the existing specifications prior to adopting requirements in the Model Regulations. We propose that the ICAO TI requirements for the design and construction of aerosols and gas receptacles be used as a basis for discussion and that this matter be addressed in the 2003-2004 biennium.

4. Annex 1 of this paper includes the ICAO TI requirements and the US/Canada 2P/2Q specifications.

## Annex I

### **ICAO TI IP.7, IP.7A and IP.7B Requirements**

#### 3.2.7 Metal receptacles (aerosols), non-refillable (IP.7, IP.7A, IP.7B)

##### 3.2.7.1 Receptacles (aerosols) IP.7 and IP.7A

3.2.7.1.1 Materials and construction. Uniform quality steel plate or non-ferrous metal of uniform drawing quality must be used:

- IP.7 receptacles must have a minimum wall thickness of 0.18 mm;
- IP.7A receptacles must have a minimum wall thickness of 0.20 mm.

The receptacles may be seamless or with seams welded, soldered, brazed, double-seamed or swaged. The ends must be of pressure design. Maximum capacity must not exceed 820 mL and the maximum inner diameter must not exceed 76 mm.

3.2.7.1.2 Performance test. One out of each lot of 25 000 or less receptacles successively produced per day must be pressure-tested to destruction:

- IP.7 receptacles must not burst below 1 650 kPa gauge pressure;
- IP.7A receptacles must not burst below 1 860 kPa gauge pressure.

##### 3.2.7.2 Receptacles (aerosols) IP.7B

3.2.7.2.1 Materials and construction. Uniform quality steel plate or non-ferrous metal of uniform drawing quality must be used. The receptacles may be seamless or with seams welded, soldered, brazed, double-seamed or swaged. The ends must be of pressure design. Maximum capacity must not exceed 1 000 mL and the maximum inner diameter must not exceed 76 mm. The aerosol, including its valve, must be virtually hermetically sealed under normal conditions of transport and the valve must be suitably protected to prevent actuation during transport.

3.2.7.2.2 Performance tests required:

- hydraulic pressure test;
- bursting test;
- leakage test.

3.2.7.2.3 Hydraulic pressure test. Number of samples: six receptacles.

Method of testing and pressure applied: the pressure must be applied slowly. The test pressure must be 50 per cent higher than the internal pressure at 50°C but at least 1 000 kPa. The test pressure must be applied for 25 seconds.

Criteria for passing the test successfully: the receptacle must not show major distortions, leaks or similar faults, but a slight symmetrical distortion of the base, or one affecting the profile of the top end shall be allowed, provided that the receptacle passes the bursting test.

3.2.7.2.4 Bursting test. Number of samples: six receptacles; these may be the same receptacles used in the hydraulic pressure test.

Method of testing and pressures applied: a hydraulic pressure at least 20 per cent higher than the test pressure as mentioned in 3.2.7.2.3 must be applied.

Criteria for passing the test successfully: no receptacle may leak.

3.2.7.2.5 Leakage test. Number of samples: every aerosol.

Method of testing: each aerosol must be immersed in a bath of water. The temperature of the water and the duration of the test must be such that the internal pressure reaches that which would be reached at 55°C, or 50°C if the liquid phase does not exceed 95 per cent of the capacity of the aerosol at 50°C. When an aerosol is sensitive to heat, the temperature of the bath may be set at between 20°C and 30°C in which case one receptacle in 2 000 must be tested at the higher temperature.

Equally effective methods of testing may also be used.

Criteria for passing the test successfully: the aerosol must not show visible permanent distortions or any leakage.

## ***2P and 2Q Specifications***

### **Specification 2P; inner nonrefillable metal receptacles.**

#### *Type and size:*

Single-trip inside containers must be seamless, or with seams, welded, soldered, brazed, double seamed, or swedged. The maximum capacity of containers in this class shall not exceed one liter (61.0 cubic inches). The maximum inside diameter shall not exceed 3 inches.

#### *Inspection by competent inspector:*

The duties of the inspector are to inspect material and completed containers and witness tests, and to reject defective materials or containers.

#### *Material:*

Material must be uniform quality steel plate such as black plate, electro-tin plate, hot dipped tin plate, tern plate or other commercially accepted can making plate; or nonferrous metal of uniform drawing quality. Material with seams, cracks, laminations or other injurious defects is not authorized.

#### *Manufacture:*

Manufacture must be by appliances and methods that will assure uniformity of completed containers. Dirt and scale must be removed as necessary. No defect is acceptable that is likely to weaken the finished container appreciably. A reasonably smooth and uniform surface finish is required.

#### *Seams when used must be as follows:*

Circumferential seams: By welding, swedging, brazing, soldering, or double seaming.

Side seams: By welding, brazing, or soldering.

Ends: The ends shall be of pressure design.

#### *Wall thickness:*

The minimum wall thickness for any container shall be 0.007 inches.

#### *Tests:*

One out of each lot of 25,000 containers or less, successively produced per day shall be pressure tested to destruction and must not burst below 240 psig pressure. The container tested shall be complete with end assembled.

Each such 25,000 containers or less, successively produced per day, shall constitute a lot and if the test container shall fail, the lot shall be rejected or ten additional containers may be selected at random and subjected to the test under which failure occurred. These containers shall be complete with ends assembled. Should any of the ten containers thus tested fail, the entire lot must be rejected. All containers constituting a lot shall be of like material, size, design construction, finish, and quality.

#### *Marking:*

Marking must be by means of printing, lithographing, embossing, or stamping. Each container must be marked to show:

(1) DOT-2P.

(2) The name or symbol of the person making the mark specified in paragraph (a)(1) of this section. A symbol, if used,

must be registered with the Associate Administrator.

**Specification 2Q; inner nonrefillable metal receptacles.**

*Type and size:*

Single-trip inside containers must be seamless, or with seams welded, soldered, brazed, double seamed, or swedged. The maximum capacity of containers in this class shall not exceed 1 L (61.0 cubic inches). The maximum inside diameter shall not exceed 3 inches.

*Inspection by competent inspector:*

The duties of the inspector are to inspect material and completed containers and witness tests, and to reject defective materials or containers.

*Material:*

Material must be uniform quality steel plate such as black plate, electrotin plate, hot dipped tinplate, ternplate or other commercially accepted can making plate; or nonferrous metal of uniform drawing quality. Material with seams, cracks, laminations or other injurious defects is not authorized.

*Manufacture:*

Manufacture must be by appliances and methods that will assure uniformity of completed containers. Dirt and scale are to be removed as necessary. No defect that is likely to weaken the finished container appreciably is acceptable. A reasonably smooth and uniform surface finish is required.

*Seams when used must be as follows:*

Circumferential seams: By welding, swedging, brazing, soldering, or double seaming.

Side seams: By welding, brazing or soldering.

The ends shall be of pressure design.

*Wall thickness:*

The minimum wall thickness for any container shall be 0.008 inches.

*Tests:*

One out of each lot of 25,000 containers or less, successively produced per day, shall be pressure tested to destruction and must not burst below 270 psig pressure. The container tested shall be complete with the end assembled.

(b) Each such 25,000 containers or less, successively produced per day, shall constitute a lot and if the test container shall fail, the lot shall be rejected or ten additional containers may be selected at random and subjected to the test under which failure occurred. These containers shall be complete with ends assembled. Should any of the ten containers thus tested fail, the entire lot must be rejected. All containers constituting a lot shall be of like material, size, design, construction, finish and quality.

*Marking:*

Marking must be by means of printing, lithographing, embossing, or stamping, each container must be marked to show:

(1) DOT-2Q.

(2) Name or symbol of person making the mark specified in paragraph (a)(1) of this section. A symbol, if used, must be registered with the Associate Administrator.