United Nations ST/SG/AC.10/C.3/2012/69

Secretariat

Distr.: General
18 September 2012

Original: English

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-second session
Geneva, 3–11 December 2012
Item 2 (d) of the provisional agenda
Recommendations made by the Sub-Committee on its thirty-ninth, fortieth and forty-first sessions and pending issues: miscellaneous proposals of amendments to the Model Regulations on the Transport of Dangerous Goods

Proposal for changing Section 6.2.4 to include alternatives to the hot water bath test for small receptacles containing gas (gas cartridges) – UN2037 – and fuel cell cartridges containing liquefied flammable gas – UN3478 (in addition to the alternatives already provided for aerosol dispensers)

Submitted by the European Cylinder Makers Association (ECMA)[1]

Background

1. At the forty-first session, ECMA presented a document ST/SG/AC.10/C.3/2012/3 – Proposal for changing Section 6.2.4 to permit alternatives to the hot water bath test for small receptacles containing gas (gas cartridges) and fuel cell cartridges containing liquefied flammable gas. While this proposal was generally supported by the sub-committee, several delegates recommended that the text should be aligned with the text for alternative methods for aerosol dispensers.

2. Since the pressures in some gas cartridges and the test pressures for these gas cartridges and for fuel cell cartridges are significantly higher than those in aerosol

[1] In accordance with the programme of work of the Sub-Committee for 2011-2012 approved by the Committee at its fifth session (refer to ST/SG/AC.10/C.3/76, para. 116 and ST/SG/AC.10/38, para. 16).

dispensers, and filling and leak testing procedures are different, the alignment with the text for aerosol dispensers is made taking these differences into account.

3. The following is proposed to meet these requirements.

Proposal

4. Replace paragraph 6.2.4 (title remaining unchanged) by the following: [editing note: new text, compared to existing text from 17th revised edition is underlined]

6.2.4 Requirements for aerosol dispensers, small receptacles containing gas (gas cartridges) and fuel cell cartridges containing liquefied gas

Each filled aerosol dispenser or gas cartridge or fuel cell cartridge shall be subjected to a test in a hot water bath in accordance with 6.2.4.1 or an approved water bath alternative in accordance with 6.2.4.2.

6.2.4.1 Hot water bath test

6.2.4.1.1 The temperature of the water bath and the duration of the test shall be such that the internal pressure reaches that which would be reached at 55°C (50°C if the liquid phase does not exceed 95% of the capacity of the aerosol dispenser, gas cartridge or the fuel cell cartridge at 50°C). If the contents are sensitive to heat or if the aerosol dispensers, gas cartridges or the fuel cell cartridges are made of plastics material which softens at this temperature, the temperature of the bath shall be set at between 20°C and 30°C but, in addition, one aerosol dispenser, gas cartridge or fuel cell cartridge in 2 000 shall be tested at the higher temperature.

6.2.4.1.2 No leakage or permanent deformation of the aerosol dispenser, receptacle or fuel cell cartridge may occur, except that a plastic aerosol dispenser, gas cartridge or fuel cell cartridge may be deformed through softening provided that it does not leak.

6.2.4.2 Alternative methods

With the approval of the competent authority alternative methods that provide an equivalent level of safety may be used provided that the requirements of 6.2.4.2.1 and, as appropriate, 6.2.4.2.2 or 6.2.4.2.3 are met.

6.2.4.2.1. Quality system

Aerosol dispenser, gas cartridge or fuel cell cartridge fillers and component manufacturers shall have a quality system. The quality system shall implement procedures to ensure that all aerosol dispensers, gas cartridges or fuel cell cartridges that leak or that are deformed are rejected and not offered for transport.

The quality system shall include:

(a) A description of the organisational structure and responsibilities;

(b) The relevant inspection and test, quality control, quality assurance and process operation instructions that will be used;

(c) Quality records such as inspection reports, test data, calibration data and certificates;

(d) Management reviews to ensure the effective operation of the quality system;

(e) A process for the control of documents and their revision

(f) A means for the control of non-conforming aerosol dispensers, gas cartridges or fuel cell cartridges

(g) Training programmes and qualification procedures for the relevant personnel; and

(h) Procedures to ensure there is no damage to the final product.

An initial audit and periodic audits shall be conducted to the satisfaction of the competent authority. These audits shall ensure the approved system is and remains adequate and efficient. Any proposed changes to the approved system shall be notified to the competent authority in advance.

6.2.4.2.2 Aerosol dispensers

6.2.4.2.2.1 Pressure and leak testing of aerosol dispensers before filling

Every aerosol dispenser shall be subjected to a pressure equal to or in excess of the maximum expected in the filled aerosol dispenser at 55°C (50°C if the liquid phase does not exceed 95% of the capacity of the receptacle at 50°C). This shall be at least two-thirds of the design pressure of the aerosol dispenser. If any aerosol dispenser shows evidence of leakage at a rate equal to or greater than $3.3x10^{-2}$ mbar.l.$^{-1}$ at the test pressure, distortion or other defect, it shall be rejected.

6.2.4.2.2.2 Testing of aerosol dispensers after filling

Prior to filling the filler shall ensure that the crimping equipment is set appropriately and the specified propellant is used.

Each filled aerosol dispenser shall be weighed and leak tested. The leak detection equipment shall be sufficiently sensitive to detect at least a leak rate of $2.0x10^{-3}$ mbar.l.s^{-1} at 20°C.

Any filled aerosol dispenser that shows evidence of leakage, deformation or excessive mass shall be rejected.

6.2.4.2.3 Gas cartridges and fuel cell cartridges

6.2.4.2.3.1 Pressure testing of gas cartridges and fuel cell cartridges

Each gas cartridge or fuel cell cartridge shall be subjected to a test pressure equal to or in excess of the maximum expected in the filled receptacle at 55°C (50°C if the liquid phase does not exceed 95% of the capacity of the receptacle at 50°C). This test pressure shall be that specified for the gas cartridge or fuel cell cartridge and shall not be less than two thirds the design pressure of the gas cartridge or fuel cell cartridge. If any gas cartridge or fuel cell cartridge shows evidence of leakage at a rate equal to or greater than $3.3x10^{-2}$ mbar.l.s^{-1} at the test pressure or distortion or any other defect, it shall be rejected.

6.2.4.2.3.2 Leak testing gas cartridges and fuel cell cartridges

Prior to filling and sealing, the filler shall ensure that the closures (if any), and the associated sealing equipment are set appropriately and the specified gas is used.

Each filled gas cartridge or fuel cell cartridge shall be checked for the correct weight of gas and shall be leak tested. The leak detection equipment shall be sufficiently sensitive to detect at least a leak rate of 2.0×10^{-3} mbar.l.s^{-1}.at 20°C.

Any gas cartridge or fuel cell cartridge that has gas weights not in conformance with the declared weight limits or shows evidence of leakage or deformation shall be rejected.

6.2.4.3 With the approval of the competent authority, ……. *[Text from 17th revised edition remains unchanged.*