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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**

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Item 5 (b) of the provisional agenda
**Transport of gases: miscellaneous**

# Provisions for pressure receptacles and their closures – Amendments to document ST/SG/AC.10/C.3/2019/21

**Transmitted by the European Industrial Gases Association (EIGA), the Compressed Gases Association (CGA) and the European Cylinder Makers Association (ECMA)***

## Introduction

1. The working group which prepared document ST/SG/AC.10/C.3/2019/21 was encouraged by the positive response from all delegations who spoke at the fifty-fifth session. However, a few comments and questions have led to a review of the proposals and some changes have been agreed by the working group.

## Amendments to document ST/SG/AC.10/C.3/2019/21

2. 4.1.6.1.6: The text proposed in document ST/SG/AC.10/C.3/2019/21 is satisfactory, but had been misunderstood by one commenter. We believe this is due to the lack of clarity in the explanation given in the box.

* In accordance with the programme of work of the Sub-Committee for 2019–2020 approved by the Committee at its ninth session (see ST/SG/AC.10/C.3/108, paragraph 141 and ST/SG/AC.10/46, paragraph 14).

In the box after 4.1.6.1.6 replace the text by:

| |
|---|
| Pressure receptacles are made of components and sometimes it is necessary to use a component with a lower rating. One possibility is that a bundle of cylinders contains a cylinder with a lower rating, but there are other examples such as a 300 bar cylinder shell fitted with a 200 bar valve. The additional text in the first sentence establishes this circumstance in general and the precaution of lowering the filling pressure. The second sentence limits the options on choice of component to preserve safety of the package. The final sentence on bundles of cylinders becomes redundant. |

3. 6.2.1.1.1: At the end of the proposed amendment replace "transport and use" by "transport and intended use".

4. 6.2.1.4.1: This paragraph requires adjustment to remove the particular requirement for pressure receptacle shells and the inner vessels of closed cryogenic receptacles from a within a paragraph applicable to all pressure receptacles. The amendments shall read:

6.2.1.4.1: Delete the second sentence beginning "Pressure receptacles…"

After 6.2.1.4.2, insert a new paragraph 6.2.1.4.3 to read:

"6.2.1.4.3 Pressure receptacle shells and the inner vessels of closed cryogenic receptacles shall be inspected tested and approved by an inspection body."

Renumber former 6.2.1.4.3 proposed in ST/SG/AC.10/C.3/2019/21 as 6.2.1.4.4.

5. The text proposed for 6.2.1.5.2 was difficult to understand and did not differentiate which tests had to be done on the inner vessel or the complete assembly. The text has therefore been rewritten.

6. Replace 6.2.1.5.2 by:

"6.2.1.5.2 Closed cryogenic receptacles shall be subjected to testing and inspection during and after manufacture in accordance with the applicable design standards or recognized technical codes including the following:

On an adequate sample of inner vessels:

(a) Testing of the mechanical characteristics of the material of construction;

(b) Verification of the minimum wall thickness;

(c) Inspection of the external and internal conditions;

(d) Verification of the conformance with the design standard or code;

(e) Inspection of welds by radiographic, ultrasonic or other suitable non-destructive test method according to the applicable design and construction standard or code.

For all inner vessels:

(f) A hydraulic pressure test. The inner vessel shall meet the acceptance criteria specified in the design and construction technical standard or technical code;

***NOTE:*** *With the agreement of the competent authority, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.*

(g) Inspection and assessment of manufacturing defects and either repairing them or rendering the inner vessel unserviceable;

h) An inspection of the marks.

On an adequate sample of closures:

(i) Verification of materials;

(j) Verification of dimensions;

(k) Verification of cleanliness;

(l) Inspection of completed assembly;

(m) Verification of the presence of marks.

For all closures:

(n) Testing for leakproofness.

On an adequate sample of completed closed cryogenic receptacles:

(o) Testing the satisfactory operation of service equipment;

(p) Verification of the conformance with the design standard or code.

For all completed closed cryogenic pressure receptacles:

(q) Testing for leakproofness."

7. The working group was questioned as to whether proficiency testing should be restricted to manufacturers of pressure receptacle shells and the inner vessels of closed cryogenic receptacles when previously all manufacturers were specified. Our answer was that this was a minimum requirement taking into account differing national practices. The authors expected valve manufacturers would also be subject to proficiency testing in Europe, and did not foresee a need for proficiency testing of the those engaged in the final assembly of bundles of cylinders or closed cryogenic receptacles. Therefore, a new amendment shall read:

In 6.2.1.7.2, insert a new second sentence to read:

"Proficiency testing of manufacturers of closures shall be carried out if required by the competent authority."

8. In 6.2.2.3 the proposal to delete the text and standard reference table concerning UN metal hydride storage systems is withdrawn.

9. In response to the query in the plenary meeting about the meaning of "reservation" in 6.2.2.5.4.9 the authors have changed the words used. Replace the proposed text as follows:

In 6.2.2.5.4.9, after the penultimate sentence starting "After prototype testing has been carried out … design type" continue the paragraph by inserting the following sentence: "If it was not possible to evaluate exhaustively the compatibility of the materials of construction with the contents of the pressure receptacle when the certificate was issued a statement that compatibility assessment was not completed shall be included in the design type approval certificate."

10. One comment indicated that the instruction on marking "the identity of the porous material" on an acetylene cylinders was rather broad and wondered how this should be shown. Accordingly the working group decided to add examples as a hint.

11. In 6.2.2.7.3 (k) (ii) replace "the identity of the porous material" by "the identity of the porous material (e.g. name or trademark)".

## Suitability of the new definitions

12. In plenary one delegate asked if the change of definitions affected other parts of the Model Regulations. Before these definitions were adopted an extensive survey has been made on Parts 4 and 5 of the Regulations. It had been concluded that only in Chapter 6.2 were pressure receptacle, cylinder, tube etc. taken to mean a receptacle without a closure. This survey has now been supplemented with a search of the whole text of volume 1. Here again the authors found that cylinder and other types of pressure receptacle were taken to mean a complete receptacle either full or ready to fill, i.e. with its closure. The search also revealed that "shell" was used extensively in Class 1, but in this context it was clear that shell referred to ammunition and there would be no confusion with pressure receptacle shell. The working group confirms its opinion that the impact of these changes in definition will be imperceptible except for the activities concerned with construction and testing pressure receptacles.