



**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****Sixty-third session**

Geneva, 27 November-6 December 2023

Item 5 (c) of the provisional agenda

Transport of Gases:**Miscellaneous****Consequential amendments in the context of the pV-product
of salvage pressure receptacles and document
ST/SG/AC.10/C.3/2023/1****Transmitted by the expert from Germany*****Introduction**

1. At the sixty-second session of the Sub-Committee the final report of the intersessional working group on the pV-product limit for pressure receptacles was presented in document ST/SG/AC.10/C.3/2023/1. This document included four proposals for amending the definitions of different pressure receptacles in section 1.2.1 of the United Nations Model Regulation which were adopted in square brackets during that session of the Sub-Committee.
2. Following the discussion concerning document ST/SG/AC.10/C.3/2023/1, Germany subsequently submitted informal document INF.44 with a proposal on an additional requirement in 6.2.3.5 on the safe handling of salvage pressure receptacles.
3. This document and the proposals below take into account the feedback received in the discussion of informal document INF.44 during last session as well as comments received after that session from members of the former working group. The proposals below include the introduction of additional information requirements for the safe handling of salvage pressure receptacles as well as the indication of the maximum pressure-volume-product in the marking of salvage pressure receptacles.
4. Proposal 1 through 4 constitute consequential amendments to the amendments on the pV-product of salvage pressure receptacles that have already been adopted in square brackets. Proposal 5 invites the Sub-Committee to consider the deletion of the square brackets to the amendments in section 1.2.1 adopted at the last session of the Sub-Committee (see: report ST/SG/AC.10/C.3/124/Add.1, para. 2).

* A/77/6 (Sect. 20), table 20.6



5. This document supports Sustainable Development Goal 3: Good health and well-being of the 2030 Agenda for Sustainable Development by advancing regulations for the safe transport of gases in pressure receptacles.

Proposal 1

6. Amend 4.1.1.19.3 (c) as follows (new text is underlined, ~~deleted text in strikethrough~~):

“(c) The contents of the contained pressure receptacle(s) are limited in pressure ~~and volume~~, its useable water capacity and its pressure-volume-product so that if totally discharged into the salvage pressure receptacle, the pressure in the salvage pressure receptacle at 65 °C will not exceed the test pressure of the salvage pressure receptacle (for gases, see packing instruction in P200 (3) in 4.1.4.1). The reduction of the useable water capacity of the salvage pressure receptacle, e.g. by any contained equipment and cushioning, shall be taken into account.”

7. Rational for proposal 1:

This proposal is a consequential amendment to the existing text reflecting the additional criteria of the new introduced pressure volume product.

Proposal 2

8. Amend the second paragraph in 6.2.3.5 as follows:

“Instructions on the safe handling and use of the salvage pressure receptacle shall be clearly shown in the documentation for the application to the competent authority and shall form part of the approval certificate. In the approval certificate, the pressure receptacles authorized to be transported in a salvage pressure receptacle shall be indicated. This indication of authorized pressure receptacles shall contain the following information:

The test pressure to which it is allowed to load the salvage pressure receptacle at maximum temperature, which limits the storage of pressure receptacles filled with liquified gases.

The usable water capacity and the maximum pV-product authorized for stored pressure receptacles(s), which limits the storage of pressure receptacles filled with compressed gases. The value of this maximum pV-product is the lowest value of either of the following:

(a) the general limit of the pV-product of 1.5 Mio bar litres; or

(b) the pV-product of the salvage pressure receptacle based on the test pressure to which it is allowed to be loaded at maximum temperature and the usable water capacity.

A list of the materials of construction of all parts likely to be in contact with the dangerous goods shall also be included in the approval certificate.”

9. Rational for proposal 2:

This proposal describes the necessary consideration of the new pV-limit instead of the substituted limit of the water capacity. The amendment in the last sentence of the second paragraph is for clarification purposes to ensure that the original meaning of the last sentence of paragraph 2 is not changed.

Proposal 3

10. Amend the fourth paragraph in 6.2.3.5 and delete the NOTE in the current text as follows:

“The marking of salvage pressure receptacles according to 6.2.3 shall be determined by the competent authority taking into account suitable marking provisions of 6.2.2.7 as appropriate. The marking shall include the useable water capacity, and test pressure of the salvage pressure receptacle and the maximum pressure-volume-product indicated by PVP as follows:

e.g. PVP1500 000BAR.L

For a better readability this marking starts with the letters “PVP” followed by the PVP-value and the relevant units. The PVP value includes a space in front of the last 3 digits of the value. The units of pressure and water capacity are indicated by “BAR.L” with a dot between BAR and L. For a harmonised readability and for avoidance of later manipulation the marking shall not contain more spaces.

~~*NOTE: These provisions for salvage pressure receptacles may be applied for new salvage pressure receptacles as from 1 January 2013, unless otherwise authorized, and shall be applied for all new salvage pressure receptacles as from 1 January 2014. Salvage pressure receptacles approved in accordance with national regulations may be used with the approval of the competent authorities of the countries of use.*~~

~~*NOTE 1: Since the marked PVP stands for the maximum capacity of the salvage pressure receptacle, which is related to the limitation of pressure receptacles authorized for being stored inside, the PVP-mark can be less than the product of the marked values for test pressure PH and water capacity V, which indicate technical properties of the salvage pressure receptacle.*~~

~~*NOTE 2: For a transitional period until 31 December 2030 salvage pressure receptacles with a water capacity of not more than 3000 litres may be used without bearing the additional PVP-mark.”*~~

11. Rational for proposal 3

Due to the limitation of the inventory of a salvage pressure receptacle to 1.5 million bar litres and individual safety concepts, the authorized pV-product value might be lower than the product of marked test pressure and the marked usable water capacity. For avoidance of human errors and with respect to an over-loading, it is a safety-plus to indicate the value of the maximum accepted PVP value.

The order of letters and numbers for the proposed marking should be clearly readable and distinctive for indicating the maximum pV-product value.

Since there are a lot of salvage pressure receptacles with a volume of maximum 3000 litres in use the request for an additional marking needs some time for getting implemented.

The current NOTE has no relevance anymore.

Proposal 4

12. Introduce the following definition of “pressure volume product” in section 1.2.1:

“Pressure volume product (pV-product; PVP) means the value resulting from multiplying the useable water capacity of a containment with its maximum pressure as indicated in the relevant paragraph. Expressed in bar litres.”

13. Rational for proposal 4:

The pressure volume product is used in different places in the Model Regulations, e.g., “charge pressure” in special provision (SP) 283 or “test pressure” in SP 406 as well as in 6.2.3.5. Additionally, it is used in other regulations harmonized with the Model Regulations (e.g., ADR/RID). In all cases this pressure indicates the maximum pressure during filling and usage, which in general service means the test pressure.

Proposal 5

14. Delete square brackets from the amendments to section 1.2.1 proposed in document ST/SG/AC.10/C.3/2023/1 and adopted during the sixty-second session of the Sub-Committee (see: report ST/SG/AC.10/C.3/124/Add.1, para. 2).

15. Rational for proposal 5:

Without the deletion, the adoption of the proposals above as consequential amendments would add square brackets in several places throughout the Model Regulations. So far, no concerns have been raised against the amendments already adopted in square brackets and all relevant questions have been answered. Therefore, after having discussed the principle issue since summer 2020, it seems to be disproportional to add substantial text and individual phrases in three different chapters throughout the Model Regulations while putting them in square brackets.
