



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-fourth session

Geneva, 24 June-3 July 2024

Item 5 (c) of the provisional agenda

Transport of gases:

Miscellaneous

Updated ISO standards in Class 2

Transmitted by the International Organisation for Standardisation (ISO)*

Introduction

1. These proposals concern one new standard, two revised standards and two amended standards.

The titles of the standards are:

ISO 23876:2022, Gas cylinders – Cylinders and tubes of composite construction – Acoustic emission examination (AT) for periodic inspection and testing

ISO 11623:2023, Gas cylinders – Composite cylinders and tubes – Periodic inspection and testing

ISO 4706:2023, Gas cylinders – Refillable welded steel cylinders – Test pressure 60 bar and below

ISO 11119-2:2020/Amd 1:2023, Gas cylinders – Design, construction and testing of refillable composite gas cylinders and tubes, Part 2: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with load-sharing metal liners, Amendment 1

ISO 11119-3:2020/Amd 1:2023, Gas cylinders – Design, construction and testing of refillable composite gas cylinders and tubes, Part 3: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with non-load-sharing metallic or non-metallic liners or without liners, Amendment 1

The usual arrangements have been made with the secretariat to circulate PDF copies of these documents to the experts.

* A/78/6 (Sect. 20), table 20.5.



Proposal 1

2. In 6.2.1.6.1 (d) add a new note as follows:

“NOTE 5: With the agreement of the competent authority, for composite cylinder shells and tube shells, the hydraulic pressure test of 6.2.1.6.1 (d) may be replaced by a procedure conforming to ISO 23876:2022 “Gas cylinders — Cylinders and tubes of composite construction — Acoustic emission examination (AT) for periodic inspection and testing.”.

3. In the table in 6.2.2.4 add the following new row beneath the row starting ISO 23088:2020:

ISO 23876:2022	Gas cylinders – Cylinders and tubes of composite construction – Acoustic emission examination (AT) for periodic inspection and testing	Until further notice
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Justification

4. This document specifies the use of acoustic emission examination (AT) during periodic inspection and testing of composite cylinders and tubes. The introduction of a more advanced technique for the periodic inspection and testing of composite cylinders and tubes (under a note with the agreement of competent authority) is an approach similar to the approach proposed for seamless metallic cylinders and tubes with standard ISO 16148, some 15 years ago. The scope of the document includes:

- hoop wrapped (Type 2),
- fully wrapped (Types 3 and 4) composite transportable gas cylinders and tubes of water capacity up to 3 000 l, with aluminium-alloy, steel or non-metallic liner, or
- of linerless construction (Type 5), intended for compressed and liquefied gases under pressure.

It is applicable only to the verification of the composite material. Additional inspection such as internal visual inspection of the liner does not apply to this document (see standard ISO 11623).

Proposal 2

5. In the table in 6.2.2.4, in the row starting ISO 11623:2015 replace “Until further notice” with “Until 31 December 2028”. In the table in 6.2.2.4 add the following new row beneath the row starting ISO 11623:2015.

ISO 11623:2023	Gas cylinders – Composite cylinders and tubes – Periodic inspection and testing	Until further notice
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Justification

6. This document specifies the requirements for periodic inspection and testing to verify the integrity for further service of hoop-wrapped and fully-wrapped composite transportable gas cylinders and tubes, with aluminium-alloy, steel or non-metallic liners or of linerless construction (Types 2, 3, 4, and 5), intended for compressed, liquefied or dissolved gases under pressure, of water capacity from 0.5 l up to 3 000 l. The significant changes compared to the previous edition are as follows:

- the scope has been revised to include cylinders and tubes with a water capacity up to 3 000 l, i.e. the limit was previously set at 450 l,
- modification of Table 1 to separate abrasion damage based on water capacity of the cylinder,

- clarification that a transparent sleeve may be left in place during inspection (7.1.3) and
- clarification on the use of tare during inspection.

Proposal 3

7. In the table in 6.2.2.1.1, in the row starting ISO 4706:2008 replace “Until further notice” with “Until 31 December 2030”. In the table in 6.2.2.1.1 add the following new row beneath the row starting ISO 4706:2008.

ISO 4706:2023	Gas cylinders – Refillable welded steel cylinders – Test pressure 60 bar and below	Until further notice
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8. In the table in 6.2.2.1.3, in the row starting ISO 4706:2008 replace “Until further notice” with “Until 31 December 2030”. In the table in 6.2.2.1.3 add the following new row beneath the row starting ISO 4706:2008.

ISO 4706:2023	Gas cylinders – Refillable welded steel cylinders – Test pressure 60 bar and below	Until further notice
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9. In the table in 6.2.2.1.8, in the row starting ISO 4706:2008 replace “Until further notice” with “Until 31 December 2030”. In the table in 6.2.2.1.8 add the following new row beneath the row starting ISO 4706:2008.

ISO 4706:2023	Gas cylinders – Refillable welded steel cylinders – Test pressure 60 bar and below	Until further notice
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Justification

10. The purpose of this document is to facilitate agreement on the design and manufacture of welded-steel gas cylinders in all countries. The requirements are based on the knowledge of, and experience with, materials, design requirements, manufacturing processes and controls in common use for the manufacture of gas cylinder. The significant changes compared to the previous edition are as follows:

- references have been updated,
- X-ray is required on three-piece designs,
- X-ray frequency has been changed from 50 to 250, and
- criteria for X-ray retesting requirements have been added.

Proposal 4

11. In the table in 6.2.2.1.1, in the row starting ISO 11119-2:2020 replace “Until further notice” with “Until 31 December 2030”. In the table in 6.2.2.1.1 add the following new row beneath the row starting ISO 11119-2:2020.

ISO 11119-2:2020 + Amd 1 2023	Gas cylinders – Refillable composite gas cylinders and tubes – Design, construction and testing – Part 2: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with load-sharing metal liners	Until further notice
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12. In the table in 6.2.2.1.2, in the row starting ISO 11119-2:2020 replace “Until further notice” with “Until 31 December 2030”. In the table in 6.2.2.1.2 add the following new row beneath the row starting ISO 11119-2:2020.

ISO 11119-2:2020 + Amd 1 2023	Gas cylinders – Refillable composite gas cylinders and tubes – Design, construction and testing – Part 2: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with load-sharing metal liners	Until further notice
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Justification

13. The amendment to standard ISO 11119-2:2020 was implemented to align the criteria for cycling to 2/3 test pressure in 8.5.8.5.2 with the cycle testing requirements for cylinders, greater than 50 l water capacity, in 8.5.8.4.2.

Proposal 5

14. In the table in 6.2.2.1.1, in the row starting ISO 11119-3:2020 replace “Until further notice” with “Until 31 December 2030”. In the table in 6.2.2.1.1 add the following new row beneath the row starting ISO 11119-3:2020.

ISO 11119-3:2020 + Amd 1 2023	Gas cylinders – Refillable composite gas cylinders and tubes – Design, construction and testing – Part 3: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with non-load-sharing metallic or non-metallic liners	Until further notice
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15. In the table in 6.2.2.1.2, in the row starting ISO 11119-3:2020 replace “Until further notice” with “Until 31 December 2030”. In the table in 6.2.2.1.2 add the following new row beneath the row starting ISO 11119-3:2020.

ISO 11119-3:2020 + Amd 1 2023	Gas cylinders – Refillable composite gas cylinders and tubes – Design, construction and testing – Part 3: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with non-load-sharing metallic or non-metallic liners	Until further notice
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Justification

16. The amendment to standard ISO 11119-3:2020 is comprised of three changes, to correct anomalies in the published standard, as follows:

- procedure of the drop test for cylinders up to and including 50 l water capacity with dedicated compressed gas service 8.5.9.4.1,
- criteria of the drop test for cylinders up to and including 50 l water capacity with dedicated compressed gas service 8.5.9.4.2,
- criteria of the impact test for tubes over 150 l water capacity 8.5.9.5.2 and
- a change in section A to specify how to cycle the cylinders after the drop test in 8.5.9.4.1.