

## 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: limited quantities for division 2.2**

## Updated ISO standards in Class 2

Submitted by the International Organisation for Standardisation (ISO)

### Introduction

1. ISO apologises that the paper was not prepared in time to be an official document but hopes that the experts will find time to consider this informal document. These standards are the principal standards covering the evolving technology of composite cylinders, and industry is keen to adopt these revisions now and not wait for the next revised edition of the Model Regulations.
2. These proposals concern three revised standards. The titles of the standards are:
  - ISO 11119-1:2020 - Gas cylinders — Design, construction and testing of refillable composite gas cylinders and tubes — Part 1: Hoop wrapped fibre reinforced composite gas cylinders and tubes up to 450 l
  - ISO 11119-2:2020 - 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
  - ISO 11119-3:2020 - 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
3. The 2020 editions of ISO 11119 parts 1, 2 and 3 were revised and improved following comments received from regulators, manufacturers, and users of the standards worldwide. For example, changes were made to bring the documents up to date, to improve and clarify test procedures, particularly in relation to large composite cylinders and tubes.

### Proposal 1

4. In the table in 6.2.2.1.1 in the row starting ISO 11119-1:2012 replace “Until further notice” with “Until 31 December 2028”. In the table in 6.2.2.1.1 add the following new row beneath the row starting ISO 11119-1:2012.

|                  |  |                      |
|------------------|--|----------------------|
| ISO 11119-1:2020 | Gas cylinders — Design, construction and testing of refillable composite gas cylinders and tubes — Part 1: Hoop wrapped fibre reinforced composite gas cylinders and tubes up to 450 l | Until further notice |
|------------------|--|----------------------|

## Justification

5. The main changes compared to the previous edition are as follows:
- References updated.
  - 7.1.3 Minimum fibre stress ratios added.
  - 8.5.8 Fire resistance test. Changes to the procedure to make the test more consistent. Adding a criterion for tubes above 150 l to be tested for 5 minutes.
  - 8.5.10 Torque Test is now only required for taper threads.

## Proposal 2

6. In the table in 6.2.2.1.1 in the row starting ISO 11119-2:2012 + Amd 1:2014 replace “Until further notice” with “Until 31 December 2028”. In the table in 6.2.2.1.1 add the following new row beneath the row starting ISO 11119-2:2012 + Amd 1:2014.

|                  |  |                      |
|------------------|--|----------------------|
| ISO 11119-2:2020 | 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 | Until further notice |
|------------------|--|----------------------|

## Justification

7. The main changes compared to the previous edition are as follows:
- References updated.
  - 7.1.3 Minimum fibre stress ratios added.
  - 8.5.8 Drop Test. Addition of new alternative test for cylinders up to and including 50 l water capacity with dedicated compressed gas service. Addition of alternative impact test for tubes 150 l and above.
  - 8.5.10 Fire resistance test. Changes to the procedure to make the test more consistent. Adding a criterion for tubes above 150 l to be tested for 5 minutes.
  - 8.5.12 Torque Test is now only required for taper threads

## Proposal 3

8. In the table in 6.2.2.1.1 in the row starting ISO 11119-3:2013 replace “Until further notice” with “Until 31 December 2028”. In the table in 6.2.2.1.1 add the following new row beneath the row starting ISO 11119-3:2013.

|                  |   |                      |
|------------------|---|----------------------|
| ISO 11119-3:2020 | 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 | Until further notice |
|------------------|---|----------------------|

## Justification

9. The main changes compared to the previous edition are as follows:
- References updated.
  - 7.1.4 Minimum fibre stress ratios added.
  - 8.5.9 Drop/impact test. Addition of new alternative test for cylinders up to and including 50 l water capacity with dedicated compressed gas service. Addition of alternative impact test for tubes 150 l and above.
  - 8.5.11 Fire resistance test. Changes to the procedure to make the test more consistent. Adding a criterion for tubes above 150 l to be tested for 5 minutes.
  - 8.5.12 Torque test is now only required for taper threads.
  - 8.5.16 Pneumatic cycle test. New procedure for the test to have a lower number of cycles but, with a significant hold time at pressure.
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