



**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****Fifty-seventh session**

Geneva, 29 June-8 July 2020

Item 5 (b) 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, eight revised standards and three amended standards. The titles of the standards are:

- ISO 9809-1:2019, Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 1: Quenched and tempered steel cylinders and tubes with tensile strength less than 1 100 MPa
- ISO 9809-2:2019, Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 2: Quenched and tempered steel cylinders and tubes with tensile strength greater than or equal to 1 100 MPa
- ISO 9809-3:2019, Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 3: Normalized steel cylinders and tubes
- ISO 21029-1:2018 + A1:2019, Cryogenic vessels – Transportable vacuum insulated vessels of not more than 1 000 litres volume – Part 1: design, fabrication, inspection and tests
- ISO 16111:2018, Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride
- ISO 10961:2019, Gas cylinders – Cylinder bundles – Design, manufacture, testing and inspection
- ISO 11513:2019, Gas cylinders – Refillable welded steel cylinders containing materials for sub-atmospheric gas packaging (excluding acetylene) – Design, construction, testing, use and periodic inspection

* 2020 (A/74/6 (Sect.20) and Supplementary, Subprogramme 2

- ISO 11118:2015 +A1:2019, Gas cylinders - Non-refillable metallic gas cylinders - Specification and test methods
- ISO 11117:2019, Gas cylinders – Valve protection caps and guards – Design, construction and tests
- ISO 17871:2015 +A1:2018, Gas cylinders – Quick-release cylinder valves – Specification and type testing
- ISO 10462:2013 + A1:2019, Gas cylinders – Acetylene cylinders – Periodic inspection and maintenance
- ISO 23088:2020, Gas cylinders – Periodic inspection and testing of welded steel pressure drums — Capacities up to 1 000 l.

Proposal 1

2. In the tables in 6.2.2.1.1, 6.2.2.1.3 and 6.2.2.1.7 in the row starting ISO 9809-1:2010 replace “Until further notice” with “Until 31 December 2026”. In the tables in 6.2.2.1.1, 6.2.2.1.3 and 6.2.2.1.7 add the following new row beneath the row starting ISO 9809-1:2010:

ISO 9809-1:2019	Gas cylinders — Design, construction and testing of refillable seamless steel gas cylinders and tubes — Part 1: Quenched and tempered steel cylinders and tubes with tensile strength less than 1 100 MPa	Until further notice
-----------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------

In 6.2.2.1.2 at the end of the table, after the row starting ISO 11515:2013, add the above new row.

Justification

3. The significant changes compared to the previous edition are as follows:
- Water capacity is extended from below 0.5 l and up to and including 450 l;
 - Batch size for tubes are now introduced;
 - The bend test is retained only for prototype tests;
 - Test requirements for check analysis (tolerances modified);
 - New test requirements for threads introduced including an informative Annex G.

Proposal 2

4. In the tables in 6.2.2.1.1 in the row starting ISO 9809-2:2010 replace “Until further notice” with “Until 31 December 2026”. Add the following new row to the table (after ISO 9809-2:2010):

ISO 9809-2:2019	Gas cylinders – Design, construction and testing of refillable seamless steel gas cylinders and tubes – Part 2: Quenched and tempered steel cylinders and tubes with tensile strength greater than or equal to 1 100 MPa	Until further notice
-----------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------

In 6.2.2.1.2 at the end of the table, after the new row starting ISO 9809-1:2019, add the above row.

Justification

5. The changes detailed in paragraph 3 above are also applicable to this standard.

Proposal 3

6. In the tables in 6.2.2.1.1 and 6.2.2.1.3 in the row starting ISO 9809-3:2010 replace “Until further notice” with “Until 31 December 2026”. Add a new row beneath these rows as follows:

ISO 9809-3:2019	Gas cylinders — Design, construction and testing of refillable seamless steel gas cylinders and tubes — Part 1: Quenched and tempered steel cylinders and tubes with tensile strength less than 1 100 MPa	Until further notice
-----------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------

In 6.2.2.1.2 at the end of the table, after the new row starting ISO 9809-2:2019, add the above row.

Justification

7. The changes detailed in paragraph 3 above are also applicable to this standard.

Proposal 4

8. In the table in 6.2.2.1.4 in the row starting ISO 21029-1:2004 replace “Until further notice” with “Until 31 December 2026”. Add the following new second row to the table (after ISO 21029-1:2004):

ISO 21029-1:2018 + A1:2019	Cryogenic vessels – Transportable vacuum insulated vessels of not more than 1 000 litres volume – Part 1: Design, fabrication, inspection and tests	Until further notice
----------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------	----------------------

Justification

9. This second edition has the following noteworthy changes:
- Various changes to increase consistency with the UN Model Regulations;
 - The partial exchange of calculation methods by experimental methods is explained in detail in order to improve clarity;
 - The clauses on Common Design Requirements and on Non-destructive Test Requirements were technically revised.

Proposal 5

10. In the table in 6.2.2.1.5 in the row starting ISO 16111:2008 replace “Until further notice” with “Until 31 December 2026”. Add the following new second row to the table (after ISO 16111:2008):

ISO 16111:2018	Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride	Until further notice
----------------	-----------------------------------------------------------------------------------	----------------------

11. In P205 of 4.1.4.1 paragraphs (5), (6) and (7) replace “ISO 16111:2008” by “ISO 16111:2008 or ISO 16111:2018”. At the end of paragraph (7) add the sentence “See 6.2.2.4 to determine which standard is applicable at the time of periodic inspection and test.”

12. In 4.1.6.1.8, in the final sentence, replace “ISO 16111:2008” by “ISO 16111:2008 or ISO 16111:2018”.

Justification

13. Reversible metal hydride technology has significantly evolved since 2008; hence some parts of the standard required an update in order to be aligned with the evolution of the technology. Considering this, and the acquired practical experience, the 2008 version of the document needed both the resolution of identified inconsistencies as well as enhancement of its contents. The update was mainly necessary for the cylinders of water capacity greater than 120 ml.

The main changes compared to the previous edition concern the following:

- Service temperature conditions have been described in further detail;
- Shell design has been extended to a reference to ISO 11119-3;
- Drop test conditions have been modified;
- The acceptance criteria for leak testing have been modified;
- Hydrogen cycling conditions have been modified;
- New warning labelling has been proposed;
- Information in safety data sheets has been updated.

Proposal 6

14. In the table in 6.2.2.1.6 in the row starting ISO 10961:2010 replace “Until further notice” with “Until 31 December 2026”. Add the following new second row to the table (after ISO 10961:2010):

ISO 10961:2019	Gas cylinders – Cylinder bundles – Design, manufacture, testing and inspection	Until further notice
----------------	--------------------------------------------------------------------------------	----------------------

Justification

15. The main changes compared to the previous edition from 2010 are as follows:

- storage was added throughout the document as a possible use case,
- the descriptions of the drop tests were clarified,
- the descriptions of the leak tests were clarified,
- a new figure was added showing the angle for the vertical drop test,
- the rotating drop test has been differentiated by whether the bundle is fitted with cylinders vertically or horizontally,
- the additional requirements for acetylene cylinder bundles were clarified, and
- the information for the bundle identification for filling was moved to Annex C.

Proposal 7

16. In the table in 6.2.2.1.7 in the row starting ISO 11513:2011 replace “Until further notice” with “Until 31 December 2026”. Add the following new second row to the table (after ISO 11513:2011):

ISO 11513:2019	Gas cylinders – Refillable welded steel cylinders containing materials for sub-atmospheric gas packaging (excluding acetylene) – Design, construction, testing, use and periodic inspection	Until further notice
----------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------

17. In the table in 6.2.2.4 in the row starting ISO 11513:2011 replace “Until further notice” with “Until 31 December 2024”. Add the following new row to the table after the row starting ISO 11513:2011:

ISO 11513:2019	Gas cylinders – Refillable welded steel cylinders containing materials for sub-atmospheric gas packaging (excluding acetylene) – Design, construction, testing, use and periodic inspection	Until further notice
----------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------

18. In P208 of 4.1.4.1 for paragraph (1) (a) replace “ISO 11513:2011 or ISO 9809-1:2010” by “ISO 11513:2011, ISO 11513:2019, ISO 9809-1:2010 or ISO 9809-1:2019”. In P208 paragraph (11) replace “Annex A of ISO 11513:2011” by “Annex A of ISO 11513:2011 (applicable until 31 December 2024) or Annex A of ISO 11513:2019”.

Justification

19. The main changes compared to the previous edition are as follows:

- References to packing instruction P200 of the UN Model Regulations have been replaced with packing instruction P208 as this document is referenced in only P208 of the UN Model Regulations;
- The prohibition on the use of ultrasonic testing during periodic inspection and test has been removed from Annex B.

Proposal 8

20. In the table in 6.2.2.1.9 in the row starting ISO 11118:2015 replace “Until further notice” with “Until 31 December 2026”. Add the following new fourth row to the table (after ISO 11118:2015):

ISO 11118:2015 +A1:2019	Gas cylinders - Non-refillable metallic gas cylinders - Specification and test methods	Until further notice
----------------------------	----------------------------------------------------------------------------------------	----------------------

Justification

21. Amendment 1 corrects the identity of referenced clauses and corrects numerous typographical errors. The marking requirements have been modified and normative Annex A has clarifications, corrections and new testing requirements.

Proposal 9

22. In the table in 6.2.2.3 in the row starting ISO 11117:2008 + Cor.1:2009 replace “Until further notice” with “Until 31 December 2026”. Add the following new second row to the table (after ISO 11117:2008 + Cor.1:2009):

ISO 11117:2019	Gas cylinders – Valve protection caps and guards – Design, construction and tests	Until further notice
----------------	-----------------------------------------------------------------------------------	----------------------

23. In 4.1.6.1.8, in the first sentence of the penultimate paragraph (after indent (e)), replace “ISO 11117:1998 or ISO 11117:2008 + Cor 1:2009” with “ISO 11117:1998, ISO 11117:2008 + Cor 1:2009 or ISO 11117:2019”.

Justification

24. The changes in this revised standard are significant and are mainly related to the improvement of the interoperability of both the valve protection caps and the valve guards, with the cylinders and the cylinder valves. In particular, following this goal, the drop test, the marking and test report requirements have been revised and clarified.

Proposal 10

25. In the table in 6.2.2.3 in the row starting ISO 17871:2015 insert a new Note as shown underlined below:

ISO 17871:2015	Gas cylinders – Quick-release cylinder valves – Specification and type testing. <u><i>NOTE: This standard shall not be used for flammable gases.</i></u>	Until further notice
----------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------

Justification

26. This standard has been amended (Amendment 1:2018 as listed in paragraph 1) to improve safety by eliminating flammable gases from the scope, (toxic, corrosive and oxidising gases were already excluded). This change of scope was the only change introduced by this amendment. Also, it should be noted that a full revision of the standard is in progress and is expected to be available in the next biennium. Therefore, rather than create an additional entry for this amendment, which will be added to by another new entry in the 23rd Revision, it is proposed to limit the standard by a note which takes immediate effect without a transition period.

Proposal 11

27. In the table in 6.2.2.4 in the row starting ISO 10462:2013 replace “Until further notice” with “Until 31 December 2024”. Add the following new row to the table (after ISO 10462:2015):

ISO 10462:2013 + Amd1:2019	Gas cylinders – Acetylene cylinders – Periodic inspection and maintenance	Until further notice
-------------------------------	---------------------------------------------------------------------------	----------------------

Justification

28. The short amendment consists of simplifying the marking requirements when rejected cylinders have to be transported in order to render them unserviceable.

Proposal 12

29. In the first table in 6.2.2.4 add the following new row (after ISO 20475:2018):

ISO 23088:2020	Gas cylinders – Periodic inspection and testing of welded steel pressure drums — Capacities up to 1 000 l.	Until further notice
----------------	------------------------------------------------------------------------------------------------------------	----------------------

Justification

30. This new standard supports the design and construction standard ISO 21172-1, *Gas cylinders – Welded steel pressure drums up to 3 000 litre capacity for the transport of gases – Design and construction – Part 1: Capacities up to 1 000 litres*. ISO 21172-1:2015 was introduced into the 20th Revision of the Model Regulations so this standard is well timed to meet the need for specific periodic inspection instructions.