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|  |  | **UN/SCETDG/57/INF.57**  |

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| **Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classificationand Labelling of Chemicals 2 December 2020** |
| **Sub-Committee of Experts on the Transport of Dangerous Goods**  |  |
| **Fifty-seventh session** |  |
| Geneva, 30 November-8 December 2020Item 5 (b) of the provisional agenda**Transport of gases: miscellaneous** |  |

 Consolidated changes for ISO standards in Class 2 (ST/SG/AC.10/C.3/2020/13 (Updated ISO standards in Class 2), informal documents INF.31/Rev.1 (57th session) and INF.46 (57th session)

 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 + Amd.1:2019, 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
* ISO 11118:2015 +Amd.1:2019, 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 +Amd.1:2018, Gas cylinders – Quick-release cylinder valves – Specification and type testing
* ISO 17871:2020, Gas cylinders – Quick-release cylinder valves – Specification and type testing (published since paper 2020/13 was submitted)
* ISO 10462:2013 + Amd.1:2019, 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.
1. ISO thanks all the delegations who have expressed support for the proposals in document ST/SG/AC.10/C.3/2020/13 and informal document INF.31/Rev.1. We are grateful to those delegations who have studied the proposals in detail and raising questions and finding errors. Informal document UN/SCETDG/57/INF.46 addresses the comments raised.
2. As requested by the Chair of the 57th Session of the Sub-Committee of Experts on the Transport of Dangerous Goods, this document presents each proposal and incorporates any additional amendments resulting from comments received.
3. This paper is based on ST/SG/AC.10/C.3/2020/13 and all changes are shown highlighted.

 Proposal 1 (No change)

5. 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

6. 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 (No change)

7. 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**

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

 **Proposal 3 (As proposed by NL the title of standard has been corrected)**

9. 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 3: Normalized steel cylinders and tubes | 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**

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

 **Proposal 4 (No change)**

11. 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 + Amd.1:2019  | 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**

12. This second edition has the following noteworthy changes:

 - Various changes to increase consistency with the UN Model Regulations;

- The partial exchange of calculation methods bb 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 (additional amendments to 6.2.2.4 as proposed by NL)**

13. 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 |

14. 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.”

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

15a. In the table in 6.2.2.4 in the row starting ISO 16111:2008 replace “Until further notice” with “Until 31 December 2024”. Add the following new row to the table after the row starting ISO 16111:2008:

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

 **Justification**

16. 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. In light of 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 (No change)**

17. 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**

18. 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,
* the information for the bundle identification for filling was moved to Annex C.

 **Proposal 7 (No change – see comment from BE in Note below)**

19. 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 |

20. In the table in 6.2.2.4 in the row starting ISO 11513:2011replace “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 |

21. 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”.

Note: In a response to a comment from BE. The proposals in paragraphs 17 and 27 cover references to standards for periodic inspection. As laid out in Part 6 of the Guiding Principles for the development of the UN Model Regulations, standards dealing with construction usually have a 6 year transition period, but standards for periodic inspection are allocated 4 years.

 **Justification**

22. 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 (No change – see comments from NL (Note 1) and CN (Note 2) below)**

23. In 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 +Amd.1:2019 | Gas cylinders - Non-refillable metallic gas cylinders - Specification and test methods | Until further notice |

Note 1: In response to a comment from NL. As a part of the revision of Chapter 6.2 to distinguish between pressure receptacle shells and their closures a new paragraph 6.2.2.1.9 was introduced to cover non-refillable cylinders. This may be confirmed by reference to pages 9 and 10 of the Secretariat’s paper 2020/59 Consolidated list of draft amendments.

Note 2: China asks whether a reference of ISO 11118:1999 in PP89 of P206 should also be revised. Packing Instruction P206 was proposed for adoption into the Model Regulations by CEFIC. ISO does not have expertise in Chemicals under Pressure and therefore has not made a proposal to update the reference to ISO 11118:1999 in PP89. We would welcome an approach from the chemicals industry to update the reference to ISO 11118 in PP89. It would probably be beneficial to reference the specific clauses of the standard covering the limitation of cylinder size.

 **Justification**

24. 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 (No change)**

25. 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 |

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

 **Justification**

27. 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 (Amended as proposed in UN/SCETDG/57/INF.31/Rev.1)**

28. Since Proposal 10 in document ST/SG/AC.10/C.3/2020/13 was prepared a revised standard was published in July 2020. The purpose of UN/SCETDG/57/INF.31/Rev.1 is to propose the insertion of EN ISO 17871:2020 in the 22nd Revision.

29. Also, in 2018 an amendment to EN ISO 17871:2015 was published which improved safety by eliminating flammable gases from the scope, (toxic, corrosive and oxidizing gases were already excluded). Rather than introduce a new entry for this amended standard it is proposed to implement the amendment by inserting a Note in the existing entry. This entry also needs to be amended by ceasing manufacture after 31 December 2026.

30. Amendments to ST/SG/AC.10/C.3/2020/13, Proposal 10

Replace the text of Proposal 10, paragraphs 25 and 26 by the following.

In the table in 6.2.2.3 in the row starting ISO 17871:2015 insert a new Note and manufacturing date as shown underlined below. Also, following the entry for ISO 17871:2015 add a new row for the 2020 edition of the standard.

|  |  |  |
| --- | --- | --- |
| ISO 17871:2015  | Gas cylinders – Quick-release cylinder valves – Specification and type testing.***NOTE:*** *This standard shall not be used for flammable gases.* | Until 31 December 2026 |
| ISO 17871:2020 | Gas cylinders – Quick-release cylinder valves – Specification and type testing.  | Until further notice |

 **Justification**

30a. Safety is improved by using a Note in the entry of ISO I7871:2015 eliminating use with flammable gases. The 2020 edition of the standard broadens the scope to include quick-release valves for pressure drums and tubes and also excludes the use of quick-release valves with flammable gases. Other notable changes are:

- addition of the valve burst test pressure;

- deletion of the flame impingement test;

- deletion of internal leak tightness test at −40 °C for quick-release cylinder valves used only for fixed fire fire-fighting systems installed in buildings;

- complete revision of Clause 4.2.11 “Securing arrangements and Annex A Manufacturing tests and examinations.”

 **Proposal 11 (No change – see comment from NL in Note below)**

30. In the table in 6.2.2.4 in the row starting ISO 10462:2013replace “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**

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

Note: NL proposed that Amd1 should be replaced by A1. This comment led ISO to look at other references and we found the form “+A1” is used in 6.2.2.2, 6.2.2.3 and 6.2.2.4 and “+Amd1” (and ‘+Cor.1’) is used in 6.2.2.1.1 and 6.2.2.1.2. There is a need to be consistent and ISO believes the Model Regulations should use the form “+Amd.1” (and “Cor.1”) that is used in the ISO catalogue since the ISO catalogue is where readers will search for the standard. Therefore, we decline to support this suggestion from The Netherlands since this proposal as presented will be a step in the preferred direction. Also, the other references in this document using the form A1 have been changed to Amd.1.

 **Proposal 12 (no change)**

32. 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**

33. 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.