



SLOVENSKI STANDARD SIST EN ISO 18119:2019

01-januar-2019

Plinske jeklenke - Nevarjene plinske jeklenke in velike jeklenke iz jekla in aluminijevih zlitin - Periodični pregled in preskušanje (ISO 18119:2018)

Gas cylinders - Seamless steel and seamless aluminium-alloy gas cylinders and tubes - Periodic inspection and testing (ISO 18119:2018)

Gasflaschen - Nahtlose Gasflaschen und Großflaschen aus Stahl und Aluminiumlegierungen - Wiederkehrende Inspektion und Prüfung (ISO 18119:2018)

Bouteilles à gaz - Bouteilles et tubes à gaz en acier et en alliages d'aluminium, sans soudure - Contrôles et essais périodiques (ISO 18119:2018)

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EUROPEAN STANDARD

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Gas cylinders - Seamless steel and seamless aluminium-alloy gas cylinders and tubes - Periodic inspection and testing (ISO 18119:2018)

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This European Standard was approved by CEN on 17 May 2018.

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European foreword

This document (EN ISO 18119:2018) has been prepared by Technical Committee ISO/TC 58 "Gas cylinders" in collaboration with Technical Committee CEN/TC 23 "Transportable gas cylinders" the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2019, and conflicting national standards shall be withdrawn at the latest by April 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Endorsement notice

The text of ISO 18119:2018 has been approved by CEN as EN ISO 18119:2018 without any modification.

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INTERNATIONAL
STANDARD

ISO
18119

First edition
2018-05

**Gas cylinders — Seamless steel
and seamless aluminium-alloy gas
cylinders and tubes — Periodic
inspection and testing**

*Bouteilles à gaz — Bouteilles et tubes à gaz en acier et en alliages
d'aluminium, sans soudure — Contrôles et essais périodiques*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by ISO/TC 58, *Gas cylinders*, Subcommittee SC 4, *Operational requirements for gas cylinders*.

This first edition cancels and replaces ISO 6406:2005 and ISO 10461:2005, which have been technically revised. It also incorporates the Amendment ISO 10461:2005/Amd 1:2006.

The main changes are:

- a section has been added for symbols used in the document;
- a detailed account of steps to be taken if the actual cylinder wall thickness is less than the minimum design wall thickness has been added;
- a clearer way to ultrasonically test cylinders with a built-in footing, especially for seamless steel cylinders with a convex base, has been added;
- improved guidelines have been added for dealing with the effects of heating of seamless aluminium-alloy cylinders.

ISO 18119:2018(E)**Introduction**

This document provides information and procedures for the periodic inspection and testing of seamless steel and seamless aluminium-alloy cylinders and the condition of the test equipment. The principal aim of periodic inspection and testing is that at the completion of the test the cylinders have been requalified and are suitable to be reintroduced into service for a further period of time.

This document requires that well-trained and competent personnel undertake the work as described in this document, who consult the cylinder's manufacturer if there are doubts about aspects of the document, so that the cylinder manufacturer's current recommendations are taken into account.

This document has been written so that it is suitable to be referenced in the UN *Model Regulations*^[23].

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Gas cylinders — Seamless steel and seamless aluminium-alloy gas cylinders and tubes — Periodic inspection and testing

CAUTION — Some of the tests specified in this document involve the use of processes that could lead to a hazardous situation.

1 Scope

This document specifies the requirements for periodic inspection and testing to verify the integrity of cylinders and tubes to be re-introduced into service for a further period of time.

This document is applicable to seamless steel and seamless aluminium-alloy transportable gas cylinders (single or those that comprise a bundle) intended for compressed and liquefied gases under pressure, of water capacity from 0,5 l up to 150 l and to seamless steel and seamless aluminium-alloy transportable gas tubes (single or those that comprise a bundle) intended for compressed and liquefied gases under pressure, of water capacity greater than 150 l. It also applies, as far as practical, to cylinders of less than 0,5 l water capacity.

This document does not apply to the periodic inspection and maintenance of acetylene cylinders or to the periodic inspection and testing of composite cylinders.

NOTE Unless noted by exception, the use of the word “cylinder” in this document refers to both cylinders and tubes.

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2 Normative references

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The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method*

ISO 7866, *Gas cylinders — Refillable seamless aluminium alloy gas cylinders — Design, construction and testing*

ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel*

ISO 9809-1, *Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa*

ISO 10286, *Gas cylinders — Terminology*

ISO 11621, *Gas cylinders — Procedures for change of gas service*

ISO 13769¹⁾, *Gas cylinders — Stamp marking*

ISO 22434, *Transportable gas cylinders — Inspection and maintenance of cylinder valves*

ISO 25760, *Gas cylinders — Operational procedures for the safe removal of valves from gas cylinders*

1) To be published. Stage at the time of publication: ISO/FDIS 13769:2018.

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10286 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1 liquefied gas

gas, which, when packaged under pressure, is partially liquid at temperatures above -50 °C

Note 1 to entry: A distinction is made between

- a) high pressure liquefied gas: a gas with a critical temperature between -50 °C and 65 °C , and
- b) low pressure liquefied gas: a gas with a critical temperature above 65 °C .

3.2 rejected cylinder

cylinder not fit for service

3.3 competent authority

any national body or authority designated or otherwise recognized as such, having jurisdiction for the transport of dangerous goods and the approval of gas cylinders

Note 1 to entry: Adapted from UN *Model Regulations*[23].

3.4 minimum design wall thickness

thickness of the cylinder wall calculated from the design standard, taking into account the material properties and dimensions at time of manufacture

3.5 stove

treat by heating in a stove or an oven in order to apply a desired surface coating

4 Abbreviated terms and symbols

FBH	flat bottom hole
PE	permanent expansion
SBT	sidewall-to-base transition region
UT	ultrasonic testing
<i>C</i>	compressibility (expressed in m^2/N or Pa^{-1})
<i>D</i>	depth of notch in ultrasonic test sample (expressed in mm)
<i>K</i>	factor for individual temperature (listed in Table C.1)
<i>L</i>	length of notch in ultrasonic test sample (expressed in mm)
<i>P</i>	pressure (expressed in bar)
<i>V</i>	cylinder water capacity (expressed in l)

W	width of notch in ultrasonic test sample (expressed in mm)
X	flaw length (expressed in mm)
Y	flaw depth ratio
t_{mc}	minimum measured wall thickness of the calibration specimen (expressed in mm)
t_m	minimum design wall thickness (expressed in mm)

5 Intervals between periodic inspections and tests

A cylinder shall be due for periodic inspection and testing on its first receipt by a filler following the expiry of the established interval or, in the absence of regulations, in accordance with the UN *Model Regulations*[23]. [Annex A](#) lists the intervals for period inspection and testing as outlined in the 19th revised edition of the UN *Model Regulations*. The expiry date is based on the last test date shown on the cylinder. Other means of indicating the expiry date may be used.

Provided the cylinder has not been subjected to abusive and abnormal conditions such as being involved in an accident, heat exposure or other severe conditions that would render it unsafe, there is no requirement for the user to return a cylinder before the contents have been used even though the periodic inspection and testing interval has lapsed. However, cylinders, particularly those containing corrosive gases, should be retested within a period not exceeding twice the time interval.

Seamless steel or seamless aluminium-alloy cylinders used for self-contained breathing apparatus or self-contained underwater breathing apparatus that are not covered by transport regulations may be submitted for inspection within the interval shown in [Table A.1](#).

6 List of procedures for periodic inspections and tests

Assessment of conformity to this document shall be carried out in accordance with the applicable regulations of the countries of use.

Tests and examinations performed to demonstrate compliance shall be conducted using instruments calibrated before being put into service and thereafter according to an established programme.

Each cylinder shall be submitted to periodic inspections and tests. The following procedures, when applicable, form the requirements for such inspections and tests and are explained more fully in subsequent clauses:

- a) identification of cylinder and preparation for inspection and tests (see [Clause 7](#));
- b) depressurization and de-valving procedures (see [Clause 8](#));
- c) external visual inspection (see [Clause 9](#));
- d) inspection of cylinder neck (see [Clause 10](#));
- e) check of internal condition (see [Clause 11](#));
- f) supplementary tests (see [Clause 12](#));
- g) cylinder repairs (see [Clause 13](#));
- h) pressure test or UT (see [Clause 14](#));
- i) inspection of valve and other accessories (see [Clause 15](#));
- j) replacement of cylinder parts (see [Clause 16](#));
- k) final operations (see [Clause 17](#));