



BSI Standards Publication

Gas cylinders - Acetylene cylinders - Periodic inspection and maintenance

National foreword

This British Standard is the UK implementation of EN ISO 10462:2013+A1:2019. It is identical to ISO 10462:2013, incorporating amendment 1:2019. It supersedes BS EN ISO 10462:2013, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment 1 is indicated by **A1** **A1**.

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Bouteilles à gaz — Bouteilles d'acétylène — Contrôle et entretien périodiques (ISO 10462:2013)

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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

European foreword

This document (EN ISO 10462:2013) has been prepared by Technical Committee ISO/TC 58 “Gas cylinders” in collaboration with the 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of an identical text or by endorsement, at the latest by June 2014, and conflicting national standards shall be withdrawn at the latest by June 2014.

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Endorsement notice

The text of ISO 10462:2013 has been approved by CEN as EN ISO 10462:2013 without any modification.

Foreword to amendment A1

This document (EN ISO 10462:2013/A1:2019) 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.

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Endorsement notice

The text of ISO 10462:2013/Amd 1:2019 has been approved by CEN as EN ISO 10462:2013/A1:2019 without any modification.

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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. www.iso.org/directives

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 58, *Gas cylinders*, Subcommittee SC 4, *Operational requirements for gas cylinders*.

This third edition cancels and replaces the second edition (ISO 10462:2005), which has been technically revised.

The following are the main technical modifications.

- a) The second edition (ISO 10462:2005) has been revised taking EN 12863 into account; EN 12863 has been superseded by this third edition.
- b) Periodic inspection periods are based on the relevant regulations and do not have to be repeated in this International Standard, thus also avoiding possible inconsistencies in case periodic inspection periods are changed in the regulations. Consequently, the former Annex A has been deleted and relevant information is covered in [4.1](#).
- c) For the removal of the valve, reference to ISO 25760 is included and, consequently, the former Annex B has been deleted.
- d) The external visual inspection has been revised; [6.1](#) and Annex B (which was Annex C in the second edition) have been updated accordingly.
- e) The inspection of monolithic porous materials with regard to cracking, crumbling or cavitation is given in greater detail for better clarity. A new [Annex C](#) for the determination of the top clearance has been added.
- f) For the inspection of the valve, reference to ISO 22434 is included and, consequently, the former Annex F has been deleted.

Introduction

Acetylene cylinders differ from all other cylinders transporting compressed or liquefied gases in that they contain a porous material and, normally, a solvent in which the acetylene is dissolved. Acetylene cylinders that contain a porous material but no solvent are only used for special applications. For periodic inspections, it is intended that due regard be given to the different types of construction of cylinders and porous materials. This International Standard should be read considering these differences.

The primary objective of the porous material is to limit an acetylene decomposition, if it is initiated, and thus prevent a cylinder incident. If some porous material is missing, or if a defect (e.g. a cavity, crack or void of significant size) exists as a result of breakdown or subsidence of the porous material, the decomposition could progress at a rate that can cause violent failure of the cylinder accompanied by an explosion.

The requirements in this International Standard are mainly those specific to acetylene cylinders. The periodic inspection of acetylene cylinders is to be performed only by competent persons and, in those jurisdictions requiring it, persons authorized by the regulatory authority.

This International Standard is intended to be used under a variety of national regulatory regimes, but has been written so that it is suitable for the application of Reference [1]. Attention is drawn to requirements in the specified relevant national regulations of the country (countries) where the cylinders are intended to be used that might override the requirements given in this International Standard. Where there is any conflict between this International Standard and any applicable regulation, the regulation always takes precedence.

In International Standards, “weight” is equivalent to a force, expressed in Newton. However, in common parlance (as used in terms defined in this International Standard), “weight” is used as an equivalent of “mass”, but this practice is deprecated (see ISO 80000-4).

Similarly, the unit “bar”¹⁾, which is not an SI unit and is deprecated by ISO, is used as an equivalent of Pascal, the SI unit for pressure. This is because of its universal use in the field of technical gases. Pressure values in this International Standard are given as gauge pressure (pressure exceeding atmospheric pressure), unless noted otherwise.

1) 1 bar = 0,1 MPa = 10⁵ Pa; 1 MPa = 1 N/mm².

Gas cylinders — Acetylene cylinders — Periodic inspection and maintenance

1 Scope

This International Standard specifies requirements for the periodic inspection of acetylene cylinders as required for the transport of dangerous goods and for maintenance in connection with periodic inspection. It applies to acetylene cylinders with and without solvent and with a maximum nominal water capacity of 150 l.

NOTE The limitation of 150 l is derived from the definition of cylinder in Reference [1].

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 13341, *Gas cylinders — Fitting of valves to gas cylinders*

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

acetylene cylinder

cylinder manufactured and suitable for the transport of acetylene, containing a *porous material* (3.6) and *solvent* (3.9) (where applicable) for acetylene with a valve and other accessories affixed to the cylinder

Note 1 to entry: When there is no risk of ambiguity, the word “cylinder” is used.

3.2

cylinder shell

<acetylene cylinders> empty cylinder manufactured and suitable for receiving and containing a *porous material* (3.6) for use as part of an *acetylene cylinder* (3.1)

3.3

maximum acetylene content

<acetylene cylinders> specified maximum weight of acetylene including *saturation acetylene* (3.8) in an *acetylene cylinder* (3.1)

3.4

maximum acetylene charge

<acetylene cylinders> *maximum acetylene content* (3.3) minus the *saturation acetylene* (3.8)

3.5

periodic inspection body

<acetylene cylinders> body responsible for the periodic inspection of *acetylene cylinders* (3.1)

3.6

porous material

<acetylene cylinders> single or multiple component material introduced to or formed in the *cylinder shell* (3.2) that, due to its porosity, allows the absorption of a solvent/acetylene solution

Note 1 to entry: The porous material can be either

- monolithic, consisting of a solid product obtained by reacting materials or by materials connected together with a binder, or
- non-monolithic, consisting of granular, fibrous or similar materials without the addition of a binder.

3.7

residual gas

<acetylene cylinders> weight of acetylene including the *saturation acetylene* (3.8) contained in an *acetylene cylinder* (3.1) returned for filling

3.8

saturation acetylene

<acetylene cylinders> acetylene dissolved in the *solvent* (3.9) in the *acetylene cylinder* (3.1) at atmospheric pressure (1,013 bar) and at a temperature of 15 °C

3.9

solvent

<acetylene cylinders> liquid that is absorbed by the *porous material* (3.6) and is capable of dissolving and releasing acetylene

Note 1 to entry: The following abbreviated terms are used:

- “A” for acetone;
- “DMF” for dimethylformamide.

3.10

tare

<acetylene cylinders> reference weight of the *acetylene cylinder* (3.1) including the specified solvent content

Note 1 to entry: The tare is further specified in accordance with the following subclauses.

Note 2 to entry: For acetylene cylinders with solvent, the tare is expressed by indicating either tare S or both, tare A and tare S. For solvent-free acetylene cylinders, the tare is expressed by indicating tare F. For the tare used for acetylene cylinders in bundles, see ISO 13088.

3.10.1

tare A

<acetylene cylinders> sum of the weights of the empty *cylinder shell* (3.2), the *porous material* (3.6), the specified solvent content, the valve, the coating and the valve guard, where applicable, and all other parts that are permanently attached to the cylinder when it is presented to be filled

Note 1 to entry: Generally, valve guards are included in the tare and are considered to be permanently attached (and are not removed when the cylinder is filled). This, however, might not always be the case.

3.10.2

tare S

<acetylene cylinders> *tare A* (3.10.1) plus the weight of the *saturation acetylene* (3.8)

3.10.3

tare F

<acetylene cylinders> *tare A* (3.10.1) minus the specified solvent content