BSI Standards Publication

Gas cylinders — Cylinder valves — Specification and type testing

National foreword

This British Standard is the UK implementation of EN ISO 10297:2024. It is identical to ISO 10297:2024. It supersedes BS EN ISO 10297:2014+A1:2017, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PVE/3/1, Gas containers - Valve fittings for gas containers.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Published by BSI Standards Limited 2025

ISBN 978 0 539 38221 1

ICS 23.020.35; 23.060.40

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 April 2024.

Amendments/corrigenda issued since publication

Date	Text affected
31 July 2025	Implementation of ISO corrected text May 2024 with CEN endorsement 2024: See ISO foreword for details

EUROPEAN STANDARD **EN ISO 10297**

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2024

ICS 23.020.35; 23.060.40 Supersedes EN ISO 10297:2014

English Version

Gas cylinders - Cylinder valves - Specification and type testing (ISO 10297:2024, Corrected version 2024-05)

Bouteilles à gaz - Robinets de bouteilles - Spécifications et essais de type (ISO 10297:2024, Version corrigée 2024-05)

Gasflaschen - Flaschenventile - Spezifikation und Baumusterprüfungen (ISO 10297:2024, korrigierte Fassung 2024-05)

This European Standard was approved by CEN on 14 March 2024.

This European Standard was corrected and reissued by the CEN-CENELEC Management Centre on 29 May 2024.

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Ref. No. EN ISO 10297:2024 E

European foreword

This document (EN ISO 10297:2024) 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of an identical text or by endorsement, at the latest by October 2024, and conflicting national standards shall be withdrawn at the latest by October 2024.

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 supersedes EN ISO 10297:2014 and EN ISO 10297:2014/A1:2017.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

Any feedback and questions on this document should be directed to the users’ national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 10297:2024, Corrected version 2024-05 has been approved by CEN as EN ISO 10297:2024 without any modification.

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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 document 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).

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For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 2, *Cylinder fittings*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 23, *Transportable gas cylinders*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 10297:2014), which has been technically revised. It also incorporates the Amendment ISO 10297:2014/Amd.1:2017.

The main changes are as follows:

— clarification of the Scope concerning different VIPR designs;

— addition of several new terms and definitions, e.g. VIPR types A, B and C for easy referencing of different design types;

— oxygen pressure surge test:

  — for VIPRs transferred from ISO 22435 and amended,

  — for RPVs transferred from ISO 15996 and amended,

  — reference for test equipment and procedure to ISO 11114-6,

— endurance test for specific VIPR designs transferred from ISO 22435 and amended;

— endurance test of the filling connection non-return valve transferred from ISO 22435 with clarification of the test procedure without changes to the acceptance criteria;

— acetylene decomposition test of VIPR designs transferred from ISO 22435 and amended;

— subclause 5.3 "Dimensions" removed;

— introduction of Table 2 for giving the different leakage rates depending on the valve design;

— introduction of recommendations for flow capacity values and reference to CGA V-9 for the respective determination as an example;

— introduction of a valve spindle impact test for pin-index valves not permanently protected during transport and use;

— introduction of the hydraulic pressure test also in the closed position for manually operated valves;

— introduction of an additional tightness test for pressure relief valves located upstream of the valve operating mechanism;

— Annex D "Example of test schedule" removed;

— information on changes and/or material variants within a valve design moved to new Annex F and amended.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

This corrected version of ISO 10297:2024 incorporates the following corrections:

— in 5.5.4.2, the first sentence has been modified to adjust to the criteria for the hydraulic pressure test given in 5.4.1;

— in 6.4, third paragraph, the missing test number "no. 14" has been added;

— in Annex A, third paragraph, the alternative value "or 40 J" has been added for the impact energy used in the impact test.

This document has been written so that it is suitable to be referenced in the UN Model Regulations.

The term “pressure receptacle” is used within this document to cover instances where no differentiation is necessary between gas cylinders, bundles of cylinders, pressure drums and tubes.

In this document, the unit bar is used, due to its universal use in the field of technical gases. It should, however, be noted that bar is not an SI unit, and that the corresponding SI unit for pressure is Pa (1 bar = 10^5 Pa = 10^5 N/m^2).

Pressure values given in this document are given as gauge pressure (pressure exceeding atmospheric pressure) unless noted otherwise.

Any tolerances given in this document include measurement uncertainties.

Gas cylinders — Cylinder valves — Specification and type testing

1 Scope

This document specifies design, type testing and marking requirements for:

a) cylinder valves intended to be fitted to refillable transportable gas cylinders;

b) main valves (excluding ball valves) for bundles of cylinders;

c) cylinder valves or main valves with integrated pressure regulator (VIPR);

NOTE 1 This includes the following specific VIPR designs where:

1) The pressure regulating system is acting as the primary valve operating mechanism (VIPR type B). This also includes designs where closure of the primary valve operating mechanism is obtained by closing the seat of the pressure regulating mechanism.

2) The primary valve operating mechanism is located at the low-pressure side of the pressure regulating system (VIPR type C).

d) valves for pressure drums and tubes;

which convey compressed, liquefied or dissolved gases.

NOTE 2 Where there is no risk of ambiguity, cylinder valves, main valves, VIPRs and valves for pressure drums and tubes are addressed with the collective term “valves” within this document.

This document does not apply to

— valves for cryogenic equipment, portable fire extinguishers and liquefied petroleum gas (LPG);

— quick-release cylinder valves (e.g. for fire-extinguishing, explosion protection and rescue applications) - requirements for quick-release cylinder valves are specified in ISO 17871 which contains normative references to this document;

— self-closing cylinder valves and ball valves.

NOTE 3 Requirements for valves for cryogenic vessels are specified in ISO 21011 and at a regional level, e.g. in EN 1626. Requirements for LPG valves are specified in ISO 14245 or ISO 15995. Requirements for self-closing cylinder valves are specified in ISO 17879. Requirements for ball valves are specified in ISO 23826. Requirements for valves for portable fire extinguishers at a regional level are specified, for example, in the EN 3 series.

This document only covers the function of a valve as a closure. Other functions that are possibly integrated in the valve can be covered by other standards. Such standards do however not constitute requirements according to this document.

NOTE 4 Definition of and specific requirements for VIPRs in addition to those that are given in this document are specified in ISO 22435 for industrial applications or ISO 10524-3 for medical applications. Similarly, certain specific requirements for residual pressure valves (RPV) with or without a non-return function in addition to those that are given in this document are given in ISO 15996.

NOTE 5 Certain specific requirements for valves for breathing apparatus in addition to those that are given in this document are specified at a regional level, for example, in the EN 144 series. Certain specific requirements for quick-release valves for fixed fire-fighting systems in addition to those that are given in this document are specified in ISO 16003 and at a regional level, for example, in EN 12094–4.

NOTE 6 Requirements for manufacturing tests and examinations of valves covered by this document are given in ISO 14246.