
**Gas cylinders — Seamless steel gas
cylinders — Periodic inspection and
testing**

*Bouteilles à gaz — Bouteilles à gaz en acier sans soudure — Contrôles
et essais périodiques*



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Contents

Page

Foreword.....	iv
1 Scope.....	1
2 Normative references	1
3 Intervals between periodic inspections and tests	1
4 List of procedures for periodic inspections and tests.....	2
5 Identification of cylinder and preparation for inspections and tests	2
6 Depressurization and de-valving procedures	3
7 External visual inspection.....	3
8 Check of internal condition.....	4
9 Supplementary tests.....	4
10 Inspection of cylinder neck.....	5
11 Pressure test or ultrasonic examination	5
12 Inspection of valve and other accessories.....	16
13 Replacement of cylinder parts.....	16
14 Cylinder repairs	16
15 Final operations	18
16 Rejection and rendering cylinder unserviceable	20
Annex A (informative) Periodic inspection and test periods	21
Annex B (normative) Description, evaluation of defects and conditions for rejection of seamless steel gas cylinders at the time of visual inspection	22
Annex C (informative) List of gases corrosive to cylinder material	27
Annex D (normative) Procedure to be adopted when de-valving and/or when it is suspected that a cylinder valve is obstructed.....	28
Annex E (informative) Volumetric expansion testing of gas cylinders.....	31
Annex F (informative) Inspection and maintenance of valves and their junctions — Recommended procedures.....	39
Annex G (informative) Test date rings for gas cylinders.....	40
Bibliography	41

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 6406 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 4, *Operational requirements for gas cylinders*.

This second edition cancels and replaces the first edition (ISO 6406:1992), which has been technically revised.

Gas cylinders — Seamless steel gas cylinders — Periodic inspection and testing

1 Scope

This International Standard deals with seamless steel 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; it also applies, as far as practical, to cylinders of less than 0,5 l water capacity.

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

This International Standard does not apply to periodic inspection and testing of acetylene cylinders or composite cylinders with steel liners.

2 Normative references

The following referenced documents are indispensable for the application 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 9712:—¹⁾, *Non-destructive testing — Qualification and certification of personnel*

ISO 11114-1:1997, *Transportable gas cylinders — Compatibility of cylinder and valve materials with gas contents — Part 1: Metallic materials*

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

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

ISO 13769, *Gas cylinders — Stamp marking*

3 Intervals between periodic inspections and tests

A cylinder shall be due for periodic inspection and test on its first receipt of a filler following the expiry of the interval established in accordance with the requirements of the *United Nations Recommendations on the Transport of Dangerous Goods — Model Regulations* or as specified by national or international authorities (see Annex A).

Provided the cylinder has been subjected to normal conditions of use and has not been subjected to abusive and abnormal conditions that would render the cylinder unsafe, there is no general requirement for the user to return a gas cylinder before the contents have been used even though the periodic inspection and test interval may have lapsed.

1) To be published. (Revision of ISO 9712:1999)

It is the responsibility of the owner or user to submit the cylinder for periodic inspection and test within the interval specified by national or international authorities or as specified in the relevant cylinder design standard if this is shorter.

4 List of procedures for periodic inspections and tests

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

- a) identification of cylinder and preparation for inspection and tests (Clause 5);
- b) depressurization and de-valving (Clause 6);
- c) external visual inspection (Clause 7);
- d) check of internal condition (Clause 8);
- e) supplementary tests (Clause 9);
- f) inspection of cylinder neck (Clause 10);
- g) pressure test or ultrasonic examination (Clause 11);
- h) inspection of valve and other accessories (Clause 12);
- i) replacement of cylinder parts (Clause 13);
- j) cylinder repairs (Clause 14);
- k) final operations (Clause 15);
- l) rejection and rendering cylinder unserviceable (Clause 16).

It is recommended that the procedures a) to l) be performed in the sequence listed. In particular, the check of internal condition [d)] should be carried out before the pressure test or before the ultrasonic examination [g)].

Cylinders that fail an inspection or test shall be rejected (see Clause 16). Where a cylinder passes the above-listed procedures but the condition of the cylinder remains in doubt, additional tests shall be performed to confirm its suitability for continued service (see Clause 9) or the cylinder shall be rendered unserviceable.

Depending on the reason for rejection, some cylinders may be recovered (see Annex B).

The inspections and tests shall be carried out only by persons who are competent in the subject and authorized under the relevant regulations.

Mechanical properties of steel cylinders may be affected by heat exposure. Therefore, the maximum temperature for any operation shall be limited in accordance with the manufacturer's recommendation.

5 Identification of cylinder and preparation for inspections and tests

Before any work is carried out, the relevant cylinder data and its contents and ownership shall be identified (e.g. from the labelling and stamping, see ISO 13769). Cylinders with incorrect or illegible markings or unknown gas contents shall be set aside for special handling.

If the contents are identified as hydrogen or other embrittling gas, only those cylinders manufactured or qualified as hydrogen cylinders shall be used for that service. It shall be checked that the cylinder is



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