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**Gas cylinders — Refillable welded
aluminium-alloy cylinders — Design,
construction and testing**

*Bouteilles à gaz — Bouteilles rechargeables soudées en alliage
d'aluminium — Conception, construction et essais*



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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.

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 20703 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 3, *Cylinder design*.

This International Standard has been prepared to address the general requirements in Section 6.2.1 of the UN model regulations for the transportation of dangerous goods ST/SG/AC.10/1/Rev.13. It is intended to be used under a variety of regulatory regimes but has been written so that it is suitable for use with the conformity assessment system in paragraph 6.2.2.5 of the above mentioned model regulations.

Introduction

The purpose of this International Standard is to provide a specification for the design, manufacture, inspection and approval of refillable, transportable, welded aluminium-alloy gas cylinders. The specifications given are based on knowledge of, and experience with, materials, design requirements, manufacturing processes and control during manufacture of cylinders in common use in the countries of the participating members.

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Gas cylinders — Refillable welded aluminium-alloy cylinders — Design, construction and testing

1 Scope

This International Standard specifies minimum requirements for the material, design, construction and workmanship, manufacturing processes and tests at manufacture of refillable, transportable, welded aluminium-alloy gas cylinders of water capacities from 0,5 l up to and including 150 l, and of a test pressure not greater than 60 bar (6 MPa) for compressed, liquefied and dissolved gases.

This International Standard includes requirements for spherical receptacles and cylinders made from seamless bodies with welded non-pressure-bearing attachments such as shrouds and foot-rings.

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 2107, *Aluminium and aluminium alloys — Wrought products — Temper designations*

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

ISO 6892, *Metallic materials — Tensile testing at ambient temperature*

ISO 7438, *Metallic materials — Bend test*

ISO 7866:1999, *Gas cylinders — Refillable seamless aluminium alloy gas cylinders — Design, construction and testing*

ISO 9606-2, *Qualification test of welders — Fusion welding — Part 2: Aluminium and aluminium alloys*

ISO 10042:2005, *Welding — Arc-welded joints in aluminium and its alloys — Quality levels for imperfections*

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

ISO 11117, *Gas cylinders — Valve protection caps and valve guards for industrial and medical gas cylinders — Design, construction and tests*

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

ISO 13769, *Gas cylinders — Stamp marking*

ISO 15614-2:2005, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 2: Arc welding of aluminium and its alloys*