INTERNATIONAL STANDARD

ISO 7866

Second edition
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Gas cylinders — Refillable seamless aluminium alloy gas cylinders — Design, construction and testing

Bouteilles à gaz — Bouteilles à gaz sans soudure en alliage d'aluminium destinées à être rechargées — 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 7866 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 3, and by Technical Committee CEN/TC 23, *Transportable gas cylinders* in collaboration.

This second edition cancels and replaces the first edition (ISO 7866:1999), which has been technically revised.

The following significant technical changes have been carried out:

— a new subclause (11.7) has been added to address unacceptable manufacturing defects and unacceptable surface features at the time of manufacture and changes have been made to other subclauses to compliment the new subclause;

— terms and definitions and the symbols have been revised;

— terminology changes included: “stress” changed to “strength”;

— various editorial errors were corrected;

— equipment calibration requirements were added;

— defining "defect" as a feature caused by the manufacturing/manufacturer; and

— defining "imperfection" as damage or feature not caused by manufacturing/manufacturer.

Introduction

The purpose of this International Standard is to provide a specification for the design, manufacture, inspection and testing of a seamless aluminium alloy gas cylinder for worldwide usage. The objective is to balance design and economic efficiency against international acceptance and universal utility.

This International Standard aims to eliminate the concern about climate, duplicate inspections and restrictions currently existing because of lack of definitive International Standards. This International Standard should not be construed as reflecting on the suitability of the practice of any nation or region.

Following publication, this International Standard will be submitted for reference in the UN Recommendations on the Transport of Dangerous Goods – Model Regulations.

Gas cylinders — Refillable seamless aluminium alloy gas 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 time of manufacture of refillable seamless aluminium alloy gas cylinders of water capacities up to and including 150 litres for compressed, liquefied and dissolved gases for worldwide use (normally up to +65 °C).

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

ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T)*

ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

ISO 7438, *Metallic materials — Bend test*

ISO 7539-6:2011, *Corrosion of metals and alloys — Stress corrosion testing — Part 6: Preparation and use of pre-cracked specimens for tests under constant load or constant displacement*

ISO 10461, *Gas cylinders — Seamless aluminium-alloy gas cylinders — Periodic inspection and testing*

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

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

ISO 13769, *Gas cylinders — Stamp marking*

3 Terms and definitions

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

3.1
artificial ageing
heat treatment process in which the solute phase is precipitated to give an increased yield strength and tensile strength

3.2
bar·litres
product of the test pressure (in bars) and the water capacity (in litres)