

INTERNATIONAL STANDARD

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Refillable welded steel gas cylinders

Bouteilles à gaz soudées en acier destinées à être rechargées



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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 4706 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Refillable welded steel gas cylinders

0 Introduction

The purpose of this International Standard is to facilitate agreement on the design and manufacture of welded steel gas cylinders in all countries. The specifications given are based on knowledge of, and experience with, materials, design requirements, manufacturing processes and control at manufacture of cylinders in common use in the countries of the ISO member bodies.

With respect to those aspects concerning construction materials, approval of design rules and inspection during manufacture which are subject to national or international regulations, it is necessary for interested parties to ensure that, in the practical application of this International Standard, the requirements of the relevant authority are also satisfied.

1 Scope and field of application

This International Standard gives minimum requirements for certain aspects concerning material, design, construction and workmanship, procedure and test at manufacture of refillable welded steel gas cylinders of a test pressure not greater than 75 bar¹⁾, and of water capacities from 1 L up to and including 150 L for compressed, liquefied or dissolved gases, exposed to ambient temperatures.

2 References

ISO 2604, *Steel products for pressure purposes — Quality requirements*.

ISO 3166, *Codes for the representation of names of countries*.

ISO 4978, *Flat rolled steel products for welded gas cylinders*.

ISO 6892, *Metallic materials — Tensile testing*.

ISO 7438, *Metallic materials — Bend test*.

3 Definitions and symbols

3.1 Definitions

3.1.1 yield stress : See ISO 6892.

Throughout this International Standard, the term "yield stress" means the upper yield stress, R_{eH} , or, for steels that do not exhibit a defined yield, the 0,2 % proof stress (non-proportional elongation), $R_{p0,2}$.

3.1.2 normalizing : Heat treatment in which a finished cylinder is heated to a uniform temperature above the upper critical point (AC_3) of the steel and then cooled in still air.

3.1.3 stress relieving : Heat treatment given to the finished cylinder, the object of which is to reduce the residual stresses without altering the metallurgical structure of the steel.

3.2 Symbols

a : Calculated minimum thickness, in millimetres, of the cylindrical shell.

a_b : Minimum thickness, in millimetres, of the cylindrical shell (including any corrosion allowance) guaranteed by the manufacturer.

A : Percentage elongation after fracture.

b : Calculated minimum thickness, in millimetres, of the end.

C : Shape factor (see figure 1).

D : Outside diameter, in millimetres, of the cylinder as given in the design drawing (see figure 4).

h : Height, in millimetres, of the cylindrical part of the end (see figure 4).

H : Outside height, in millimetres, of the domed part of the end (see figure 4).

J : Stress reduction factor.

L : Length, in millimetres, of the cylinder.

1) 1 bar = 10^5 Pa = 10^5 N/m²