SLOVENSKI STANDARD
SIST EN ISO 9809-2:2010

01-november-2010

Nadomešča:
SIST EN 1964-2:2002

Plinske jeklenke - Ponovno polnljive plinske jeklenke iz celega - Konstruiranje, izdelava in preskus - 2. del: Jeklenke iz jekel za poboljšanje z natezno trdnostjo, enako ali večjo od 1100 MPa (ISO 9809-2:2010)

Gas cylinders - Refillable seamless steel gas cylinders - Design, construction and testing - Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa (ISO 9809-2:2010)

Gasflaschen - Wiederbefüllbare, nahtlose Gasflaschen aus Stahl - Gestaltung, Konstruktion und Prüfung - Teil 2: Flaschen aus vergütetem Stahl mit einer Zugfestigkeit größer oder gleich 1 100 MPa (ISO 9809-2:2010)

Bouteilles a gaz - Bouteilles a gaz rechargeables en acier sans soudure - Conception, construction et essais - Partie 2: Bouteilles en acier trempé et revenu ayant une résistance a la traction supérieure ou égale a 1 100 MPa (ISO 9809-2:2010)

Ta slovenski standard je istoveten z: **EN ISO 9809-2:2010**

ICS:

23.020.30	Tlačne posode, plinske jeklenke	Pressure vessels, gas cylinders

SIST EN ISO 9809-2:2010 **en,fr**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 9809-2

April 2010

ICS 23.020.30

Supersedes EN 1964-2:2001

English Version

Gas cylinders - Refillable seamless steel gas cylinders - Design, construction and testing - Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa (ISO 9809-2:2010)

Bouteilles à gaz - Bouteilles à gaz rechargeables en acier sans soudure - Conception, construction et essais - Partie 2: Bouteilles en acier trempé et revenu ayant une résistance à la traction supérieure ou égale à 1 100 MPa (ISO 9809-2:2010)

Gasflaschen - Wiederbefüllbare nahtlose Gasflaschen aus Stahl - Gestaltung, Konstruktion und Prüfung - Teil 2: Flaschen aus vergütetem Stahl mit einer Zugfestigkeit größer als oder gleich 1 100 MPa (ISO 9809-2:2010)

This European Standard was approved by CEN on 18 March 2010.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN ISO 9809-2:2010: E

Contents

Page

Foreword

This document (EN ISO 9809-2:2010) 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 2010, and conflicting national standards shall be withdrawn at the latest by October 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1964-2:2001.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For Specific European requirements, see normative Annex NA, which is an integral part of this document.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 9809-2:2010 has been approved by CEN as a EN ISO 9809-2:2010 without any modification.

Annex NA
(normative)
Specific European requirements

NA.1 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.

EN 473, *Non-destructive testing — Qualification and certification of NDT personnel — General principles*

EN ISO 11114-4, *Transportable gas cylinders — Compatibility of cylinder and valve materials with gas contents — Part 4: Test methods for selecting metallic materials resistant to hydrogen embrittlement*

EN ISO 13769, *Gas cylinders — Stamp marking*

NA.2 Technical requirements

With reference to the clauses in the main body of the text, the following additional requirements shall apply:

5 Inspection and testing

The following informative note shall be added to Clause 5:

“NOTE The conformity of cylinders shall be assessed in accordance with the regulations in force at the time of manufacture. RID/ADR/ADN includes requirements for conformity assessment consisting of type approval, supervision of manufacture and initial inspection and test. If conformity is assessed in accordance with Council Directive 99/36/EC on transportable pressure equipment (TPED), modules B+D or B+F should be used. If other modules are used, the cylinders will not be in conformity with this standard and the number of this standard shall not be marked.”

11.2 Hydraulic test

11.2.2 Volumetric expansion test

"NOTE The initial inspection and tests regarding hydraulic test are regulated by RID, ADR which take precedence over Clause 11.2.2.

13 Marking

Marking shall be in accordance with EN ISO 13769.

"NOTE The marking of gas cylinders is regulated by RID, ADR and ADN which take precedence over any clause in this standard. The European Directive on the TPED includes additional marking requirements (π-marking). It is important to know that these provisions are subject to regular revisions. This may lead to temporary noncompliance with EN ISO 13769.”

Annex A

Annex A shall be taken as normative.

B.2 General requirements

The second paragraph shall be replaced by the following: “The operation of the test equipment shall be by personnel certified at least to level 1 of EN 473 and supervised by qualified and experienced personnel certified to level 2 or level 3 of EN 473.

Additionally the following note shall be added to the end of this clause:

"NOTE As it is considered that the qualifications of personnel according to EN 473 and ISO 9712 are comparable, certification of the personnel to either standard should be accepted.”

INTERNATIONAL STANDARD

ISO 9809-2

Second edition
2010-04-15

Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing —

Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa

Bouteilles à gaz — Bouteilles à gaz rechargeables en acier sans soudure — Conception, construction et essais —

Partie 2: Bouteilles en acier trempé et revenu ayant une résistance à la traction supérieure ou égale à 1 100 MPa

Reference number
ISO 9809-2:2010(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

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 9809-2 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 3, *Cylinder design*.

This second edition cancels and replaces the first edition (ISO 9809-2:2000), which has been technically revised.

a) the reduction of maximum sulfur content in 6.2.2 from 0,010 % to 0,005 %, which is now applicable to all strength levels;

b) the note in 7.3 regarding limitation of the F factor was deleted (as required by the United Nations *Recommendations on the Transport of Dangerous Goods: Model Regulations*);

c) the modification of provisions for ultrasonic examination in 8.4 to include ultrasonic examination on the cylindrical area to be closed, prior to the forming process;

d) the addition of the requirement of a base check according to 9.2.6 for all cylinder types during prototype testing;

e) the addition of the requirement of a base check according to 9.2.6 for cylinders made from continuously cast billet material during batch testing.

ISO 9809 consists of the following parts, under the general title *Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing*:

— *Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa*

— *Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa*

— *Part 3: Normalized steel cylinders*

Stainless steel cylinders with tensile strength of less than 1 100 MPa will form the subject of a part 4.

Introduction

This part of ISO 9809 provides a specification for the design, manufacture, inspection and testing of a seamless steel cylinder for worldwide usage. The objective is to balance design and economic efficiency against international acceptance and universal utility.

ISO 9809 (all parts) aims to eliminate existing concern; about climate, duplicate inspections and restrictions because of a lack of definitive International Standards. This part of ISO 9809 should not be construed as reflecting on the suitability of the practice of any nation or region.

This part of ISO 9809 addresses the general requirements on design, construction and initial inspection and test of pressure receptacles of the United Nations *Recommendations on the Transport of Dangerous Goods: Model Regulations*.

It is intended to be used under a variety of regulatory regimes, but is suitable for use with the conformity assessment system in 6.2.2.5 of the above-mentioned Model Regulations.

Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing —

Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa

1 Scope

This part of ISO 9809 specifies minimum requirements for the material, design, construction and workmanship, manufacturing processes, examination and testing at manufacture of refillable quenched and tempered seamless steel gas cylinders of water capacities from 0,5 l up to and including 150 l for compressed, liquefied and dissolved gases. This part of ISO 9809 is applicable to cylinders with a maximum tensile strength $R_{ma} \geqslant 1\,100$ MPa. It is not applicable to cylinders with $R_{ma,\,max} > 1\,300$ MPa for diameters > 140 mm and guaranteed wall thicknesses $a' \geqslant 12$ mm and $R_{ma,\,max} > 1\,400$ MPa for diameters $\leqslant 140$ mm and guaranteed wall thicknesses $a' \geqslant 6$ mm, because beyond these limits, additional requirements can apply.

NOTE 1 If desired, cylinders of water capacity less than 0,5 l and between 150 l and 500 l can be manufactured and certified to be in compliance with this part of ISO 9809.

NOTE 2 For quenched and tempered steel cylinders with maximum tensile strength less than 1 100 MPa, see ISO 9809-1. For normalized steel cylinders, see ISO 9809-3.

NOTE 3 Grades and strength ranges of steels used for these types of cylinders might not be compatible with some gas service (see 6.1.4) and operational conditions.

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 148-1, *Metallic materials — Charpy pendulum impact test — Part 1: Test method*

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 9329-1, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 1: Unalloyed steels with specified room temperature properties*

ISO 9712, *Non-destructive testing — Qualification and certification of personnel*