Transportable gas cylinders - Specification for the design and construction of refillable transportable seamless steel gas cylinders of water capacities from 0,5 litre up to and including 150 litres - Part 3: Cylinders made of seamless stainless steel with an Rm value of less than 1100 MPa

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EESTI STANDARDI EESSÕNA

Käesolev Eesti standard EVS-EN 1964-3:2000 sisaldab Euroopa standardi EN 1964-3:2000 ingliskeelset teksti. Käesolev dokument on jõustatud 08.08.2000 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 1964-3:2000 consists of the English text of the European standard EN 1964-3:2000. This document is endorsed on 08.08.2000 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

NATIONAL FOREWORD

Käsitlusala: The standard sets out minimum requirements for the material, design, construction and workmanship, manufacturing processes and tests at manufacture of refillable seamless stainless steel gas cylinders of water capacities from 0,5 L up to and including 150 L for compressed, liquefiable and dissolved gases. This standard (Part 3) is applicable to cylinders with a maximum Rm value of 1100 N/mm2.	**Scope:** The standard sets out minimum requirements for the material, design, construction and workmanship, manufacturing processes and tests at manufacture of refillable seamless stainless steel gas cylinders of water capacities from 0,5 L up to and including 150 L for compressed, liquefiable and dissolved gases. This standard (Part 3) is applicable to cylinders with a maximum Rm value of 1100 N/mm2.

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English version

Transportable gas cylinders

Specification for the design and construction of refillable transportable seamless steel gas cylinders of water capacities from 0,5 litre up to and including 150 litres

Part 3: Cylinders made of seamless stainless steel with an R_m value of less than 1100 MPa

Bouteilles à gaz transportables – Spécifications pour la conception et la fabrication de bouteilles à gaz rechargeables et transportables en acier sans soudure, d'une capacité en eau comprise entre 0,5 litre et 150 litres inclus – Partie 3: Bouteilles en acier inoxydable sans soudure ayant une valeur R_m inférieure à 1100 MPa

Ortsbewegliche Gasflaschen – Gestaltung und Konstruktion von nahtlosen wiederbefüllbaren ortsbeweglichen Gasflaschen aus Stahl mit einem Fassungsraum von 0,5 Liter bis einschließlich 150 Liter – Teil 3: Nahtlose Flaschen aus nicht rostendem Stahl mit einem R_m-Wert von weniger als 1100 MPa

This European Standard was approved by CEN on 1999-12-11.

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 Central Secretariat or to any CEN member.

The European Standards exist 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Ref. No. EN 1964-3 : 2000 E

Contents

Foreword

This European Standard has been prepared by 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 August 2000, and conflicting national standards shall be withdrawn at the latest by August 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This European Standard has been submitted for reference into the RID and/or in the technical annexes of the ADR. Therefore in this context the standards listed in the normative references and covering basic requirements of the RID/ADR not addressed within the present standard are normative only when the standards themselves are referred to in the RID and/or in the technical annexes of the ADR.

This standard supports the objectives of EU directives 94/55 and 96/49.

This standard is one of a series of three standards concerning refillable seamless steel gas cylinders of water capacities from 0,5 l up to and including 150 l for compressed, liquefied and dissolved gases:

Part 1: Cylinders made of seamless steel with an R_m value of less than 1100 MPa
Part 2: Cylinders made of seamless steel with an R_m value of 1100 MPa and above
Part 3: Cylinders made of seamless stainless steel with an R_m value of less than 1100 MPa

Introduction

The purpose of this standard is to provide a specification for the design, manufacture, inspection and approval of refillable, transportable seamless steel gas cylinders made of materials belonging to the group generally known as stainless steels.

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 CEN members.

1 Scope

The standard specifies minimum requirements for the material, design, construction and workmanship, manufacturing processes and tests at manufacture of refillable transportable seamless steel gas cylinders of water capacities from 0,5 l up to and including 150 l for compressed, liquefied and dissolved gases. This standard is applicable to cylinders manufactured from stainless steel with an R_m value of less than 1100 MPa.

NOTE This standard is also suitable for the manufacture of cylinders of water capacity less than 0,5 l.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 473	Qualification and certification of NDT personnel - General principles
EN 1089-1:1996	Transportable gas cylinders - Gas cylinder identification (excluding LPG) - Part 1: Stampmarking
EN 10002-1	Metallic materials - Tensile testing - Part 1: Method of test
EN 10003-1	Metallic materials - Brinell hardness test - Part 1: Test method
EN 10028-1	Flat products made of steels for pressure purposes - Part 1: General requirements
EN 10045-1	Metallic materials - Charpy impact test - Part 1: Test method
EN 10052	Vocabulary of heat treatment terms for ferrous products
EN 10088-1	Stainless steels - Part 1: List of stainless steels
EN 10088-2	Stainless steels - Part 2: Technical delivery conditions for sheet/plate and strip for general purposes
EN ISO 3651-2	Determination of resistance to intergranular corrosion of stainless steels - Part 2: Ferritic, austenitic and ferritic-austenitic (duplex) stainless steels - Corrosion test in media containing sulfuric acid (ISO 3651-2:1998)

EN ISO 11114-1:1997 Transportable gas cylinders - Compatibility of cylinder and valve materials with gas contents - Part 1: Metallic materials (ISO 11114-1:1997)

EURONORM 6-55 Bend test for steel

3 Definitions and symbols

For the purposes of this Standard the following definitions and symbols apply:

3.1 Definitions

3.1.1
yield stress
value corresponding to the 0,2 % proof stress, or, for austenitic steels in the solution annealed condition, 1% proof stress.

3.1.2
quenching
hardening heat treatment in which a cylinder, which has been heated to a uniform temperature above the upper critical point (Ac_3, as defined in EN 10052) of the steel, is cooled rapidly in a suitable medium.

3.1.3
tempering
softening heat treatment which follows quenching, in which the cylinder is heated to a uniform temperature below the lower critical point (Ac_1, as defined in EN 10052) of the steel.

3.1.4
solution annealing
softening heat treatment for austenitic steels in which a cylinder is heated to a uniform temperature above the upper critical point (Ac_3, as defined in EN 10052) of the steel followed by rapid cooling.

3.1.5
cryoforming
a process where the cylinder is subjected to a controlled low temperature deformation treatment that results in a permanent increase in strength.

3.1.6
batch
a quantity of up to 200 cylinders, plus cylinders for destructive testing, of the same nominal diameter, thickness, length and design made from the same steel cast and subjected to the same heat treatment for the same duration of time.