

Leekkuumutusest surveanumad. Osa 5: Kontroll ja katsetamine

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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English Version

Unfired pressure vessels - Part 5: Inspection and testing

Réceptacles sous pression non soumis à la flamme - Partie 5
: inspection et contrôles

Unbefeuerte Druckbehälter - Teil 5: Inspektion und Prüfung

This European Standard was approved by CEN on 30 June 2009.

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Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 13445-5:2009) has been prepared by Technical Committee CEN/TC 54 “Unfired pressure vessels”, 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of an identical text or by endorsement, at the latest by *December 2009*, and conflicting national standards shall be withdrawn at the latest by *December 2009*.

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 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 relationship with EU Directive(s), see informative annex ZA, which is an integral part of this document.

This European Standard consists of the following Parts:

- Part 1: *General*.
- Part 2: *Materials*.
- Part 3: *Design*.
- Part 4: *Fabrication*.
- Part 5: *Inspection and testing*.
- Part 6: *Requirements for the design and fabrication of pressure vessels and pressure parts constructed from spheroidal graphite cast iron*.
- CR 13445-7, *Unfired pressure vessels* — Part 7: *Guidance on the use of conformity assessment procedures*.
- Part 8: *Additional requirements for pressure vessels of aluminium and aluminium alloys*.
- CEN/TR 13445-9, *Unfired pressure vessels* — Part 9: *Conformance of EN 13445 series to ISO 16528*

This document supersedes EN 13445-5:2002. This new edition incorporates the Amendments which have been approved previously by CEN members, and the corrected pages up to Issue 36 without any further technical change. Annex Y to EN 13445-1:2009 and Annex Y to this Part provides details of significant technical changes between this European Standard and the previous edition.

Amendments to this new edition may be issued from time to time and then used immediately as alternatives to rules contained herein. It is intended to deliver a new Issue of EN 13445:2009 each year, consolidating these Amendments and including other identified corrections. Issue 5 (2013-07) consolidates Amendment EN 13445-5:2009/A4:2013; it includes the corrected pages listed in Annex Y.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This Part of this European Standard specifies the inspection and testing of individual and serially produced pressure vessels made of steels in accordance with EN 13445-2:2009.

Special provisions for cyclic operation are given in Annex G of this Part.

Special provisions for vessels or vessel parts working in the creep range are given in Annex F and Annex I of this Part.

NOTE The responsibilities of parties involved in the conformity assessment procedures are given in Directive 97/23/EC. Guidance on this can be found in CR 13445-7.

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 (including amendments).

EN 287-1:2011, *Qualification test of welders — Fusion welding — Part 1: Steels*

EN 583-4:2002, EN 583-4:2002/A1:2003, *Non-destructive testing — Ultrasonic examination — Part 4: Examination for discontinuities perpendicular to the surface*

CEN/TS 764-6:2004, *Pressure equipment — Part 6: Structure and content of operating instructions*

EN 895:1995, *Destructive tests on welds in metallic materials — Transverse tensile test*

EN 1418:1997, *Welding personnel — Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanized and automatic welding of metallic materials*

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EN 1779:1999, EN 1779:1999/A1:2003, *Non-destructive testing — Leak testing — Criteria for method and technique selection*

EN 13445-1:2009, *Unfired pressure vessels — Part 1: General*

EN 13445-2:2009, *Unfired pressure vessels — Part 2: Materials*

EN 13445-3:2009, *Unfired pressure vessels — Part 3: Design*

EN 13445-4:2009, *Unfired pressure vessels — Part 4: Fabrication*

EN ISO 4063:2010, *Welding and allied processes — Nomenclature of processes and reference numbers (ISO 4063:2009, Corrected version 2010-03-01)*

EN ISO 5817:2007, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections (ISO 5817:2003)*

EN ISO 6520-1:2007, *Welding and allied processes — Classification of geometric imperfections in metallic materials — Part 1: Fusion welding (ISO 6520-1:2007)*

EN ISO 9712:2012, *Non-destructive testing - Qualification and certification of NDT personnel (ISO 9712:2012)*

EN ISO 17635:2010, *Non-destructive testing of welds — General rules for metallic materials (ISO 17635:2010)*

3 Terms and definitions

For the purposes of this European Standard the following terms and definitions apply.

3.1

design review

procedure by which a manufacturer ascertains and declares that the design meets the requirements of this standard

3.2

design approval

procedure by which a responsible authority ascertains that the design meets the requirements of this standard

3.3

testing group

grouping which determines the appropriate level of non-destructive testing (NDT) on a welded joint

NOTE There are four testing groups.

3.4

inspection

survey activity which assesses the compliance of the pressure vessel to the technical specification

NOTE It is a major activity, undertaken mainly by the manufacturer during design, manufacture and testing of equipment. It can be complemented by inspection by other parties. Inspection includes the assessment of testing activities.

3.5

testing

procedure used to verify vessel compliance with the technical requirements of this standard by one or more tests