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NSAI Standards

Irish Standard
I.S. EN 13445-5:2014

# Unfired pressure vessels - Part 5: Inspection and testing

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**I.S. EN 13445-5:2014**

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| *This document is based on:* | *Published:* |
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## National Foreword

I.S. EN 13445-5:2014 is the adopted Irish version of the European Document EN 13445-5:2014, Unfired pressure vessels - Part 5: Inspection and testing

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# Correction Notice

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EUROPÄISCHES KOMITEE FÜR NORMUNG

**EN 13445:2014**

Title: Unfired pressure vessels

Brussels, 2015-07-29

**With reference to the above, please include the following minor editorial correction(s) in the document :**

☒ for the following procedure :
- ☐ Enquiry
- ☐ Parallel Enquiry (☐ ISO/ ☐ CEN Lead )
- ☐ Formal Vote
- ☐ Parallel Formal Vote (☐ ISO/ ☐ CEN Lead )
- ☐ UAP
- ☐ Comments before voting meeting (ENV)
- ☐ 2-year Enquiry (ENV)
- ☐ COCOR Vote
- ☒ Publication
- ☐ Parallel Publication (☐ ISO/ ☐ CEN Lead )

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In line with resolution **BT 64/2007** and in co-operation with the **Migration Help Desk**, please note that corrections have been brought to some pages of the documents as listed below.

The following pages have been corrected:

**EN 13445-1:2014** – WI 00054139 - Part 1: General

| English | French | German |
|---|---|---|
| 4 - 5 - 6 - 22 - 36 - 37 - 37a to 37c - 38 | 4 - 5 - 6 - 22 - 36 - 37 - 37a à 37c - 38 | 4 - 5 - 6 - 22 – 36 - 37 - 37a bis - 37c - 38 |

**EN 13445-2:2014** – WI 00054140 - Part 2: Materials

| English | French | German |
|---|---|---|
| 5 - 7 - 11 - 17 - 21 - 22 - 23 - 24 - 25 - 58 - 59 - 60 - 61 - 62 - 63 - 64 - 65 - 66 - 67 - 68 - 69 - 70 - 71 - 72 - 73 - 74 - 75 - 76 - 77 - 78 - 79 - 80 - 81 | 5 - 7 - 11 - 17 - 21 - 22 - 23 - 24 - 25 - 58 - 59 - 60 - 61 - 62 - 63 - 64 - 65 - 66 - 67 - 68 - 69 - 70 - 71 - 72 - 73 - 74 - 75 - 76 - 77 - 78 - 79 - 80 - 81 | 5 - 7 - 11 - 17 - 21 - 22 - 23 - 24 - 25 - 58 - 59 - 60 - 61 - 62 - 63 - 64 - 65 - 66 - 67 - 68 - 69 - 70 - 71 - 72 - 73 - 74 - 75 - 76 - 77 - 78 - 79 - 80 - 81 |

**EN 13445-3:2014** – WI 00054138 - Part 3: Design

| English | French | German |
|---|---|---|
| 7 - 102 - 142 - 185 - 614 - 628 - 632a to 632b - 864 | 7 - 102 - 142 - 185 - 549 - 614 - 628 - 631 - 632a à 632b - 696 - 815 - 864 | 7 - 102 - 142 - 185 - 405 - 460 - 614 - 628 - 632a bis 632b - 864 |

**EN 13445-4:2014** – WI 00054141 - Part 4: Fabrication

| English | French | German |
|---|---|---|
| 6 - 67 | 6 - 67 | 6 - 67 |

**EN 13445-5:2014** – WI 00054135 - Part 5: Inspection and testing

| English | French | German |
|---|---|---|
| 6 - 23 - 24 - 77 | 6 - 23 - 24 - 77 | 6 - 19 - 23 - 24 - 77 |

**EN 13445-6:2014** – WI 00054136 - Part 6: Requirements for the design and fabrication of pressure vessels and pressure parts constructed from spheroidal graphite cast iron

| English | French | German |
|---|---|---|
| 6 - 53 | 6 - 53 | 6 - 53 |

**EN 13445-8:2014**– WI 00054137 - Part 8: Additional requirements for pressure vessels of aluminium and aluminium alloys

| English | French | German |
|---|---|---|
| 2 - 3 - 5 - 6 - 6a - 7 - 8 - 9 - 10 - 11 - 11a - 12 - 12a - 13 - 14 - 15 - 16 - 19 - 20 - 21 - 24a to 24f - 25 - 26 - 27 | 2 - 3 - 5 - 6 - 6a - 7 - 8 - 9 - 10 - 11 - 11a - 12 - 12a - 13 - 14 - 15 - 16 - 19 - 20 - 21 - 24a à 24f - 25 - 26 - 27 | 2 - 3 - 5 - 6 - 6a - 7 - 8 - 9 - 10 - 11 - 11a - 12 - 12a - 13 - 14 - 15 - 16 - 19 - 20 - 21 - 24a bis 24f - 25 - 26 - 27 |

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# EN 13445-5

September 2014

ICS 23.020.30

Supersedes EN 13445-5:2009

English Version

# Unfired pressure vessels - Part 5: Inspection and testing

Récipients sous pression non soumis à la flamme - Partie 5: Inspection et contrôle

Unbefeuerte Druckbehälter - Teil 5: Inspektion und Prüfung

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COMITÉ EUROPÉEN DE NORMALISATION
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Ref. No. EN 13445-5:2014 E

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EN 13445-5:2014 (E)
Issue 2 (2015-07)

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# Foreword

This document (EN 13445-5:2014) 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 2014, and conflicting national standards shall be withdrawn at the latest by December 2014.

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*

Although these Parts may be obtained separately, it should be recognised that the Parts are inter-dependant. As such the manufacture of unfired pressure vessels requires the application of all the relevant Parts in order for the requirements of the Standard to be satisfactorily fulfilled.

Corrections to the standard interpretations where several options seem possible are conducted through the Migration Help Desk (MHD). Information related to the Help Desk can be found at http://www.unm.fr (en13445@unm.fr). A form for submitting questions can be downloaded from the link to the MHD website. After subject experts have agreed an answer, the answer will be communicated to the questioner. Corrected pages will be given specific issue number and issued by CEN according to CEN Rules. Interpretation sheets will be posted on the website of the MHD.

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

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**EN 13445-5:2014 (E)**
**Issue 2 (2015-07)**

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 13445:2014 each year, consolidating these Amendments and including other identified corrections. Issue 2 (2015-07) 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, Croatia, 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.

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## 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 13445-2:2014.

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

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

CEN/TR 764-6:2012, *Pressure equipment — Part 6: Structure and content of operating instructions*

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

EN 13445-1:2014, *Unfired pressure vessels — Part 1: General*

EN 13445-2:2014, *Unfired pressure vessels — Part 2: Materials*

EN 13445-3:2014, *Unfired pressure vessels — Part 3: Design*

EN 13445-4:2014, *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 4136:2012, *Destructive tests on welds in metallic materials — Transverse tensile test* (ISO 4136:2012)

EN ISO 5817:2014, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) – Quality levels for imperfections* (ISO 5817:2014)

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 14732:2013, *Welding personnel — Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials* (ISO 14732:2013)

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

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1) EN ISO 9606-1 has been published in 2013 replaces EN 287-1. CEN has decided to have a transition period for EN 287-1. As a consequence, EN 287-1 is valid until October 2015.

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