



SLOVENSKI STANDARD
SIST EN 13445-5:2002/A5:2007

01-januar-2007

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Unfired pressure vessels - Part 5: Inspection and testing

Unbefeuerte Druckbehälter - Teil 5: Inspektion und Prüfung

Réipients sous pression non soumis a la flamme - Partie 5: Inspection et contrôles

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Ta slovenski standard je istoveten z: EN 13445-5:2002/A5:2006

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ICS:

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English Version

Unfired pressure vessels - Part 5: Inspection and testing

Réceptifs sous pression non soumis à la flamme - Partie
5: Inspection et contrôles

Unbefeuerte Druckbehälter - Teil 5: Inspektion und Prüfung

This amendment A5 modifies the European Standard EN 13445-5:2002; it was approved by CEN on 27 April 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant 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.

This amendment 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, 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.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Foreword

This document (EN 13445-5:2002/A5:2006) has been prepared by Technical Committee CEN/TC 54 “Unfired pressure vessels”, the secretariat of which is held by BSI.

This Amendment to the European Standard EN 13445-5:2002 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2007, and conflicting national standards shall be withdrawn at the latest by February 2007.

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.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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.

This document includes the text of the amendment itself. The corrected pages of EN 13445-5 will be delivered as issue xx of the standard.

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2 Normative references

Replace:

prEN ISO 5817:2002, *Welding – Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) – Quality levels for imperfections (ISO/DIS 5817:2002)*.

By:

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

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6.6.3.2 Applicable non-destructive testing techniques

Replace by:

Table 6.6.3-1 shows the method, characterisation and acceptance criteria. This table is based on EN 12062:1997 and also on Quality level C of EN ISO 5817:2003.

Table 6.6.3-1 — NDT methods, techniques, characterisation, acceptance criteria

NDT Methods (abbreviations)	Techniques	Characterisation	Acceptance Criteria
Visual inspection (VT)	EN 970:1997	EN ISO 5817:2003 (surface imperfections)	EN ISO 5817:2003 (surface imperfections Acceptance level C) ^c
Radiography (RT)	EN 1435:1997 class B	EN 12517:1998 and additional table 6.6.4-1	EN 12517:1998, Acceptance level 2, and Table 6.6.4-1
Ultrasonic Testing(UT)	EN 1714:1997 at least Class B ^a	EN 1713:1998 ^b	EN 1712:1997 Acceptance level 2 + no planar imperfections accepted
Penetrant Testing (PT)	EN 571-1:1997 + testing parameters of EN 1289:1998, Table A.1	EN 1289:1998	EN 1289:1998, Acceptance level 2X
Magnetic Particle Testing (MT)	EN 1290:1998 + testing parameters of EN 1291:1998, Table A.1	EN 1291:1998	EN 1291:1998, Acceptance level 2X
^a For thickness > 100 mm, Class C or Class D is required. ^b EN 1713:1998 is a recommendation only. ^c Additional requirements for the following imperfections: - stray arc (601) – removal plus 100 % MT or PT to ensure no imperfection; - spatter (602) – weld spatter shall be removed from all pressure parts and load carrying attachment welds. Isolated non systematic spatter is permitted on components made of group 1 materials; - torn surface (603), grinding mark (604), chipping mark (605) shall be ground to provide a smooth transition; - underflushing (606) shall not be permitted. Any local underflushing shall be related to design characteristics (calculated thickness + corrosion allowance).			

Annex A
(normative)

Inspection and testing of serially produced pressure vessels
Model acceptance

A.7.2.2 First vessels in each batch

In the English version, replace the reference to Table 6.5.2.2-1 by the reference to Table 6.6.3-2:

- a) At least 50 % of all welds shall be tested by the methods specified in Table 6.6.3-2 and the acceptance criteria given in Table 6.6.3-1;

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Annex G (normative)

Inspection and testing of pressure vessels subject to cyclic loads

G.1 General

Replace by:

To avoid fatigue damage in case of cyclic loading, more severe inspection and testing requirements are needed for critical areas of the pressure vessels, i.e. areas that can limit the lifetime of the vessel for $n_{eq} > 500$ full range or equivalent pressure cycles (See EN 13445-3:2002, Clause 17.2.16 or 18.10.5 for definition of critical areas).

To reflect this, Quality Level B of EN ISO 5817:2003 is the reference quality level for maximum allowable welds imperfections in these critical areas.

For cyclic loaded vessels the absence of surface imperfections (no undercut, no root concavity, no lack of penetration for full penetration welds) and the necessity of smooth transitions are essential. Only smooth transitions are allowed, see EN 13445-3:2002, Figure 18-7.

Similarly, shape imperfections such as peaking are absolutely critical and the maximum permissible peaking of EN 13445-4, Clause 5.4.4 or the value permitted in the fatigue analysis of clauses 17 and 18 of EN 13445-3:2002 and referred to below, shall not be exceeded.

These testing requirements are in addition to the general vessel testing requirements based on the vessel testing groups 1, 2 or 3.

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All critical areas shall be clearly designated in the design documentation, see EN 13445-3:2002 and Clause 5 of EN 13445-5:2002.