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Unfired pressure vessels - Part 2: Materials

Unbefeuerte Druckbehälter - Teil 2: Werkstoffe

Réipients sous pression non soumis a la flamme - Partie 2: Matériaux



Ta slovenski standard je istoveten z: **EN 13445-2:2002/A2:2006**

[SIST EN 13445-2:2002/A2:2007](#)

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**SIST EN 13445-2:2002/A2:2007**                    **en**

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English Version

## Unfired pressure vessels - Part 2: Materials

Réipients sous pression non soumis à la flamme - Partie  
2: Matériaux

Unbefeuerte Druckbehälter - Teil 2: Werkstoffe

This amendment A2 modifies the European Standard EN 13445-2:2002; it was approved by CEN on 21 October 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

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## Foreword

This document (EN 13445-2:2002/A2:2006) 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 13445-2:2002 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2007, and conflicting national standards shall be withdrawn at the latest by June 2007.

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.

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 the United Kingdom.

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The amendment is based on EN 13445-2:2002 up to issue 16 (October 2005).

The document includes the text of the amendment itself. The corrected pages of EN 13445-2 will be delivered as issue 24 of the standard.

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## 1 Scope

*Delete:*

This Part of the European Standard does not give provisions for material requirements and material selection for vessels designed using Design by Analysis – Direct Route (DBA) of EN 13445-3:2002, Annex B.

## 2 Normative references

*Update the date for the following reference:*

EN 10204:2004, *Metallic products — Types of inspection documents.*

## 4 Requirements for materials to be used for pressure-bearing parts

### 4.1.2

*Add at the end of the first paragraph:*

Certificate of specific control (3.1 or 3.2 certificate) shall be required for all steels if Design by Analysis – Direct Route according to Annex B of EN 13445-3:2002 is used.

*Update the date for EN 10204 to 2004 and the date of EN 764-5 to 2002.*

Modify 4.1.7 as follows:

**4.1.7** The chemical composition of steels intended for welding or forming shall not exceed the values in Table 4.1-1. Line 2 of the table refers to vessels or parts designed using Design by Analysis – Direct Route according to Annex B of EN 13445-3:2002. Exceptions shall be technically justified.

Insert a line 2 in the Table 4.1-1:

Steels (1 to 6 and 9) when DBA – Direct Route is used <sup>c</sup>	0,20	0,025	0,015
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Insert a new footnote <sup>c</sup> at the end of the Table 4.1-1:

<sup>c</sup> In addition the ratio on thickness reduction (ratio of initial thickness of slab/ingot to the thickness of the final plate) shall be equal or greater than:

- 4 for NL2 steels and steels of material group 9;
- 3 for other materials.

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## Annex A (normative)

### Metallic materials for pressure equipment — Grouping system and European standardised steels

**Table A.2-1** (continued)

Addition of P420M, P420ML1, P420ML2, P460M, P460ML1, P460ML2, P690Q, P690QH, P690QL1, P690QL2.  
Add rows 35a to 35f and 53a to 53d:

1 No	2 Product form	3 European Standard	4 Material description	5 Grade	6 Material number	7 Heat treatment <sup>h</sup>	8 Thickness mm		9 Material group to CR ISO 15608	10 Notes
							min.	max.		
35a	plate and strip	EN 10028-5	fine grain steel thermomechanically rolled	P420M	1.8824	M	0	63	2.1	a g
35b	plate and strip	EN 10028-5	fine grain steel thermomechanically rolled	P420ML1	1.8835	M	0	63	2.1	a g
35c	plate and strip	EN 10028-5	fine grain steel thermomechanically rolled	P420ML2	1.8828	M	0	63	2.1	a g
35d	plate and strip	EN 10028-5	fine grain steel thermomechanically rolled	P460M	1.8826	M	0	63	2.1	a g
35e	plate and strip	EN 10028-5	fine grain steel thermomechanically rolled	P460ML1	1.8837	M	0	63	2.1	a g
35f	plate and strip	EN 10028-5	fine grain steel thermomechanically rolled	P460ML2	1.8831	M	0	63	2.1	a g
53a	plate and strip	EN 10028-6	fine grain steel quenched/tempered	P690Q	1.8879	QT	0	150	3.1	a
53b	plate and strip	EN 10028-6	fine grain steel quenched/tempered	P690QH	1.8880	QT	0	150	3.1	a
53c	plate and strip	EN 10028-6	fine grain steel quenched/tempered	P690QL1	1.8881	QT	0	150	3.1	a
53d	plate and strip	EN 10028-6	fine grain steel quenched/tempered	P690QL2	1.8888	QT	0	150	3.1	a



**Annex B**  
(normative)

**Requirements for prevention of brittle fracture**

**B.1 General**

*Add at the end:*

NOTE Developments are in progress in JWG B on the extension of Method 2, using the results of the research programme ECOPRESS [16].

*Add in bibliography:*

[16] Langenberg P., "ECOPRESS – Economical and safe design of pressure vessels applying new modern steels, EPERC Bulletin 9, December 2003.

*Replace the text of Annex ZA with the following:*

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