

# DIN EN 13445-2:2010-12 (E)

## Unfired pressure vessels - Part 2: Materials

---

<b>Contents</b>		<b>Page</b>
Foreword .....		3
<b>1</b>	<b>Scope .....</b>	<b>4</b>
<b>2</b>	<b>Normative references .....</b>	<b>4</b>
<b>3</b>	<b>Terms, definitions, symbols and units .....</b>	<b>6</b>
3.1	Terms and definitions .....	6
3.2	Symbols and units .....	7
<b>4</b>	<b>Requirements for materials to be used for pressure-bearing parts .....</b>	<b>9</b>
4.1	General .....	9
4.2	Special provisions .....	11
4.2.1	Special properties .....	11
4.2.2	Design temperature above 20 °C .....	11
4.2.3	Prevention of brittle fracture .....	12
4.2.4	Design properties in the creep range .....	12
4.2.5	Specific requirements for steels for fasteners .....	12
4.3	Technical delivery conditions .....	13
4.3.1	European Standards .....	13
4.3.2	European Approval for Materials .....	13
4.3.3	Particular material appraisals .....	13
4.3.4	Clad products .....	13
4.3.5	Welding consumables .....	13
4.4	Marking .....	13
<b>5</b>	<b>Requirements for materials to be used for non-pressure parts .....</b>	<b>14</b>
<b>Annex A (normative) Grouping system for steels for pressure equipment .....</b>		<b>15</b>
<b>Annex B (normative) Requirements for prevention of brittle fracture at low temperatures .....</b>		<b>17</b>
<b>Annex C (informative) Procedure for determination of the weld creep strength reduction factor (WCSRF) .....</b>		<b>50</b>
<b>Annex D (informative) Technical delivery conditions for clad products for pressure purposes .....</b>		<b>51</b>
<b>Annex E (informative) European steels for pressure purposes .....</b>		<b>55</b>
<b>Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of the EU Pressure Equipment Directive 97/23/EC .....</b>		<b>80</b>
<b>Bibliography .....</b>		<b>81</b>