



SLOVENSKI STANDARD

SIST EN 12953-2:2012

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Nadomešča:
SIST EN 12953-2:2002

Mnogovodni kotli - 2. del: Materiali za tlačno obremenjene dele in opremo kotla

Shell boilers - Part 2: Materials for pressure parts of boilers and accessories

Großwasserraumkessel - Teil 2: Werkstoffe für drucktragende Kesselteile und Zubehör

Chaudières à tubes de fumée - Partie 2: Matériaux des parties sous pression des chaudières et des accessoires

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EUROPEAN STANDARD
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English Version

Shell boilers - Part 2: Materials for pressure parts of boilers and accessories

Chaudières à tubes de fumée - Partie 2: Matériaux des parties sous pression des chaudières et des accessoires

Großwasserraumkessel - Teil 2: Werkstoffe für drucktragende Kesselteile und Zubehör

This European Standard was approved by CEN on 7 January 2012.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, 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, Turkey and United Kingdom.

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Foreword

This document (EN 12953-2:2012) has been prepared by Technical Committee CEN/TC 269 "Shell and water-tube boilers", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by September 2012, and conflicting national standards shall be withdrawn at the latest by September 2012.

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 supersedes EN 12953-2:2002.

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.

Annex A provides details of significant technical changes between this European Standard and the previous edition.

The European Standard EN 12953 concerning shell boilers consists of the following parts:

- *Part 1: General;*
- *Part 2: Materials for pressure parts of boilers and accessories;*
- *Part 3: Design and calculation for pressure parts;*
- *Part 4: Workmanship and construction of pressure parts of the boiler;*
- *Part 5: Inspection during construction, documentation and marking of pressure parts of the boiler;*
- *Part 6: Requirements for equipment for the boiler;*
- *Part 7: Requirements for firing systems for liquid and gaseous fuels for the boiler;*
- *Part 8: Requirements for safeguards against excessive pressure;*
- *Part 9: Requirements for limiting devices of the boiler and accessories;*
- *Part 10: Requirements for feedwater and boiler water quality;*
- *Part 11: Acceptance tests;*
- *Part 12: Requirements for grate firing systems for solid fuels for the boiler;*
- *Part 13: Operating instructions;*
- CR 12953 Part 14: *Guideline for involvement of an inspection body independent of the manufacturer.*

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Although these parts may be obtained separately, it should be recognized that the parts are interdependent. As such, the design and manufacture of shell boilers requires the application of more than one part in order for the requirements of the European Standard to be satisfactorily fulfilled.

For any questions arising when using these standards the Boiler Helpdesk of CEN/TC 269 may be contacted:

<http://www.boiler-helpdesk.din.de>

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, 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 European Standard specifies the following materials for the pressure bearing parts of shell boilers and equipment of shell boilers (e.g. valves), subjected to internal and external pressure including integral attachments (non pressure bearing parts):

- flat products (plate) and parts formed from flat products (e.g. shell, furnace, dished ends);
- tubes and parts formed from tubes (e.g. bending, elbows, reducers, fittings);
- forgings and cast products ;
- bolting materials;
- welding consumables.

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 1092-1:2007, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 1092-2:1997, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 2: Cast iron flanges*

EN 1515-4:2009, *Flanges and their joints — Bolting — Part 4: Selection of bolting for equipment subject to the Pressure Equipment Directive 97/23/EC*

EN 1561:1997, *Founding — Grey cast irons*

EN 1563:1997, *Founding — Spheroidal graphite cast irons*

EN 1759-1:2004, *Flanges and their joint — Circular flanges for pipes, valves, fittings and accessories, Class designated — Part 1: Steel flanges, NPS 1/2 to 24*

EN 10028-2:2009, *Flat products made of steels for pressure purposes — Part 2: Non-alloy and alloy steels with specified elevated temperature properties*

EN 10028-3:2009, *Flat products made of steels for pressure purposes — Part 3: Weldable fine grain steels, normalized*

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

EN 10213:2007, *Steel castings for pressure purposes*

EN 10216-1:2002, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 1: Non-alloy steel tubes with specified room temperature properties*

EN 10216-2:2002+A2:2007, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 2: Non-alloy and alloy steel tubes with specified elevated temperature properties*

EN 10217-1:2002+A1:2005, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 1: Non-alloy steel tubes with specified room temperature properties*

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EN 10217-2:2002+A1:2005, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 2: Electric welded non-alloy and alloy steel tubes with specified elevated temperature properties*

EN 10217-5:2002+A1:2005, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 5: Submerged arc welded non-alloy and alloy steel tubes with specified elevated temperature properties*

EN 10220:2002, *Seamless and welded steel tubes — Dimensions and masses per unit length*

EN 10222-2:1999, *Steel forging for pressure purposes — Part 2: Ferritic and martensitic steels with specified elevated temperature properties*

EN 12074:2000, *Welding consumables — Quality requirements for manufacture, supply and distribution of consumables for welding and allied processes*

EN 12953-1:2012, *Shell boilers — Part 1: General*

EN 12953-4:2002, *Shell boilers — Part 4: Workmanship and construction of pressure parts of the boiler*

EN 13479:2004, *Welding consumables — General product standard for filler metals and fluxes for fusion welding of metallic materials*

EN 14394:2005+A1:2008, *Heating boilers — Heating boilers with forced draught burners — Nominal heat output not exceeding 10 MW and maximum operating temperature of 110 °C*

CEN ISO/TR 15608:2005, *Welding — Guidelines for a metallic material grouping system (ISO/TR 15608:2005)*

CEN ISO/TR 20172:2009, *Welding - Grouping systems for materials - European materials (ISO 20172:2009)*

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3 General requirements for material selection

SIST EN 12953-2:2012

3.1 General

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The materials for the boiler and the parts of the boiler selected by the manufacturer shall fulfil requirements specified in the order and the requirements of this European Standard.

3.2 Material specification

The selection of materials for pressure parts shall be in accordance with:

- a) Harmonized European Standards (see Clause 4);
- b) European approvals for materials (see 3.3);
- c) Particular Material Appraisals (see 3.4).

NOTE If relevant, the manufacturer will issue a technical specification with additional requirements such as tolerances, non-destructive examinations (NDE), etc.

Dimensions and tolerances for tubes are given in EN 10220, for flat plates in EN 10029 or EN 10051. Deviations to dimensional and tolerances aspects of these three standards are possible by agreement between the boiler manufacturer and the supplier.

The manufacturer shall specify:

- the type of inspection document (material certificate) according to EN 10204 (see also 4.7);
- any additional inspection requirements (e.g. second party/customer inspection).

3.3 European Approvals for Materials (EAM)

European approvals for materials are intended for repeated use.

NOTE 1 References of available EAM are published in the Official Journal of the European Union.

NOTE 2 EAM may be established in accordance with EN 764-4.

3.4 Particular Material Appraisals (PMA)

Particular material appraisals shall be applied for materials:

- used in special cases not covered in 3.2 a) and b),
- not intended for frequent use.

NOTE PMA may be established in accordance with e.g. EN 764-4.

4 Materials for pressure bearing parts

4.1 Shell boiler body

For typical components of the shell boiler body manufactured from flat products and tubes see EN 12953-1:2012, Figure 1.

Cast iron and cast steel are not permitted for these components.

The material shall be ordered and delivered in accordance with relevant harmonized European Standards given in Table 1, EAM or PMA. The additional requirements given in this standard shall be taken into account.

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