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NÕUDED KIHT- JA KEEVKIHIGA PÕLETUSSÜSTEEMILE  
TAHKEL KÜTUSEL TÖÖTAVA BOILERI PUHUL

Water-tube boilers and auxiliary installations - Part 16:  
Requirements for grate and fluidized-bed firing  
systems for solid fuels for the boiler

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 12952-16:2022 sisaldab Euroopa standardi EN 12952-16:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 12952-16:2022 consists of the English text of the European standard EN 12952-16:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 19.10.2022.	Date of Availability of the European standard is 19.10.2022.
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EUROPEAN STANDARD

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English Version

## Water-tube boilers and auxiliary installations - Part 16: Requirements for grate and fluidized-bed firing systems for solid fuels for the boiler

Chaudières à tubes d'eau et installations auxiliaires -  
Partie 16: Exigences pour les équipements de chauffe à  
lit fluidisé pour combustibles solides

Wasserrohrkessel und Anlagenkomponenten - Teil 16:  
Anforderungen an Rost- und  
Wirbelschichtfeuerungsanlagen für feste Brennstoffe  
für den Kessel

This European Standard was approved by CEN on 15 August 2022.

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.

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## European foreword

This document (EN 12952-16:2022) 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of an identical text or by endorsement, at the latest by April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12952-16:2002.

The technical modifications in comparison with the previous edition are listed in Annex B.

The EN 12952 series concerning water-tube boilers and auxiliary installations 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: In service boiler life expectancy calculations;*
- *Part 5: Workmanship and construction of pressure parts of the boiler;*
- *Part 6: Inspection during construction, documentation and marking of pressure parts of the boiler;*
- *Part 7: Requirements for equipment for the boiler;*
- *Part 8: Requirements for firing systems for liquid and gaseous fuels for the boiler;*
- *Part 9: Requirements for firing systems for pulverized solid fuels for the boiler;*
- *Part 10: Requirements for safeguards against excessive pressure;*
- *Part 11: Requirements for limiting devices of the boiler and accessories;*
- *Part 12: Requirements for boiler feedwater and boiler water quality;*
- *Part 13: Requirements for flue gas cleaning systems;*
- *Part 14: Requirements for flue gas DENOX systems using liquefied pressurized ammonia and ammonia water solution;*
- *Part 15: Acceptance tests;*
- *Part 16: Requirements for grate and fluidized-bed firing systems for solid fuels for the boiler;*
- *CR 12952 Part 17: Guideline for the involvement of an inspection body independent of the manufacturer;*

- *Part 18: Operating instructions.*

Although these parts can be obtained separately, it should be recognized that the parts are inter-dependent. As such, the design and manufacture of water-tube boilers requires the application of more than one part in order for the requirements of the document to be satisfactorily fulfilled.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

## 1 Scope

### 1.1 Firing systems

This document applies to atmospheric fluidized-bed and grate firing systems of steam boilers and hot water generators. These systems commence at the fuel bunkers and end at the ash extraction plant. For combination of various firing systems, the individual requirements of each system apply, especially those included in EN 12952-8:2022 and EN 12952-9:2022.

If several fuels are burnt simultaneously or if a fuel quality varies considerably (e.g. moisture content), additional safety measures can be necessary, especially with respect to limitation of the fuel flow into the firing system and ensuring proper air supply to the individual fuels.

Pressurized firing systems can require enhanced safety measures, which are not given in this European Standard.

### 1.2 Fuels

This document covers the use of solid fuels. Pulverized fuel fired in an entrained air flow (burner) system is covered by EN 12952-9:2022.

Solid fuels covered are:

- all coal qualities, e.g. lignite or brown coal, sub-bituminous or hard brown coal, bituminous coal or hard coal, pitch coal, anthracite, coke, coal culm, coal sludge;
- other fossil solid fuels (e.g. peat, oil shale);
- biomass solid fuels (e.g. wood, wood wastes [bark], pellets, energy plants [miscanthus], harvest wastes [straw] and briquettes);
- municipal waste solid fuels (e.g. garbage, sewage sludge, refuse derived fuels [RDF]);
- industrial waste solid fuels (e.g. petrol coke, soot, tyres, paper wastes, coated wood chips, spent wood, animal product wastes).

Fuel blends from two or more groups, or fuels of unconventional or unknown quality can require special safety measures which can be proved either by practical experience gained from comparable fuels, or by suitable tests, e.g. in accordance with EN 14034-2:2006+A1:2011. Such measures specified and documented by the manufacturer.

Fuels on which the design is documented in the operating instructions (see 11.2). This includes the fuel data for 100 % input of the basic fuel and the data for any supplementary fuels together with their maximum thermal input percentage.

### 1.3 Operation

The requirements for operational equipment in Clause 4, Clause 5, Clause 6, Clause 7, Clause 8, Clause 9, Clause 10 and Clause 11 apply to steam boilers and hot water generators with permanent supervision by properly trained personnel familiar with the special conditions of the firing systems and the type of fuel.



## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12952-8:2022, *Water-tube boilers and auxiliary installations — Part 8: Requirements for firing systems for liquid and gaseous fuels for the boiler*

EN 12952-9:2022, *Water-tube boilers and auxiliary installations — Part 9: Requirements for firing systems for pulverized solid fuel for the boiler*

EN 12952-18:2012, *Water-tube boilers and auxiliary installations - Part 18: Operating instructions*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

### 3.1

#### **annunciator**

device to sense a non-standard or abnormal condition and initiate a visual and/or audible signal

### 3.2

#### **back-up firing system**

separate firing system to maintain safe ignition and stable combustion

### 3.3

#### **basic fire**

in the case of grate firing systems the layer of glowing fuel, fire bed, or flame of the fed fuel

Note 1 to entry: The basic fire ensures safe ignition.

### 3.4

#### **carrier gas**

transport medium for pneumatic conveying

### 3.5

#### **combustion air**

total air supplied to the firing system for combustion

### 3.6

#### **combustion process monitoring device**

device which detects the presence of the fire, or the conditions required for a stable combustion process

### 3.7

#### **firing system heat input**

heat input into the combustion chamber

Note 1 to entry: This normally is calculated as the mass flow of the fuel multiplied by its net calorific value.