

ELAMUTE TAHKEKÜTTESEADMED. OSA 2-4:
AUTONOOMSED KATLAD NOMINAALSE
SOOJUSVÄLJASTUSEGA KUNI 50 KW

Residential solid fuel burning appliances - Part 2-4:
Independent boilers - Nominal heat output up to 50 kW

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 16510-2-4:2023 sisaldab Euroopa standardi EN 16510-2-4:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 16510-2-4:2023 consists of the English text of the European standard EN 16510-2-4:2022.
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 21.12.2022.	Date of Availability of the European standard is 21.12.2022.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 91.140.65, 97.100.30

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele. Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega: Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation and Accreditation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

EUROPEAN STANDARD

EN 16510-2-4

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2022

ICS 91.140.65; 97.100.30

Supersedes EN 12809:2001

English Version

Residential solid fuel burning appliances - Part 2-4: Independent boilers - Nominal heat output up to 50 kW

Appareils de chauffage domestiques à combustible solide - Partie 2-4 : Chaudières à installer dans le volume habitable - Puissance utile nominale inférieure ou égale à 50 kW

Häusliche Feuerstätten für feste Brennstoffe - Teil 2-4: Heizkessel für feste Brennstoffe - Nennwärmeleistung bis 50 kW

This European Standard was approved by CEN on 23 October 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.

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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword.....	4
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions.....	6
4 Characteristics.....	6
4.1 Protection of combustible materials.....	7
4.2 Carbon monoxide emission (CO).....	8
4.3 Nitrogen oxides (NO _x) emissions.....	8
4.4 Emission of organic gaseous compounds (OGC).....	9
4.5 Particulate matter (PM) emissions.....	9
4.6 Safety and accessibility in use.....	10
4.6.1 General.....	10
4.6.2 Flue gas outlet temperature at nominal heat output.....	10
4.6.3 Flue gas outlet temperature at part load heat output.....	10
4.6.4 Minimum flue draught.....	10
4.6.5 Flue gas mass flow at nominal heat output.....	12
4.6.6 Flue gas mass flow at part load heat output.....	12
4.6.7 Fire safety of installation to the chimney.....	12
4.7 Energy economy and heat retention.....	12
4.7.1 Space heat output at nominal heat output.....	12
4.7.2 Water heat output, if existing at nominal heat output.....	12
4.7.3 Efficiency at nominal heat output.....	13
4.7.4 Space heat output at part load heat output.....	13
4.7.5 Water heat output, if existing at part load heat output.....	13
4.7.6 Efficiency at part load heat output.....	13
4.7.7 Seasonal space heating efficiency at appliance's nominal heat output.....	13
4.7.8 Energy efficiency.....	14
4.7.9 Electric power consumption at nominal heat output, if existing.....	14
4.7.10 Electric power consumption at part load heat output, if existing.....	14
4.7.11 Standby mode power consumption, if existing.....	15
4.8 Environmental sustainability.....	15
5 Descriptive features.....	16
5.1 Data for potential use with room ventilation systems: type of appliance (in relation to its tightness to the room).....	16
5.2 Data for the building's statics: appliance's mass.....	16
5.3 Materials and construction elements.....	16
5.3.1 General.....	16
5.3.2 General stresses.....	17
5.3.3 Integral boiler or heat exchanger.....	17
5.4 Risk of burning fuel falling out.....	17
5.5 Temperature rise in the fuel storage.....	17
5.6 Temperature rise of the operating components.....	17
5.7 Spillage of flue gases into the room.....	17
5.7.1 Possible spillage of CO, if relevant for the fuel type.....	17
5.7.2 Open operation.....	17

5.8	Cleanability	17
5.8.1	Heating surfaces.....	17
5.8.2	Flueways	17
5.8.3	Ashpan	18
5.8.4	Bottomgrate.....	18
5.8.5	Damper.....	18
5.8.6	Fan-cut-out-device	18
5.9	Strength and leak tightness of boiler shells.....	18
6	Assessment and verification of constancy of performance - AVCP	18
6.1	General	18
6.2	Assessment of performance.....	18
6.2.1	General	18
6.2.2	Test samples, testing and compliance criteria.....	19
6.3	Verification of constancy of performance.....	21
6.3.1	Factory production control (FPC).....	21
Annex A (normative) Test methods		25
A.1	Test environment	25
A.2	Test assembly.....	25
A.3	Measurement equipment.....	25
A.4	Test procedures	25
A.5	Test results.....	28
A.6	Calculation methods	28
A.7	Test report	28
Annex ZA (informative) Relationship of this European Standard with Regulation (EU) No. 305/2011.....		29
ZA.1	Scope and relevant characteristics	29
ZA.2	System of Assessment and Verification of Constancy of Performance (AVCP)	32
ZA.3	Assignment of AVCP tasks	33

European foreword

This document (EN 16510-2-4:2022) has been prepared by Technical Committee CEN/TC 295 “Residential solid fuel burning appliances”, the secretariat of which is held by BSI.

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 June 2023, and conflicting national standards shall be withdrawn at the latest by November 2025.

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 12809:2001 as amended and corrected. In relation to EN 12809:2001 as amended and corrected the following changes have been made:

- measurement methods for NO_x, hydrocarbon and particulate matter emissions for solid fuel burning appliances;
- specifications for classification of solid fuel burning appliances and system boundaries for room sealed appliances;
- requirements for the safety of solid fuel burning appliances with water-bearing components added;
- Annex ZA updated according to requirements of M/577;
- energy efficiency and energy class labelling and seasonal space heating efficiency added;
- requirements for environmental sustainability added.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association.

For relationship with (EU) Regulation 305/2011, see informative Annex ZA, which is an integral part of this document.

The structure of EN 16510, *Residential solid fuel burning appliances*, is as follows:

- Part 1: *General requirements and test methods*;
- Part 2-1: *Roomheaters*;
- Part 2-2: *Inset appliances including open fires*;
- Part 2-3: *Cookers*;
- Part 2-4: *Independent boilers — Nominal heat output up to 50 kW*;
- Part 2-5: *Slow heat release appliances*;
- Part 2-6: *Mechanically by wood pellets fed roomheaters, inset appliances and cookers*.

Other sections of Part 2 will be added to cover residential solid fuel burning appliances not included in parts 2-1 to 2-6.

Subclauses and Figures which are additional to those in EN 16510-1:2022 are numbered starting with 401. Annexes which are additional to those in EN 16510-1 are numbered starting with DA.

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

This document is applicable to independent boiler appliances for solid fuel with a nominal output up to 50 kW (hand and automatically fired independent boilers (hereafter called appliances)).

The intended use of the appliances is space heating in residential buildings. This happens directly or via provision of hot water for central heating. They are designed for use only with open vented systems at a working pressure not exceeding 2 bar.

The appliances can burn one or more types of the following solid fuels as specified:

- wood logs;
- compressed untreated wood;
- wood pellets;
- lignite briquettes;
- solid mineral fuels;
- peat briquettes.

The appliances are operated closed and/or open.

The appliances are typed according to their tightness depending on their designation in accordance with a possible operation together with a room ventilation system.

This document is not applicable for:

- appliances for hot water only production and heat output < 5 kW;
- automatic stoking devices.

This document specifies procedures for assessment and verification of constancy of performance (AVCP) of characteristics of solid fuel burning independent boiler appliances.

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.

EN 15804:2012+A2:2019, *Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products*

EN 16510-1:2022, *Residential solid fuel burning appliances — Part 1: General requirements and test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16510-1:2022 apply.

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

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