

# DIN EN 16510-2-4:2023-11 (E)

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

---

<b>Contents</b>		<b>Page</b>
European foreword .....		4
<b>1</b>	<b>Scope .....</b>	<b>6</b>
<b>2</b>	<b>Normative references .....</b>	<b>6</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>6</b>
<b>4</b>	<b>Characteristics .....</b>	<b>6</b>
4.1	Protection of combustible materials .....	7
4.2	Carbon monoxide emission (CO) .....	8
4.3	Nitrogen oxides (NO <sub>x</sub> ) 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
<b>5</b>	<b>Descriptive features .....</b>	<b>16</b>
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