

Specification for

Domestic solid mineral fuel-fired, free-standing cookers with or without boilers

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Refrigeration, Heating and Air Conditioning Standards Policy Committee (RHE/-) to Technical Committee RHE/28, upon which the following bodies were represented:

- Association of British Solid Fuel Appliances Manufacturers
- British Ceramic Tile Council
- British Coal Corporation
- Consumer Policy Committee of BSI
- DSFAAS Ltd.
- Department of Energy (Energy Efficiency Office)
- Department of the Environment
- Incorporated Association of Architects and Surveyors
- Low Temperature Coal Distillers Association of Great Britain Ltd.
- METCOM
- National Fireplace Council Manufacturers' Association
- National Society for Clean Air
- Real Fire Association
- Solid Smokeless Fuels Federation
- Waterheater Manufacturers' Association

This British Standard, having been prepared under the direction of the Refrigeration, Heating and Air Conditioning Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 31 January 1992

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First published December 1957
Second edition January 1981
Third edition January 1992

The following BSI references relate to the work on this standard:
Committee reference RHE/28
Draft for comment 90/70485 DC

ISBN 0 580 19749 2

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
Committees responsible	Inside front cover
Foreword	iii
Section 1. General	
1.1 Scope	1
1.2 Definitions	1
1.3 Classification	2
1.4 Symbols	2
Section 2. Construction	
2.1 General	3
2.2 Boiler	4
2.3 Fuel capacity	4
2.4 Flueways	4
2.5 Flue outlet	4
2.6 Internal flueway dampers	4
2.7 Combustion controls	4
2.8 Insulation	4
2.9 Operating tools	4
2.10 Cleaning tools	5
2.11 Hotplate and top plate	5
2.12 Roasting oven/additional oven	5
2.13 Roasting oven temperature indicator	5
2.14 Bottomgrate	5
2.15 Ashpit and ashpit cover/door	5
2.16 Ashpan	6
2.17 Firedoors and charging doors	6
2.18 Oven doors	6
2.19 Electrical devices	6
2.20 Provision for flue-pipe and chimney sweeping	6
Section 3. Instructions and marking	
3.1 Instructions	7
3.2 Marking	7
Section 4. Cooker performance	
4.1 Thermal performance	8
4.2 Oven cooking performance	8
4.3 Surface temperature	8
4.4 Condition of appliance after tests	8
Appendix A Test fuels	14
Appendix B Test methods for design	14
Appendix C Performance tests	15
Appendix D Oven cooking performance test	25
Appendix E Symbols used in calculations	28
Figure 1 — Test chimney and typical cooker flue connection	16
Figure 2 — Mixing chamber circuit	17
Figure 3 — Continuous flow circuit	18
Figure 4 — Scone rolling pin	26
Table 1 — Minimum thickness of non water-backed materials	3
Table 2 — Tapping size	4

	Page
Table 3 — Performance requirements for cookers without boilers [category a)]	9
Table 4 — Performance requirements for cookers with domestic hot water boilers with rated output of up to 3.5 kW [category b)]	9
Table 5 — Performance requirements for non-independent type cookers with central heating boilers of rated water heating output of less than 7.5 kW [category c) 1) i)]	10
Table 6 — Performance requirements for independent type cookers with central heating boilers, and non-independent type cookers with central heating boilers having a rated water heating output of 7.5 kW or more [category c) 2) and c) 1) ii) respectively]	12
Table 7 — Oven cooking performance requirements	13
Table 8 — Maximum surface temperature	13
Table 9 — Categories of appliances	15
Publication(s) referred to	Inside back cover

Foreword

This revision of this British Standard has been prepared under the direction of the Refrigeration, Heating and Air Conditioning Standards Policy Committee. It supersedes BS 1252:1981, which is withdrawn.

The main technical changes from the previous edition are:

- a) the introduction of a system of classification of cookers covered by the standard;
- b) exclusion of asbestos products in construction;
- c) changes in the requirements for shelves in cooker ovens;
- d) the requirement that rated water heating output and efficiency shall be the mean of not less than three measured values;
- e) new definitions for “summer” and “winter” mode operation for some classes of cooker together with appropriate test parameters;
- f) changes to performance requirements.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 28, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1.1 Scope

This British Standard specifies the general constructional, dimensional and performance requirements, with methods of test, for free-standing cookers, with or without boilers, designed to burn solid mineral fuels, i.e. bituminous coal, Welsh dry steam coal, anthracite or manufactured fuels derived from these coals, and designed for installation in accordance with BS 8303.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

1.2 Definitions

For the purposes of this British Standard, the definitions given in BS 1846-1, BS 4433-1 and BS 6100-1.51 apply, together with the following.

1.2.1

splash plate

a vertical plate, generally vitreous-enamelled, at the rear of the top plate

1.2.2

boiler response

a measure of the ability of the boiler to meet different demands for hot water at a given temperature controlled by a water-temperature actuated thermostat

1.2.3

thermostat setting

the combustion air control setting corresponding to a particular temperature of the water flowing from a boiler, when tested in accordance with C.8

1.2.4

top plate

the top surface of the cooker, which includes the hotplate

1.2.5

hotplate

a machined or surface-ground horizontal surface(s) designed to heat cooking utensils for boiling, simmering or frying

1.2.6

boiling plate area

a machined or surface-ground surface incorporated into the hotplate, designed for rapid heating

1.2.7

hotplate cover

an insulating cover containing insulating material, or insulated by entrapped air, hinged to cover the horizontal heating surface of the hotplate and its edges when the hotplate is not in use. Also known as a bolster or hob cover

1.2.8

independent type cooker

a cooker where the design and/or controls allow priority for water heating output over cooking/oven heating

1.2.9

non-independent type cooker

a cooker where the design and/or controls do not allow priority for water heating output over cooking/oven heating

1.2.10

“summer” mode operation

a mode of operation, normally during the summer heating season, where the cooker can be adapted and/or the controls altered to reduce the boiler output to a level to meet domestic hot water and limited central heating requirements, whilst allowing cooking/oven baking to be performed

1.2.11

“winter” mode operation

a mode of operation, during the winter heating season, where the cooker can be adapted and/or the controls altered to allow for cooking/oven baking to be performed whilst providing central heating water output

1.2.12

6 h oven controlled period

the last 6 h period of a 24 h test, where the cooker is operated to control the centre-of-oven temperature at 205 ± 5 °C, at the same time performing other tests on the cooker (see C.6.2.7)

1.2.13

oven controlled test

a 6 h test for cookers with central heating boilers with a rated water heating output of 7.5 kW or above where they are operated to control the centre-of-oven temperature at 205 ± 5 °C, at the same time performing other tests on the cooker (see C.7.4)

1.3 Classification

For the purposes of this standard cookers are classified as follows:

- a) cookers without boilers;
- b) cookers with domestic hot water boilers with rated output of up to 3.5 kW;
- c) cookers with central heating boilers:
 - 1) which do not allow priority for water heating over oven heating and are described in this standard as “non-independent”. This category is subdivided for test purposes into:
 - i) cookers with rated water heating output of less than 7.5 kW; and
 - ii) cookers with rated water heating output of 7.5 kW and above;
 - 2) which allow priority for water heating over oven heating and are described in this standard as “independent”.

1.4 Symbols

A list of all symbols used in calculations in this standard is given in Appendix E.

Section 2. Construction

2.1 General

The body of the appliance shall be constructed of cast iron or steel plate.

Materials for construction of parts of the appliance that are in contact with the fuel or flue gases and are not water-backed shall comply with the minimum thickness requirements given in Table 1.

No part of the cooker shall comprise, or contain, asbestos.

Provision shall be made for parts which form a seal to be located securely to prevent the leakage of air or combustion products between the firebox, the flue and the oven(s). Joints between metal surfaces in the firebox or flue gas passageway shall be airtight and shall be welded, seam welded, riveted, or bolted.

NOTE 1 Where a seal is to be made with fire cement, the gaps between components should be small and the cement should be well supported by the adjacent metal surfaces.

Component parts which require periodic replacement shall be either designed or marked to ensure correct fitting.

NOTE 2 Component parts that require periodic replacement should be easy to remove and replace.

Any vitreous-enamelled part of the top plate or its surround, when subjected to the tests defined in the relevant parts of BS 1344, shall meet the required grade or pass requirement, i.e.

<i>British Standard test</i>	<i>Grade/Pass requirement</i>
BS 1344-1	Pass
BS 1344-2	A
BS 1344-3	SA
BS 1344-4	SA (minimum grade 6 powder)
BS 1344-6	Pass (5 % sodium carbonate at 80 °C)
BS 1344-7	Pass

The manufacturer shall supply the test laboratory with a certificate stating that the vitreous-enamelled parts meet the above requirements.

NOTE 3 The finish should be durable and such that it can be easily cleaned.

Table 1 — Minimum thickness of non water-backed materials

Component	Cast iron	Low carbon steel	Stainless steel ^a	Vitreous-enamelled steel ^b
	mm	mm	mm	mm
Firebox:				
without refractory lining	5	4.72	Not suitable	Not suitable
with refractory lining	3	2.75	0.9	Not suitable
Flueways	3	2.75	0.9	1.8
^a Grades 316S11, 316S13, 316S31, 316S33 of BS 1449-2.				
^b Enamelled both sides with heat- and acid-resistant enamel.				

2.2 Boiler

Integral boilers, if fitted, shall comply with BS 3377. The manufacturer shall supply the test laboratory with a certificate setting out the quality and thickness of the material from which the boiler is constructed and the pressure test to which it has been subjected. Tapping sizes shall comply with the requirements given in Table 2.

Table 2 — Tapping size

Rated output	BSP tapping size
kW	R_c or R_p
< 22	1
22 to 35	1 1/4
35 to 45	1 1/2
NOTE R_p = internal tapered thread; R_c = internal parallel thread.	

NOTE It is strongly recommended that at least two flow and two return tapplings be provided. If only one flow and one return tapping is provided the use of a purpose-made injector tee should be prescribed in the manufacturer's installation instructions.

2.3 Fuel capacity

When determined in accordance with B.1 the fuel capacity of cookers with central heating boilers shall be not less than 18.4 dm³.

2.4 Flueways

Access doors or other means shall be provided to ensure that all surfaces of the flues can be effectively cleaned. Any replaceable refractory components shall be so designed or marked to ensure correct assembly.

2.5 Flue outlet

The outlets from the cooker shall be of a socket type. All socket connections shall be not less than 25 mm in depth. The outlet sockets shall accept cast iron flue pipe complying with BS 41 or, if vitreous-enamelled, mild steel complying with BS 6999.

2.6 Internal flueway dampers

Any internal flueway damper shall be capable of maintaining any position in which it is intended to be set and shall not isolate the firebox from the flue outlet. If a damper is intended to be removable then it shall be so designed or marked to ensure correct assembly. Any damper control shall be permanently and legibly marked to indicate the effect of its operation.

2.7 Combustion controls

2.7.1 Primary air

Primary air control shall be thermostatic and/or manual unless a boiler with a rated output exceeding 7.5 kW is fitted. In this case, a water-temperature actuated thermostat shall be used to control the primary air. NOTE 1 It is recommended that the design should be such that, during operation of the appliance, neither ash nor unburnt fuel can prevent closure of the air control.

When closed the primary air control clearance shall not exceed 0.25 mm at any point.

Any thermostat shall be identified either by the thermostat manufacturer's name and model number or the appliance manufacturer's part number. The cold setting distance shall either be clearly marked or the method of adjustment described in the instructions (see 3.1).

NOTE 2 In order to facilitate cooking, the use of a separate manually operated primary air control which is capable of being completely closed is recommended for use with thermostatically controlled appliances.

2.7.2 Secondary air

A secondary air inlet shall be provided for admission of air above the fuel bed to minimize the risk of condensation and the accumulation of combustion gases. The position of air entry shall be so designed that the passage of this air is not restricted when the firebox is filled to the manufacturer's recommended capacity.

2.7.3 Flue control

If a flue damper is fitted it shall be of the butterfly type or of a type that is self-cleaning in operation. It shall have a permanent opening of at least 15 % of the cross-sectional area of the flue pipe and provide an indication of the extent of flue restriction.

NOTE 1 Preferably dampers should not be of the horizontal sliding type because of the possibility of the flue pipe being blocked by chimney debris falling onto the damper. A draught stabilizer is unlikely to be so blocked and is therefore recommended. NOTE 2 Manually operated spoil draughts are not recommended when burning solid mineral fuels and if fitted for use with other fuels should be capable of being fully closed.

2.8 Insulation

Insulation shall be provided so that the surface temperature requirements of 4.3 are satisfied.

2.9 Operating tools

An operating tool shall be provided where it would otherwise be necessary to touch any surface having a temperature above 55 °C during normal operation of the appliance.

2.10 Cleaning tools

Manufacturers shall make available purpose-designed brushes or a scraper where ordinary household brushes are not effective for cleaning internal flueways.

2.11 Hotplate and top plate

The top plate shall incorporate a machined or surface-ground surface in the form of a hotplate. Part of the hotplate shall be designated as a boiling plate area; this shall have a minimum area of 10 dm² and shall be designed so that the boiling test as described in C.5 may be performed.

When the cooker is assembled, complete with any legs or plinth supplied as an integral part of the appliance, the height from the floor to the working surface of the hotplate shall be not more than 915 mm.

The unobstructed height above every part of any hotplate shall be not less than 400 mm. The surface of inset hotplates shall be at no point lower than, nor 8 mm higher than, the surface surrounding it.

Hinged insulating cover(s) shall be fitted over the hotplate. All outer surfaces of the covers more than 15 mm from the working surface shall satisfy the surface temperature requirements (see 4.3).

2.12 Roasting oven/additional oven

Neither the roasting oven nor the roasting oven door opening shall be less than 300 mm wide and 250 mm high. The roasting oven shall be not less than 350 mm deep and shall have a total volume of not less than 43 dm³.

Where a second compartment is provided, the manufacturer shall specify whether it is a warming drawer (storage drawer) or an additional oven. If the latter, it shall have a total volume of not less than 28 dm³.

The roasting oven and any additional oven shall be provided with at least two shelf runner positions. The shelf runners shall be located at the sides and shall project not more than 13 mm into the oven.

The roasting oven shall be provided with at least two shelves and any additional oven with at least one shelf. At least one shelf in each oven shall permit free circulation of air between its underside and its top side.

When pulled out a distance equal to two-thirds of its depth, each shelf shall be sufficiently rigid and adequately supported to carry a total mass of 9 ± 0.1 kg distributed evenly over the front two-thirds of the shelf without permanent distortion. An approximately square plate of dimension 215 ± 10 mm, which is included as part of the mass, shall be used for distribution.

The angle of inclination of the shelf from the horizontal, when under load, shall not exceed 10°.

NOTE 1 It is recommended that the oven be designed so that it can be easily cleaned.

NOTE 2 It is recommended that shelves should incorporate a stop to prevent them being completely removed inadvertently.

2.13 Roasting oven temperature indicator

The roasting oven shall be fitted with an oven temperature indicator which is readable without opening the oven door. When the oven temperature is measured in accordance with C.4, the indicator shall meet the requirements given in Table 3, Table 4, Table 5 or Table 6, as appropriate to the category of cooker.

2.14 Bottomgrate

The bottomgrate shall be capable of being removed and shall be designed or marked to ensure correct assembly. It shall be fitted with a de-ashing mechanism which shall be capable of de-ashing the fuel bed.

If the bottomgrate is adjustable to different positions or the firebox can be modified for reducing the water heating output then it shall be possible to mechanically de-ash the firebed in all these modes of operation.

NOTE 1 The preferred design should allow de-ashing to be carried out with the firedoor(s) and any ashpit cover closed. The de-ashing operation should be able to be accomplished without undue effort.

NOTE 2 If it is necessary to open the firedoor(s) or to remove the ashpit cover to de-ash the fire, the appliance should be designed such that there is no undue spillage of ash or fuel from the appliance during the de-ashing operation.

2.15 Ashpit and ashpit cover/door

The height from the bottom of the inside of the ashpan to the underside of the bottomgrate bars shall be not less than 75 mm at any point.

The ashpit cover/door when closed shall be designed to ensure that it maintains an effective seal of the ashpit opening and the clearance does not exceed 0.25 mm at any point.

NOTE The ashpit cover/door should be designed to ensure that:

- a) its closure is not easily prevented by spilled undergrate material;
- b) it is difficult to accidentally dislodge;