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**BS 3456 : Part 2 : Section 2.1 :**

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Specification for

⚠ SAFETY
of Household
Electrical Appliances

Part 2. Particular requirements
Section 2.1 Cooking ranges,
cooking tables and similar appliances

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Foreword

This revised British Standard has been prepared under the authority of the Electrical Industry Standards Committee and is one of a series of sections of the specification for the testing and approval of household electrical appliances*.

The revision is needed because BS 3456, Section A1, 'General requirements for heating and cooking appliances', and Section B1, 'General requirements for motor-operated appliances', have been revised in order to bring these sections into alignment with the corresponding Publications of the International Commission on Rules for the Approval of Electrical Equipment (CEE). These are Parts I of CEE Publications 10 and 11 (second editions) for motor-operated appliances and for cooking and heating appliances respectively.

The opportunity has been taken to amalgamate Sections A1 and B1 into a single Part 1, 'General requirements', and this Section 2.1 is one of many in Part 2, 'Particular requirements'. It is based on the corresponding particular appliance specification of the CEE, CEE Publication 11, Part II, Section A, which has the same title.

When comparing the requirements in this section of the British Standard with those in the corresponding CEE Publication 'differences' are requirements less onerous than those given in the CEE Publication and are merely indicated in the text of the specification. 'Deviations' are requirements more onerous than the CEE requirements and are collated in Appendix A.

This Section 2.1 specifies requirements which depart from, or are additional to, those given in BS 3456. Part 1, 'General requirements' and the clauses are numbered to correspond with those given in Part 1.

For two years from 5th September, 1972, manufacturers seeking approval for their appliances may do so on the basis of the 1966 edition of BS 3456, Section A1, and the 1962 edition of Section A12, OR on the basis of BS 3456 : Part 1 : 1969 coupled with this edition of Section 2.1. Thereafter only the latter combination will be used for approval purposes and Section A12 will be withdrawn.

* See the back cover of this standard.

British Standard Specification for

**SAFETY OF****Household Electrical Appliances****Part 2. Particular requirements****Section 2.1 Cooking ranges, cooking tables
and similar appliances****Specification****1. Scope**

This Section 2.1 covers electric cookers and ranges, cooking tables, ovens, grills for building-in and grills which form part of cookers, and similar appliances for household use. It also covers self-cleaning ovens*.

It is to be read in conjunction with Part 1 and the appliances are required to comply in all respects with the requirements specified in Part 1 except in so far as they are modified by this Section 2.1.

NOTE (i). Separate grills which are not intended for building-in are covered by Section 2.6 of this British Standard.

NOTE (ii). Appendix B gives preferred sizes of boiling plates.

NOTE (iii). The titles of the British Standards referred to in this standard are listed on the inside back cover.

2. Definitions

For the purposes of this section of this British Standard the definitions of Part 1 apply, with the following modifications and additions:

† to 2.3 as a modification:

For a cooker arranged with alternative circuits the rated input is the maximum continuous input when the highest circuit input is selected.

to 2.24 as a modification:

Conditions of adequate heat discharge. The appliance is operated under the following conditions:

Boiling plates are operated with a pan containing initially cold water positioned centrally over the heated area. The pan is of aluminium, of commercial quality, not brightly polished, and has a base which is flat or concave, the concavity not exceeding 0.75 mm†.

If the boiling plate has a nominal diameter as shown in the following table, the diameter of the bottom of the pan is approximately equal to the nominal diameter of the boiling plate, and the quantity of water in the pan is as shown in Table 1. If the boiling plate has a diameter other than as shown in the table, the diameter of the bottom of the pan and the quantity of water are those specified for the next larger nominal diameter.

Table 1. Quantity of water in relation to nominal diameter of boiling plate

Nominal diameter of boiling plate	Quantity of water
mm	litre
110	0.6
145	1
180	1.5
220	2
300	3

* Self-cleaning ovens are not included in the scope of CEE Publication 11, Part II, Section A.

† Differs from CEE Publication 11, Part II, Section A.

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During the test, the pan is covered with a lid, and water is added in such a way that the water level is maintained as boiling continues. In case of doubt, standard test pans of commercial aluminium with the dimensions shown in Fig. 1 of this Section 2.1 are used in repeat tests.

*The mean temperature, over the thermostat cycle, of the usable space in the interior of the oven is maintained at $240 \pm 4^\circ\text{C}$ or at the temperature resulting from the maximum setting of the oven thermostat, whichever is lower. Ovens without thermostats are operated so that the temperature is maintained at $240 \pm 15^\circ\text{C}$ by switching the supply on and off. The oven door is closed throughout the period of operation.

Grills are operated with the grill pan, grid or food support in the highest position, unless otherwise specified and the door, if any, in the position indicated in the manufacturer's instructions; in the absence of such instructions, the door is opened completely. An asbestos mat, having a thickness of 6 mm and a surface area of one side equal to 0.5 times the area of the grid or food support of the grill pan, is placed centrally on the grid or food support, the dimensions of the mat being proportional to those of the grid or food support. Reflectors, if any, intended to be placed above heating elements are in position.

Warming drawers and heated cupboards are operated with their doors closed.

NOTE. If the dimensions of the grid or food support of the grill pan or grills are such that the asbestos mat will considerably affect the heat circulation, the mat is divided into the maximum number of pieces of the same dimensions that can be obtained with no piece having a dimension less than 100 mm.

The following additional definitions apply:

I. *Heating unit.* Any part of the appliance which fulfils an independent cooking or heating function, such as a boiling plate, an oven, a grill or a warming drawer.

NOTE. If an oven or grill incorporates more than one heating element or group of heating elements, which are so controlled that one element or group cannot be switched on while another element or group is energized, each of them is considered as a separate heating unit.

†II. *Electric cooker or range.* A cooker comprising at least one boiling surface and at least one heated oven constructed as one or more units.

NOTE. A cooker may also incorporate a grill.

III. *Electric oven unit.* An appliance comprising at least one heated oven, with or without a grill.

†IV. *Small electric cooker.* A cooker designed primarily for use on a table or a similar surface having a rated input not exceeding 3 kW, and which is intended for connection to the supply by means of a plug and socket.

†V. *Radiant boiling plate.* A boiling plate having one or more heating resistors, enclosed within a tubular metallic sheath or sheaths and designed to accommodate a vessel or vessels on its upper surface for boiling water or cooking food.

†VI. *Solid boiling plate.* A boiling plate having one or more heating resistors enclosed or embedded within a cast body and designed to accommodate a vessel or vessels on its upper surface for boiling water or cooking food.

†VII. *Cooking table.* An appliance comprising one or more boiling or cooking surfaces.

NOTE. This definition includes portable boiling plate units.

†VIII. *Self-cleaning oven.* An oven in which provision is made for removing normal cooking deposits or soiling from the interior by raising the temperature above normal cooking temperatures to higher than 340°C .

†IX. *Effective input.* The average input to a circuit fitted with a control that automatically limits the average input to a value lower than the original input after any initial period, this average input being determined after steady conditions have been established at maximum setting of the control.

3. General requirement

This clause of Part 1 applies.

4. General conditions for the tests

This clause of Part 1 applies.

5. Rating

This clause of Part 1 applies.

Differs from CEE Publication 11, Part II, Section A.

Does not appear in CEE Publication 11, Part II, Section A.

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6. Classification

This clause of Part 1 applies, with the following modification:

to 6.1(1):

Appliances shall be of Class I or Class III construction.

7. Marking

This clause of Part 1 applies, with the following modifications and additions:

*to 7.1 as an addition:

Cookers having self-cleaning ovens or oven units of the self-cleaning type, shall have a warning notice to the effect that, with the exception of any part specified by the manufacturer, all cooking utensils and excess liquid spillage must be removed before initiating the oven cleaning process. This warning notice shall be visible when the cooker is in the installed position without removing any covers but, if necessary, with the oven door open, or with any cover that has to be opened to initiate a cleaning operation open.

to 7.6 as an addition:

All components with controls arranged to give an effective input shall be marked with the rated input, and the effective input shall be declared by the manufacturer to the testing authority.

*For appliances incorporating self-cleaning ovens the total input of the elements which are in circuit during the oven cleaning operation shall be declared by the manufacturer to the testing authority.

†to 7.11 as an addition:

The method of indicating the setting of rotary controls for boiling plates and grills shall clearly indicate the OFF position either by:

- (i) a light or illuminated part;
- (ii) a coloured flag or the like;
- (iii) an equally obvious indication given by the design and position of the control knob;
- (iv) a combination of any of the above methods.

Where such controls are grouped together the OFF position indication (as in (iii) above) shall be in the same direction.

*to 7.11 as a modification:

The time constant of heating elements shall generally be regarded as being too long for obvious indication of the OFF position of a switch or control device. The glowing of a lamp or the visible or audible action of a motor, however, shall be considered as an obvious indication of the ON position of such controls. In this case, the OFF position need not be marked.

†to 7.13 as an addition:

For cookers likely to be sited between kitchen cabinets the height of which does not exceed that of the cooker hob, the installation instructions shall state the space required each side between the cooker and adjacent cabinets to comply with the maximum temperature rise on the sides of the cabinets of 75 °C and 150 °C, when the cooker is operated under the test conditions of Clauses 11 and 19 respectively.

to 7.21.1 as an addition:

Control knobs and marked fascias (or portions cut therefrom) shall be suspended 75 mm to 100 mm above the surface of cooking oil maintained at a temperature between 195 °C and 205 °C for 6 hours on each of 4 successive days, i.e. 24 hours in all.

After cooling to room temperature, but within an hour of the completion of the treatment, the marking shall resist removal when rubbed with a cloth wetted with a detergent solution.

8. Protection against electric shock

This clause of Part 1 applies with the following modification:

†to 8.1.1:

For open coil heating elements, the test shall be made with the standard test finger 1 of BS 3042, if such elements are controlled by single-pole switches or by timers incorporating a single-pole switch.

* Does not appear in CEE Publication 11, Part II, Section A.

† Deletion. See Appendix A.

Starting of motor-operated appliances

This clause of Part 1 applies to those appliances incorporating a motor.

10. Input

This clause of Part 1 applies, with the following modifications:
to 10.1:

If the appliance incorporates more than one heating unit, the input shall be determined by measuring the input of each heating unit separately, except that where components have an effective input, this input is used for calculating the rated input of the cooker.

*For heating elements other than boiling plates, the input shall not differ from the rated input by more than 7½%.

†For self-cleaning ovens the total input of the elements which are in circuit during the oven cleaning operation shall not differ from the input declared by the manufacturer by more than 7½%.

†to 10.1.1:

For self-cleaning ovens an additional input test is carried out under the cleaning conditions, the input being measured when steady operating conditions have been obtained and with the time and/or temperature control set to give the highest possible temperature conditions.

11. Heating

This clause of Part 1 applies with the following modification and addition:

*to 11.1.1 as a modification:

Appliances provided with more than one heating element shall be supplied at a voltage such that the total input of the appliance is 1.10 times the sum of the maximum rated inputs of all heating elements that can be switched on at the same time for the particular test being undertaken.

NOTE. If the design of the cooker is such that a heating element or elements can be switched to perform more than one function, the heating test is made with the combination which imposes the most severe conditions.

Cookers other than those for building-in shall be placed against the rear wall of the test corner shown in Fig. 2a of this Section 2.1. Rectangular boxes, as shown in Fig. 2a, shall be placed each side of the cooker according to the manufacturer's instructions, as required in 7.13. The top of the boxes shall be level with the top surface of the hob of the cooker and the front shall be level with the front edge of the cooker as shown in Fig. 2a of this Section 2.1.

Cookers designed for building-in shall be installed according to the manufacturer's instructions.

Cooking tables shall be tested in the test corner as close to the walls as possible, as shown in Fig. 2b of this Section 2.1, unless the manufacturer's instructions indicate otherwise.

Grills for building-in shall be operated for 30 minutes; other appliances shall be operated for 60 minutes with the following control sequences starting at the same time, except where otherwise specified.

Grills for building-in provided with means to reduce the input shall be operated for 15 minutes with their control devices at the highest setting, and then for 15 minutes at a setting giving an input as near as possible to half the input measured at the highest setting.

Other grills provided with a control to reduce their input shall be operated in accordance with the following sequence:

- 10 minutes at the highest control setting;
- 15 minutes at a control setting which gives an input as near as possible to half the input at the highest control setting;
- 35 minutes at a control setting which gives an input as near as possible to a quarter of the input at the highest control setting.

* Deviation. See Appendix A.

† Does not appear in CEE Publication 11, Part II, Section A.

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the test and the grill pan shall be moved in accordance with the following sequence:

- 10 minutes in the highest position;
- 15 minutes in a middle position;
- 35 minutes in its lowest position.

For grills under cyclic control the input to be considered shall be the average input. is contained within the oven and not provided with a control which permits a reduction of input, the cooker shall be tested with the grill operating at the maximum setting and no other heat in the oven under the following conditions:

- 10 minutes with the pan in the highest position;
- 15 minutes with the pan in the middle position;
- 35 minutes with the pan at the bottom of the oven.

Other components shall be operated as for the previous test.

Boiling plates shall be operated with their control devices at the highest setting until the water boils, when the controls shall be adjusted so as to maintain the water gently boiling. The pans shall be covered with lids.

Warming drawers and heated cupboards shall be operated for the last 30 minutes of the test, with their control devices at the highest setting.

Rotisseries shall be operated in accordance with the most unfavourable requirements given in the manufacturer's instructions.

Ovens shall be switched on from cold and for self-cleaning ovens a note shall be taken of the thermostat control knob setting required to give the conditions of adequate heat discharge.

If the appliance is provided with a control which limits the total input, the test shall be made with whichever heating unit or combination of heating units, as may be selected by the control, imposes the most severe conditions.

*For self-cleaning ovens the heating test shall be repeated (first additional test) operating the oven under cleaning conditions, for the maximum time provided by the cleaning operation control circuit, other components being operated for one hour under the test conditions for cookers described above, the hour being selected, within the cleaning period, to provide the most arduous condition.

*A second additional heating test shall also be carried out under cleaning conditions but with no other units energized.

*After the two heating tests under self-cleaning conditions, the first heating test under conditions of adequate heat discharge shall be repeated with the same thermostat control setting as that noted for the first heating test. The mean centre oven temperature shall not differ by more than 15 °C from that measured during the first heating test.

For cookers and cooking ranges the temperature rise of the floor, rear wall and ceiling of the test enclosure and of the sides of the boxes shall be determined. The temperature rise of handles shall not be limited for inner glass doors, roasting spits in ovens and grill pans.

For cooking tables, the temperature rise of the floor, walls and ceiling of the test enclosure shall be determined.

The temperature rise for surfaces accessible to a 75 mm diameter rod of unrestricted length having a hemispherical end and below a plane 750 mm above floor level shall not exceed 68 °C. An exception of up to 96 °C shall be permitted for those places where it is manifestly difficult to keep temperature low, such as glass windows in oven doors, small areas of oven hinges, oven vents and return flanges on oven doors.

*For self-cleaning ovens the temperature of accessible surfaces shall be measured during the test as a normal oven and during the second additional test under cleaning conditions. *These limits shall also apply to similarly accessible parts of self-cleaning ovens mounted above 750 mm from the floor during the second additional test except that there shall be no limit for areas in the vicinity of the oven vent(s). When determining the height above floor level, free standing cookers and small cookers, as defined in Clause 2, are considered to be installed in accordance with the manufacturer's instructions, so far as these are considered reasonable by the approving authority.

as not appear in CEE Publication 11, Part II, Section A.

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The temperature rise of surfaces accessible to a 75 mm diameter rod of unrestricted length, having a hemispherical end, shall be determined during a further heating test applicable to all cookers, including those having self-cleaning ovens. The test conditions shall be those specified above except that the side boxes shall be removed, grills shall not be operated and grill doors, if any, shall be closed. During the test the temperature rise shall not exceed 68 °C except as follows.

- (i) The temperature rise shall not exceed 95 °C for:

glass panels and windows;
oven vents and their immediate surrounds;
surfaces more than 750 mm above floor level where it is manifestly difficult to limit the temperature rise to 68 °C;
flanges on ovens and oven doors and surfaces within 12 mm of the gap between the oven door and the cooker body;
small areas on oven hinges.

NOTE. The value of 95 °C will be reviewed within 2 years from the date of this amendment, taking into account any revision of BS 4086.

- (ii) The temperature shall not be measured for:

hob surfaces or parts within 50 mm below the boiling plate surface;

surfaces that are above hob level and more than 100 mm behind a vertical plane through the front edge of the hob.

When determining the height above floor level, free standing cookers and small cookers, as defined in Clause 2, are considered to be installed in accordance with the manufacturer's instructions, so far as these are considered to be applicable by the approving authority.

Additionally, for self-cleaning ovens, the temperature rise of accessible surfaces shall not exceed the values given above during the second additional heating test under cleaning conditions.

In Table 3 of Part 1 the penultimate item shall include walls of boxes used in the test corner: