
British Standard Specification for
**Safety of household and similar
electrical appliances**

Part 102. Particular requirements

Section 102.30 Room heaters

(Implementation of CENELEC HD 278 S1)

Sécurité des appareils électrodomestiques et analogues

Partie 102. Règles particulières

Section 102.30 Appareils de chauffage des locaux

Sicherheit von Elektrogeräten für den Haushalt und ähnliche Zwecke

Teil 102. Besondere Anforderungen

Abschnitt 102.30 Raumheizgeräte

Contents

	Page		Page
Foreword	Inside front cover	24. Components	16
Committees responsible	Back cover	25. Supply connection and external flexible cables and cords	16
Specification		26. Terminals for external conductors	17
1. Scope	2	27. Provision for earthing	17
2. Definitions	3	28. Screws and connections	17
3. General requirement	4	29. Creepage distances, clearances and distances through insulation	17
4. General notes on tests	4	30. Resistance to heat, fire and tracking	18
5. Rating	5	31. Resistance to rusting	18
6. Classification	5	32. Radiation, toxicity and similar hazards	18
7. Marking	5		
8. Protection against electric shock	7	Appendices	
9. Starting of motor-operated appliances	8	A. Thermal controls and overload releases	21
10. Input and current	8	B. Electronic circuits	21
11. Heating	8	C. Construction of safety isolating transformers	21
12. Operation under overload conditions of appliances with heating elements	9	D. Alternative requirements for protected motor units	21
13. Electrical insulation and leakage current at operating temperature	9	E. Measurement of creepage distances and clearances	21
14. Radio and television interference suppression	9	AA. Specification for flannelette	22
15. Moisture resistance	10	BB. Specification for cotton gauze	22
16. Insulation resistance and electric strength	10	X. Original text of IEC Publication 335-2-30, First Edition, 1979, prior to modification by HD 278 S1, together with the justification for the modification given in the HD	23
17. Overload protection	10	Y. National deviations that could not be removed from the CENELEC Harmonization Document	31
18. Endurance	10		
19. Abnormal operation	11		
20. Stability and mechanical hazards	14		
21. Mechanical strength	14		
22. Construction	14		
23. Internal wiring	16		

Foreword

This Section of BS 3456 : Part 102 has been prepared under the direction of the Light Electrical Engineering Standards Committee. It is aligned with the CENELEC* Harmonization Document for room heaters, HD 278 S1, plus AM 1 to HD 278 S1, which in turn is based on IEC† Publication 335-2-30 (1979—First edition). Its number is directly related to the number of the equivalent Section of the IEC publication.

It is a revision of BS 3456 : Section 2.10 : 1972 which will be withdrawn on 30 June 1989 in accordance with the CENELEC Internal Regulations.

It gives the particular requirements for room heaters and is to be read in conjunction with BS 3456 : Part 101 : 1987 'General requirements' which it supplements or modifies. The many references to Part 1 should be read as references to BS 3456 : Part 101 which is the implementation of the CENELEC Harmonization Document for the general requirements, HD 251 S3. In the original IEC text of the particular requirements the precise line numbers in the IEC Part 1 are given. The lines in Part 101 of BS 3456 are not numbered but sufficient information has been included in these particular requirements for the relevant matter in Part 101 to be identified. For ease of production the text of the IEC standard has been used, but it has been modified as described below.

The CENELEC modifications that appear in HD 278 S1 have been included in the text in the appropriate position and are indicated by a single side line in the margin of the page. References are included to items of the original IEC text which are given in appendix X together with the justifications in the CENELEC Harmonization Document for the modifications.

The United Kingdom deviations are included in the text of the standard and are indicated by a double side line in the margin of the page. In the event of any conflict between the requirement in the Harmonization Document and the requirement in the United Kingdom deviation, the requirement in the United Kingdom deviation takes precedence and users of this British Standard should operate to the United Kingdom deviation.

A complete list of all national deviations to the CENELEC Harmonization Document is given in appendix Y.

* CENELEC = European Committee for Electrotechnical Standardization.

† IEC = International Electrotechnical Commission.

Amendment No. 1
published and effective from 31 May 1991
to BS 3456 : Part 102 : Section 102.30 : 1988

Specification for safety of household and similar
electrical appliances
Part 102. Particular requirements
Section 102.30. Room heaters

Revised text

AMD 6670
May 1991

Foreword

At the end of the foreword insert the following:

‘AM 2 to HD 278 S1 was approved on 11 September 1989 and AM 3 to HD 278 S1 was approved on 1 January 1990. Amendment No. 1 to BS 3456 : Part 102 : Section 102.30 : 1988 incorporates AM 2 and AM 3 of HD 278 S1.’

Insert the following in the list of cross-references:

‘EN 60 335-2-43 : 1989 BS 3456 Specification for safety of household and similar electrical appliances
Part 202 Particular requirements
Section 202.43 : 1990 Clothes dryers and towel rails
(Identical)’

AMD 6670
May 1991

Clause 7.1

After the note to the second paragraph insert the following:

‘Such marking is not required for room heaters which also are designed to dry textile materials and which simultaneously comply with EN 60 335-2-43.’

NOTE. For information see X.53.’

AMD 6670
May 1991

Clause 8.102

Delete this clause and substitute the following:

‘NOTE. For information see X.54.’

AMD 6670
May 1991

Clause 11.8

In the table place ‘*’ next to the first word in the table, ‘Heaters’.

Insert the following footnote in the table:

‘*If no clearly visible air-outlet can be determined and the air leaves the appliance through the whole enclosure, then the lower temperature rise limit (85 K) is applied.’

NOTE. For information see X.55.’

Appendix X (Informative)

Insert the following at the end of the table:

Reference	Clause	Original IEC Text	Justification
X.53	7.1	—	This modification is considered to be necessary.
X.54	8.102	—	This modification is considered to be reasonable.
X.55	11.8	—	This modification is considered to be reasonable.

In this British Standard the following print types are used to differentiate between requirements, test specifications and explanatory matter.

Requirements: in roman type.

Test specifications: in italic type.

Explanatory matter: in small roman type.

The CENELEC Harmonization Document was approved by the CENELEC Technical Board on 15 June 1987 and AM 1 to HD 278 S1 was approved on 2 December 1987.

Cross-references

International standard	Corresponding British Standard
IEC 695-2-2 : 1980	BS 6458 Fire hazard testing for electrotechnical products Section 2.2 : 1984 Needle-flame test (Identical)
CEE Publication 15 : 1964	BS 3535 : 1962 Safety isolating transformers for industrial and domestic purposes (Technically equivalent)

Product approval. Attention is drawn to the fact that products conforming to this British Standard may be approved by the British Electrotechnical Approvals Board for the purposes of participation in the CENELEC Certification Agreement and in the CB Scheme of the IECEE. (Details of the BEAB approval mark scheme are given on the inside back cover.)

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

British Standard Specification for

Safety of household and similar electrical appliances

Part 102. Particular requirements

Section 102.30 Room heaters

1. Scope

This clause of Part 1 is applicable except as follows:

1.1 *Replacement:*

This standard applies to room heaters for household and similar purposes.

Room heaters not intended for normal household use, but which nevertheless may be a source of danger to the public, such as heaters intended to be used by laymen in shops, in light industry and on farms, are within the scope of this standard.

This standard does not take into account the special hazards which exist in nurseries and other places where there are young children or aged or infirm persons without supervision; in such cases, additional requirements may be necessary.

Examples of room heaters that are within the scope of this standard are:

- radiant heaters;
- panel heaters;
- liquid-filled radiators;
- fan heaters;
- convector heaters;
- tubular heaters.

Room heaters incorporating lighting units or ventilating units are also within the scope of this standard.

This standard does not apply to:

- thermal storage room heaters;
- heaters for saunas;
- heating cables;
- heating wall paper;
- heating carpets and similar flexible heating units;
- room heaters intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- heaters specifically designed for agriculture and animal welfare purposes;
- heaters specifically designed for use in wardrobes and similar places intended to be closed.

NOTE. For information see X.2.

For heaters intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary.

Attention is drawn to the fact that in many countries additional requirements are specified by the national health authorities and the national authorities responsible for the protection of labour.

2. Definitions

This clause of Part 1 is applicable except as follows:

2.2.26 *Addition:*

Radiant heaters specifically designed to stand in normal use in a fireplace or hearth, or against a wall, are regarded as stationary heaters.

NOTE. For information see Y.B.1.

2.2.29 *Replacement:*

Conditions of adequate heat discharge denote that the heater is operated as in normal use, in still air, heaters designed to contain liquid being filled as in normal use.

Additional definitions:

2.2.51 *Fireguard* denotes that part of the enclosure of a visibly glowing radiant heater through which the heating elements are normally visible and which is intended to prevent direct access to the heating elements.

NOTE. For information see X.3.

2.2.101 *Visibly glowing radiant heater* denotes a heater intended to dissipate heat principally by radiation and incorporating one or more heating elements, a part or all of which can be seen from outside of the heater when it is assembled ready for use, these heating elements attaining a temperature of at least 650 °C when steady conditions are established, the heater being operated in accordance with conditions of adequate heat discharge at a supply voltage such that the input is equal to rated input and at an ambient temperature of 20 °C.

2.2.102 —

NOTE. For information see X.4.

2.2.103 —

NOTE. For information see X.5.

2.2.104 —

NOTE. For information see X.6.

2.2.105 *Convactor heater* denotes a heater provided with one or more outlets through which hot air is discharged by natural convection.

2.2.106 *Fan heater* denotes a heater in which the movement of the air is caused by mechanical means.

2.2.107 *Mounting at high level* denotes mounting at a height of at least 1.8 m from the floor.

2.2.108 *Immediate surround of an air-outlet grille or of a fireguard* denotes any surface which is substantially within a distance of 25 mm from the boundary of the grille or fireguard.

Details of the way in which the immediate surrounds of an air-outlet grille or fireguard are determined, are shown in Figure 101.

NOTE. For information see X.7.

2.2.109 *Back-box* denotes a box or enclosure which is supplied with a heater for building-in and is intended to be built into the wall or other mounting surface, and into which the heater assembly is mounted.

A back-box is also known as a roughing-in box.

3. General requirement

This clause of Part 1 is applicable.

4. General notes on tests

This clause of Part 1 is applicable except as follows:

4.2 Addition:

For heaters intended to be installed in groups, a sufficient number of samples is required to determine the effects of the adjacent heaters on the heater to be tested.

4.3 Paragraph 1.

Replacement:

The tests are carried out in the order of the clauses of Part 1, except that the test of Sub-clause 22.26 is made after the tests of Clause 29.

4.4 Addition:

Unless otherwise specified, the heater is operated in accordance with the manufacturer's instructions.

4.6 Paragraph 7. Not applicable.

4.9 Addition:

Thermostats sensitive to the room air temperature, such as those where the sensing element is located in the air intake to the heater, are short-circuited.

4.10 Addition:

Heaters intended to be installed in groups are installed in accordance with the manufacturer's instructions for installation, the arrangement being such as will give the most unfavourable result.

4.13 Not applicable.

Additional sub-clauses:

4.101 Heaters intended to be used optionally as portable appliances or fixed appliances, are subjected to the tests applicable to both types of appliance.

Unless adequate means are provided to fix the heater securely to a wall and clear instructions for mounting accompany the heater, heaters intended to be fixed to a wall and provided with a power supply cord and a plug are tested either as fixed appliances or as portable appliances, whichever gives the more unfavourable result.

Keyhole slots, hooks and the like, without any further means to prevent the heater from being inadvertently lifted off the wall, are not considered to be adequate means for fixing the heater securely to the wall.

Deletion:

NOTE. For information see X.8.

4.102 If the heater is a combination of two or more types of heater, it is subjected to the tests appropriate to each type of heater.

NOTE. For information see X.9.

Heaters for wall-mounting are tested both as heaters for mounting at high level and as heaters for mounting other than at high level, unless the manufacturer's instructions for installation state clearly at which height the heater has to be mounted.

5. Rating

This clause of Part 1 is applicable.

6. Classification

This clause of Part 1 is applicable except as follows:

6.1 At end of sub-clause.

Addition:

(c) According to method of mounting:

- heaters for floor-mounting;
- heaters for wall-mounting at high level;
- heaters for wall-mounting other than at high level;
- heaters for ceiling-mounting;
- heaters provided with outlets at floor or sill level;
- portable heaters.

Deletion:

NOTE. For information see X.10.

Addition:

Heaters for ceiling mounting are considered as heaters for mounting at high level.

See also Sub-clause 22.1.

7. Marking

This clause of Part 1 is applicable except as follows:

7.1 Sub-clause (h). Not applicable.

Addition:

Heaters intended to be filled with liquid by the user shall be marked with the maximum liquid level and the minimum liquid level.

Heaters, other than those for mounting at high level and those with visibly glowing heating elements, shall be marked with a warning against covering.

NOTE. For information see X.11.

Heaters provided with a fireguard which is intended to be removed for shipping or for storage, shall be marked with a warning stating that the heater must not be operated without the fireguard in place, unless such a warning is given on a label attached to the heater.

NOTE. For information see X.12.

Addition:

The warning against covering may, for example, consist of the words "Do not cover", in the official language(s) of the country in which the heater is to be sold.

7.2 Not applicable.

7.10 *Addition:*

For heaters for mounting at high level, the indication of the different positions of switches shall be visible from a distance of at least 1 m, when viewed during daylight from a normal position for operating the switch.

7.12 *Addition:*

The instruction sheet shall include a warning stating that the heater must not be located immediately below a fixed socket-outlet.

The instruction sheet shall also include information for mounting the heater at high level, if applicable.

For portable heaters, the instruction sheet shall include the substance of the following warning:

“Do not use this heater in the immediate surroundings of a bath, a shower or a swimming pool.”

For fixed heaters likely to be used in a bathroom or shower room, the instruction sheet shall include a statement specifying that the heater must be so installed that switches and other controls cannot be touched by a person making use of the bath or shower.

For visibly glowing radiant heaters, other than those for mounting at high level, provided with fireguards which can be partly removed without the aid of a tool, the instruction sheet shall include the substance of the following warning:

“The fireguard of this heater is intended to prevent direct access to heating elements, so that it must not be permanently removed. However, the fireguard does not give full protection for young children and for aged or infirm persons.”

For visibly glowing radiant heaters, other than those for mounting at high level, the instruction sheet shall include the substance of the following warning:

“Caution! Do not use this heater in series with a thermal control, a programme controller, a timer or any other device that switches on the heater automatically, since a fire risk exists when the heater is accidentally covered or displaced.”

For heaters marked with a warning against covering, the instruction sheet shall include an explanation clarifying that marking.

For oil-filled heaters, the instruction sheet shall include the substance of the following warning:

“The container of this heater is filled with a precise quantity of special oil, so that repairs requiring the opening of the oil container must only be made by the manufacturer or his service agent. Any oil leakage must be reported to the manufacturer or his service agent.”

If rollers, castors or feet are delivered separately with the heater, the instruction sheet shall include clear information with regard to their assembly.

NOTE. For information see X.13.

7.14 Following the fourth paragraph.

Addition:

The marking concerning covering shall be clearly discernible from the outside after the heater has been placed as in normal use, and the lettering shall have a height of at least 3 mm.

NOTE. For information see X.14.

The marking concerning removable fireguards shall be readily visible after the heater has been installed as in normal use, but without the guard in place.

NOTE. For information see X.15.

7.101 If compliance with this standard depends upon the operation of a replaceable thermal link, the heater shall be marked with the information necessary to identify the thermal link.

This marking shall be visible after the thermal cut-out or the link has been installed, if necessary after the removal of the cover giving access to it.

NOTE. For information see X.16.