



DPC: 22/30442115 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

Date: 25 January 2022

Origin: International

Latest date for receipt of comments: 16 March 2022

Project No. 2021/02153

Responsible committee: CPL/61/7 Safety of electrical appliances - Heated appliance group

Interested committees:

Title: Draft BS EN 60335-2-17 Ed.4.0 Household and similar electrical appliances. Part 2-17: Particular requirements for blankets, pads, clothing and similar flexible heating appliances.

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

WARNING: THIS IS A DRAFT AND MUST NOT BE REGARDED OR USED AS A BRITISH STANDARD. THIS DRAFT IS NOT CURRENT BEYOND 16 March 2022

This draft is issued to allow comments from interested parties; all comments will be given consideration prior to publication. No acknowledgement will normally be sent. **See overleaf for information on the submission of comments.**

No copying is allowed, in any form, without prior written permission from BSI except as permitted under the Copyright, Designs and Patent Act 1988 or for circulation within a nominating organization for briefing purposes. Electronic circulation is limited to dissemination by e-mail within such an organization by committee members.

Further copies of this draft may be purchased from BSI Shop <http://shop.bsigroup.com> or from BSI Customer Services, Tel: +44(0) 20 8996 9001 or email cservices@bsigroup.com. British, International and foreign standards are also available from BSI Customer Services.

Information on the co-operating organizations represented on the committees referenced above may be obtained from <https://standardsdevelopment.bsigroup.com/>.

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
------------------	------------------------

1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



61/6441/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:

IEC 60335-2-17 ED4

DATE OF CIRCULATION:

2022-01-21

CLOSING DATE FOR VOTING:

2022-04-15

SUPERSEDES DOCUMENTS:

61/6343/RR

IEC TC 61 : SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES

SECRETARIAT:

United States of America

SECRETARY:

Ms Randi Myers

OF INTEREST TO THE FOLLOWING COMMITTEES:

PROPOSED HORIZONTAL STANDARD:



Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC

☐ ENVIRONMENT

☐ QUALITY ASSURANCE

☒ SAFETY

☐ SUBMITTED FOR CENELEC PARALLEL VOTING

☒ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Household and similar electrical appliances - Safety - Part 2-17: Particular requirements for blankets, pads, clothing and similar flexible heating appliances

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

This document is circulated according to the decisions taken at the TC 61 meetings for the 2021 Web Series-I – see 61/6306/RM

History refer to:

61/6200/DC and 61/6261A/INF n 61/6306/RM, item 16.

Copyright © 2021 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.

CONTENTS

1	Scope	7
2	1	
3	2 Normative references	8
4	3 Terms and definitions	8
5	4 General requirement	10
6	5 General conditions for the tests	10
7	6 Classification	12
8	7 Marking and instructions	12
9	8 Protection against access to live parts	15
10	9 Starting of motor-operated appliances	15
11	10 Power input and current	15
12	11 Heating	16
13	12 Charging of metal-ion batteries	18
14	13 Leakage current and electric strength at operating temperature	18
15	14 Transient overvoltages	19
16	15 Moisture resistance	19
17	16 Leakage current and electric strength	20
18	17 Overload protection of transformers and associated circuits	21
19	18 Endurance	21
20	19 Abnormal operation	21
21	20 Stability and mechanical hazards	24
22	21 Mechanical strength	24
23	22 Construction	33
24	23 Internal wiring	34
25	24 Components	35
26	25 Supply connection and external flexible cords	35
27	26 Terminals for external conductors	36
28	27 Provision for earthing	36
29	28 Screws and connections	36
30	29 Clearances, creepage distances and solid insulation	36
31	30 Resistance to heat and fire	37
32	31 Resistance to rusting	40
33	32 Radiation, toxicity and similar hazards	40
34	Annex AA (normative) Specification for the thermal insulation	53
35	Annex BB (normative) Equipment for the mechanical strength test for blankets	54
36	Annex CC (normative) Clothing	57
37	Annex DD (normative) Rigidity index test for mattresses	60

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-17: Particular requirements for blankets, pads, clothing and similar flexible heating appliances

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 60335-2-17 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2002, Amendment 1: 2008 and Amendment 2:2017. This edition constitutes a technical revision.

- alignment with IEC 60335-1: 2020;
- conversion of some notes to normative text (Clause 1, 19.106, 21.103, 21.104, 21.110, 30.1, 30.102, Annex BB, CC.19.3);
- clarification of the definition of control unit (3.6.105);
- revision for adjusting the supply voltage of appliances, other than controlled appliances, when operation at rated power input times a factor is specified (5.12);
- clarification of testing of blankets that cannot be folded with five thicknesses (19.102);
- updated compliance criteria to include breakage of electrodes (21.1);

- clarification of the test method for mattresses based on the rigidity index of the flexible part (21.111.1, Annex DD);
- clarification for testing heating elements with a non-circular construction (21.111.3);
- addition of requirements to protect the user from overheating in the event of an interruption in the mains supply (22.110)
- inclusion of pressure test method from IEC 60320-1:2001 (30.1);
- update of test methods for resistance to fire tests (30.101.1, 30.102).

The text of this International Standard is based on the following documents:

Draft	Report on voting
61/XX/FDIS	61/XX/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts of the IEC 60335 series, under the general title: *Household and similar electrical appliances – Safety*, can be found on the IEC website.

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments unless that edition precludes it; in that case, the latest edition that does not preclude it is used. It was established on the basis of the sixth edition (2020) of that standard.

NOTE 1 When “Part 1” is mentioned in this standard, it refers to IEC 60335-1.

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for blankets, pads, clothing and similar flexible heating appliances.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

NOTE 3 The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

The National Committees are requested to note that for this publication the stability date is 2025.

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

The following differences exist in the countries indicated below.

- 6.1: Class 0 products are allowed (Japan and USA).
- Annex AA: Felt is used for the thermal insulation (USA).

Note of the Secretary: National Committees are asked to reconfirm their in some countries notes. They will be deleted unless reconfirmed.

INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 supporting documents on the IEC website

<https://www.iec.ch/tc61/supportingdocuments>

This information is given for the convenience of users of this International Standard and does not constitute a replacement for the normative text in this standard.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another part 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

When a part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 1 This means that the technical committees responsible for the part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

NOTE 2 Horizontal publications, basic safety publications and group safety publications covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features that impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

- IEC standards published by TC 59 concerning methods of measuring performance;
- CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;
- CISPR 14-2 concerning electromagnetic immunity;
- IEC standards published by TC 111 concerning environmental matters.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-17: Particular requirements for blankets, pads, clothing and similar flexible heating appliances

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric **blankets, pads**, clothing and other flexible appliances that heat the bed or human body, for household and similar purposes, their **rated voltage** being not more than 250 V **including direct current (DC) supplied appliances and battery-operated appliances**.

This standard also applies to **control units** supplied with the appliance.

Appliances not intended for normal household use but which nevertheless **can** be a source of danger to the public, such as appliances intended to be used in beauty parlours or by persons in cold ambient temperatures, are within the scope of this standard.

Requirements and tests for clothing are given in **normative** Annex CC.

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account

- persons (including children) whose
 - physical, sensory or mental capabilities; or
 - lack of experience and knowledge prevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

Children are considered to be old enough to use an appliance without supervision when they have been adequately instructed by a parent or guardian and are deemed competent to use the appliance safely.

Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements **can** be necessary;
- in many countries, additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour and similar authorities.

This standard does not apply to

- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- rigid bed warmers, such as those of metal or ceramic material;
- water bed heaters (IEC 60335-2-66);
- heating appliances for breeding and rearing animals (IEC 60335-2-71);
- foot warmers and heating mats (IEC 60335-2-81);

- 248 – appliances specifically intended for use under medical supervision (IEC 60601-2-35);
- 249 – heated carpets (IEC60335-2-106).

250 2 Normative references

251 This clause of Part 1 is applicable except as follows.

252 *Addition:*

253 IEC 60320-1:2001, *Appliance couplers for household and similar general purposes — Part 1:*
254 *General requirements*
255 *Amendment 1 (2007)*¹

256 ISO 2439, *Flexible cellular polymeric materials – Determination of hardness (indentation*
257 *technique)*

258 ISO 3758, *Textiles – Care labelling code using symbols*

259 ISO/IEC Guide 37, *Instructions for use of products of consumer interest*

260 3 Terms and definitions

261 This clause of Part 1 is applicable except as follows.

262 3.1 Definitions relating to physical characteristics

263 3.1.9 *Addition:*

264 **normal operation**

265 operation of the appliance under the following conditions:

- 266 – **blankets** and **pads** are placed between sheets of thermal insulation;
- 267 – **duvets** are placed on a sheet of thermal insulation but not covered;
- 268 – **mattresses** are covered by a sheet of thermal insulation

269 NOTE 101 *to entry:* The specification for the thermal insulation is given in *normative* Annex AA.

270 The **flexible part** is supported on a plywood base 20 mm thick and positioned not less than
271 300 mm above the floor. The size of the plywood base is such that the thermal insulation can
272 be fully supported over its entire area. The size of the sheets of thermal insulation is such that
273 the edges extend at least 100 mm beyond the outline of the **heated area**.

274 **Control units** held in the hand when they are actuated and cord switches are positioned to
275 hang away from the plywood base. Other **control units** are placed on a supporting surface
276 away from the plywood base.

277 3.5 Definitions relating to types of appliances

278 3.5.101

279 **blanket**

280 appliance comprising a substantially flat **flexible part** that is intended to form part of the
281 bedding, for heating the bed

3.5.102

underblanket

blanket intended to be used under the occupant of the bed

3.5.103

overblanket

blanket intended to be used over the occupant of the bed

3.5.104

duvet

quilted **overblanket** intended to be used without additional bedding over the occupant of the bed, the **heating element**, **electro-conductive textile**, providing supplementary heat

3.5.105

pad

appliance comprising a **flexible part** having a **heated area** not exceeding 0,3 m² on each face and which is intended to heat part of the human body

If the **pad** is constructed in a cylindrical or similar form, the limit for the **heated area** is 0,6 m².

3.5.106

mattress

appliance for supporting the human body and which incorporates an upholstered **flexible part** for heating the bed

Note 1 to entry: The appliance may be placed on the floor and referred to as a mat.

3.5.107

controlled appliance

appliance incorporating means in the **flexible part**, such as **heating elements with PTC characteristics** or other means, for sensing changes in temperature when the appliance is operated under **normal operation**, thus automatically controlling the average power input

3.5.108

moisture-proof appliance

appliance having a **flexible part** that is suitable for use under moist conditions

3.5.109

wrap

appliance comprising a **flexible part** intended to be draped over the human body in order to keep it warm

3.6 Definitions relating to parts of an appliance

3.6.101

flexible part

all layers of material forming the permanent enclosure of the appliance together with the **heating element**, **electro-conductive textile**, **thermostats** and all other current-carrying parts contained within it

Note 1 to entry: The **flexible part** may be inside a **detachable cover**.

3.6.102

heating element

heating conductor, including any core and insulation, together with any other integrated conductor

3.6.103**heated area**

area of the **flexible part** enclosed within the outer perimeter of the **heating element** or **electro-conductive textile**

It includes a margin outside the perimeter that has a width equal to 0,5 times the average distance between adjacent runs of the **heating element**.

The **heated area** includes the return length of the **heating element** if the average distance between this part and the adjacent **heating element** does not exceed the average distance between adjacent runs of the **heating element**.

If a **blanket** or **mattress** has two separate **heated areas**, the surface between the two areas is considered to be part of the **heated areas**, if at any place the distance between the two **heating elements** does not exceed 1,5 times the average distance between adjacent runs of the **heating element**.

3.6.104**bonded enclosure**

enclosure of the **flexible part** that has the opposite faces joined together by means of an adhesive or by welding

3.6.105**control unit**

device, external to the **flexible part**, by means of which the average power input of the appliance or the temperature of the **flexible part** can be adjusted or regulated

Note 1 to entry: **Control units** may be incorporated in the **supply cord** or at the end of an **interconnection cord**.

3.6.106**electro-conductive textile**

material incorporating carbon or other conductive substance, together with any associated insulation, which is connected to a pair of electrodes for the purpose of providing a heated surface

3.6.107**heating element with PTC characteristics**

heating element consisting of a pair of conductors separated by conductive material that has a rapid non-linear increase in resistance when the temperature is raised through a particular range

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

5.2 Modification:

The tests are carried out on two appliances, identified as appliance A and appliance B.

Addition:

If a further appliance is required in order to continue testing after a test of Clause 19, it shall be adequately preconditioned taking into account 21.102 to 21.107.

For appliances having a **bonded enclosure**, additional appliances are required for the tests of 21.108 and 21.111. For other appliances, a length of 15 m of **heating element** is required for the tests of 21.111.

For **moisture-proof pads** subjected to the tests of 21.110, five additional appliances and 1 m² of enclosure material are required.

If heat-shrink material is used to insulate connections in the **flexible part**, a sample at least 150 mm in length is required for the test of 30.102.

An additional appliance may be required for the test of 19.107.

Additional samples of **pads** may be required for the test of 30.101.

For appliances having a **flexible part** incorporating **electro-conductive textile** and a **working voltage** above 24 V, an additional sample may be required for the test of 21.113.2 and a 1 m length of sheet insulation will be required for the test of 21.113.1.

5.3 Replacement:

The order in which the tests are carried out is as follows:

Appliance A: 7, 22.11, 8, 22.108, 10, 21.102 to 21.107, 22.104, 13, 15, 16, 17, 20, 25.15, 25.16, 19 (except 19.106), 21.108, 22.18, 30, 31 and 32. The tests of Clauses 13, 15 and 16 are not carried out on **class III appliances** having a **rated voltage** not exceeding 24 V or on **class III constructions** having a **working voltage** not exceeding 24 V.

Appliance B: 10, 11, 19.106, 21 (remainder), 22 (remainder), 23, 24, 25 (remainder), 26, 27, 28, 29 and 14.

The **flexible part** of washable appliances is laundered twice in accordance with the instructions before testing is started.

If it is evident from the construction of the appliance that a particular test is not applicable, the test is not carried out.

5.5 Addition:

If the **flexible part** of the appliance is provided with a **detachable cover**, the tests are carried out with or without this cover, whichever is more unfavourable. However, **duvets** are tested without a **detachable cover**.

If the construction of a **mattress** incorporates a separate **flexible part** that is detachable, the **detachable flexible part** is tested as an **underblanket**.

If the **heating element** can move in the channels, it is manipulated so that the individual runs are placed in the most unfavourable position.

5.6 Addition:

When testing appliances for **DC**, only, the possible influence of polarity on the operation of the appliance is taken into account.

5.7 Modification:

402 For **controlled blankets** and **mattresses**, the tests of Clauses 10, 11 and 19 are carried out
403 at an ambient temperature of $15\text{ °C} \pm 5\text{ °C}$.

404 **5.8.1** Addition:

405 Appliances for **DC** only are tested with **DC**.

406 **5.8.101** **Controlled appliances** are supplied as specified for **motor-operated appliances**.

407 **5.12** **Replacement**

408 For appliances, other than **controlled appliances**, when it is specified that the appliance has
409 to operate at the **rated power input** multiplied by a factor, the supply voltage is determined
410 by supplying the appliance at **rated voltage** until the **heating element** reaches its operating
411 temperature.

412 The supply voltage is then rapidly increased to the value necessary to give the power input
413 required for the relevant test, this value of the supply voltage being maintained throughout the
414 test.

415 **5.101** **Duvets** and **wraps** are tested as **overblankets**.

416 **6** **Classification**

417 This clause of Part 1 is applicable except as follows.

418 **6.1** **Modification:**

419 Appliances shall be **class II** or **class III**.

420 **7** **Marking and instructions**

421 This clause of Part 1 is applicable except as follows.

422 **7.1** **Modification:**

423 Appliances shall be marked with the **rated power input**. If the appliance has two means of
424 connection to the supply, the **rated power input** shall be stated for each circuit separately and
425 the information provided on a single label.

426 The **rated power input** may be expressed as $2 \times \text{rated power input}$ for each circuit in watts.
427 Other ways of expressing the **rated power input** may be used and the total given, provided
428 they do not give rise to misunderstanding.

429 Parts of **class III construction** shall not be marked with the **rated voltage** of the appliance.

430 **Addition:**

431 **Flexible parts** and **detachable covers** shall be marked with the name, trademark or
432 identification mark of the manufacturer or responsible vendor.

433 **Detachable covers** shall be marked with the model or type reference of the appliance with
434 which they are intended to be used.

435 The **flexible part** of appliances to be used with a **detachable control unit** shall be marked
436 with the reference of the **control unit** to be used.

437 The **flexible part** of appliances to be used with a **detachable transformer** shall be marked
438 with the reference of the transformer to be used.

439 **Flexible parts** shall be marked with the substance of the following:

- 440 – symbol ISO 7000-0790 (2004-01), or by the text ‘read the instructions’;
- 441 – the sign shown in Figure 101, or by the text ‘do not insert pins’;
- 442 – the sign ‘Not to be used by very young children (0-3 years)’, or by similar text;
- 443 – symbol ISO 7000-3114 (2011-10) and symbol ISO 7000-3124 (2011-10);
- 444 – intended orientation of blankets and mattresses (this marking is not required if the
445 appliance complies with 11.101, whichever way it is placed on the bed).

446 **Underblankets**, other than those having a **heating element with PTC characteristics**, shall
447 be marked with the sign shown in Figure 102 or by the text ‘do not use folded or rucked’.

448 **Detachable covers** shall be marked with the following:

- 449 • sign ISO 7000-0790 (2004-01);
- 450 • sign of Figure 101.

451 The **flexible part** of **blankets** and **detachable covers** shall be marked with the appropriate
452 laundering symbols specified in ISO 3758. Washable appliances fitted with a **non-detachable**
453 **flexible cord** shall be marked with symbol ISO 7000-3125 (2011-10). Non-washable
454 appliances shall be marked with symbol ISO 7000-3123 (2011-10).

455 **7.6 Addition:**



[symbol ISO 7000-3114 (2011-10)]

Do not dry clean



[symbol ISO 7000-3123 (2011-10)]

Do not wash



[symbol ISO 7000-3124 (2011-10)]

Do not bleach



[symbol ISO 7000-3125 (2011-10)]

Wash by hand



Not to be used by very young children (0-3 years)

7.12 Addition:

The instructions shall contain the substance of the following:

Important instructions. Retain for future use.

When the signs of Figure 101, Figure 102 or those in the addition to 7.6 are used, they shall be explained.

The instructions for **blankets** shall state whether the appliance is an **overblanket** or an **underblanket**.

The instructions shall specify the appropriate settings of controls for continuous use of the appliance.

The instructions for **pads** shall state that when the appliance is likely to be used for an extended period, for instance by the user falling asleep, controls should be adjusted to a setting recommended for continuous use. The instructions for **blankets** and **mattresses** shall state that if the appliance is slept on with the controls set to a higher temperature the user may suffer skin burns or heat stroke.

The instructions for appliances provided with **detachable control units** or **detachable transformers** shall state that the appliance is only to be used with the types that are marked on the appliance.

The instructions for **duvets** shall state the length and width of the **detachable cover** to be used.

The instructions shall state the substance of the following:

- when not in use, store as follows (quote necessary instructions);
- when storing the appliance, allow it to cool down before folding;
- do not crease the appliance by placing items on top of it during storage (for **blankets** and **pads** only);
- examine the appliance frequently for signs of wear or damage. If there are such signs, if the appliance has been misused or does not work, return it to the supplier before switching it on again;
- this appliance is not intended for medical use in hospitals;
- do not use if wet (this instruction is not required for **moisture-proof appliances** or **Class III appliances**);
- this appliance must not be used by persons insensitive to heat and other very vulnerable persons who are unable to react to overheating;
- children under the age of three are not to use this appliance due to their inability to react to overheating.

The instructions for **underblankets** shall state the substance of the following:

- the appliance should not be used on an adjustable bed; or
- if the appliance is used on an adjustable bed, check that the blanket and cord do not become trapped or rucked, for example in hinges.

The instructions shall state that the appliance is not to be used by young children over the age of three unless the controls have been pre-set by a parent or guardian, and unless the child has been adequately instructed on how to operate the controls safely.

497 Washable appliances shall be provided with instructions for laundering. The instructions for
498 washable appliances fitted with a **non-detachable cord** shall state that the switch or control
499 unit must not be allowed to get wet during washing and that during drying the cord must be
500 positioned to ensure that water does not flow into the switch or control.

501 The instructions for non-washable appliances shall state how they can be cleaned, for
502 example with a damp sponge.

503 **7.14** *Modification:*

504 *Instead of petroleum spirit, liquid detergent is used to check the marking on **flexible parts***
505 *and **detachable covers**.*

506 *Addition:*

507 The height of the lettering on the **flexible part** shall be at least 2,5 mm.

508 The height of the signs shown in Figure 101, Figure 102 and the symbol 'not to be used by
509 very young children (0-3 years)' shall be at least 15 mm.

510 The height of the words "Important instructions" and "Retain for future use" shall be at least
511 4 mm.

512 *Compliance is checked by measurement in accordance with ISO/IEC Guide 37.*

513 **7.15** *Addition:*

514 The symbols required to be marked on **detachable covers** shall be visible from the outside
515 after the cover has been fitted.

516 Symbol IEC 60417-5018 (2011-07) shall be placed next to symbol IEC 60417-5172 (2003-02)
517 or symbol IEC 60417-5180 (2003-02), as appropriate.

518 **7.101 Detachable control units** shall be marked with a reference number or by other
519 means of identification.

520 *Compliance is checked by inspection.*

521 **8 Protection against access to live parts**

522 This clause of Part 1 is applicable.

523 **9 Starting of motor-operated appliances**

524 This clause of Part 1 is not applicable.

525 **10 Power input and current**

526 This clause of Part 1 is applicable except as follows.

527 **10.1** *Modification:*

528 The negative deviation in Table 1 is increased to 20 %.

If the appliance has two means of connection to the supply, the permitted deviation for power input specified in Table 1 shall be measured separately for each circuit.

10.101 The power input of appliances incorporating **heating elements with PTC characteristics** shall significantly decrease with an increase in temperature.

Compliance is checked by the following test.

*The appliance is supplied at **rated voltage** and operated under **normal operation**. The power input shall have decreased by at least 50 % from the initial value when steady conditions are established, any control operating during this period being short-circuited.*

11 Heating

This clause of Part 1 is applicable except as follows.

11.2 *Modification:*

The plywood base is placed away from the walls of the test corner.

Addition:

***Underblankets** having the length of their longest side less than 1 m and **duvets**, other than those having **heating elements with PTC characteristics**, are also tested folded. A single fold across the complete width of the **duvet** is made at a quarter of the length from one end. Controls are adjusted to the highest setting intended for continuous use.*

***Wraps**, other than those having **heating elements with PTC characteristics**, are also tested folded. A single fold is made across the **flexible part** in the most unfavourable place.*

11.3 *Addition:*

*Thermocouples used for determining the temperature of **heating elements**, or sheaths containing them, are attached with textile thread over a length of at least 10 mm.*

*Thermocouples used for determining the temperature of the surface of **electro-conductive textiles** are fixed by means of thin adhesive tape.*

*Thermocouples used for determining the temperature of the surface of **pads** are attached to plates of copper or brass measuring 65 mm × 65 mm × 0,5 mm. The plates are positioned to cover as many **heating element** runs as possible, with one side parallel to the direction of the run. The temperatures are determined at not less than six places, three on each outer surface of the **flexible part**.*

11.4 *Addition:*

*Appliances having a **flexible part** of **class III construction** are supplied with the most unfavourable voltage between 0,94 and 1,06 times **rated voltage**.*

11.7 *Modification:*

Appliances are operated until steady conditions are established.

11.8 *Addition:*

For **controlled appliances**, the temperatures shall not exceed the values shown in Table 101. If the **flexible part** is comprised of **electro-conductive textile**, the values specified for **heating elements** are applicable to the surface of **supplementary insulation** or **reinforced insulation**, or to the conductive surface if there is no insulation.

Table 101 – Maximum temperatures

Part	Temperature °C
Heating element of blankets and mattresses	
– before the second operation of the thermal control	115
– under steady conditions	95
Heating element of pads	
– before the second operation of the thermal control	120 ^a
– under steady conditions	100
Surface of pads	50 ^b
^a A temperature of 140 °C is allowed for a period of 10 min.	
^b The temperature may exceed 50 °C, but not 85 °C, for a maximum period of 2 h. The period commences when the temperature first exceeds 50 °C.	

For other appliances, the temperature rises shall not exceed the values shown in Table 102.

Table 102 – Maximum temperature rises

Part	Temperature rise K ^a
Heating element	80
Surface of pads	35
^a These values are based on the normal ambient temperature of the appliance and take into consideration the maximum allowed ambient temperature during the test.	

If the ends of the **heating element of pads** are contained in a plastic sheath attached to the **flexible part**, the temperature or temperature rise specified for the surface also applies to the **accessible surface** of the sheath.

11.101 It shall be possible to operate **blankets** and **mattresses** without risk of skin burn or heatstroke to the user.

Compliance is checked by the following test.

The appliance is supplied as specified in 11.4 and operated under **normal operation** until steady conditions are established. The ambient temperature is maintained at 15 °C ± 2 °C. **Control units** and cord switches are adjusted to the highest setting recommended for continuous use, except for **wraps** when the lowest setting for continuous use is used.

The temperature of the surface of the **flexible part** is determined by means of a thermocouple attached to the centre of a plate of copper or brass having dimensions 300 mm × 300 mm × 0,5 mm. For **overblankets**, the plate is placed under the **flexible part**. For **underblankets** and **mattresses**, the plate is placed over the **flexible part**.