BS EN 60335-2-17:2013+A1:2020

BSI Standards Publication

Household and similar electrical appliances — Safety

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

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Full document details: BS EN 60335-2-17:2013+A1:2020

National foreword

This British Standard is the UK implementation of EN 60335-2-17:2013+A1:2020. It is derived from IEC 60335-2-17:2012, incorporating amendment 1:2015. It supersedes BS EN 60335-2-17:2013+A11:2019, which will be withdrawn on 24 April 2023.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by ⟨A1⟩ ⟨A1⟩.

Where a common modification has been introduced by CENELEC amendment, the tags carry the number of the amendment. For example, the common modifications introduced by CENELEC amendment A11 are indicated by ⟨C11⟩ ⟨C11⟩.

The UK participation in its preparation was entrusted to Technical Committee CPL/61/7, Safety of electrical appliances - Heated appliance group.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 April 2013.

Amendments/corrigenda issued since publication

Date	Text affected
31 August 2019	Implementation of CENELEC amendment A11:2019
30 April 2020	Implementation of IEC amendment 1:2015 with CENELEC endorsement A1:2020

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60335-2-17:2013+A1

April 2020

ICS 13.120; 97.040.50

Supersedes EN 60335-2-17:2002 + A1:2006 + A2:2009

English version

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

(IEC 60335-2-17:2012)

Appareils électrodomestiques et analogues - Sécurité - Partie 2-17: Exigences particulières pour les couvertures, coussins, vêtements et appareils chauffants souples analogues (CEI 60335-2-17:2012)

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke - Teil 2-17: Besondere Anforderungen an Wärmezudecken, Wärmeunterbetten, Heizkissen, Kleidung und ähnliche schmiegsame Wärmegeräte (IEC 60335-2-17:2012)

This European Standard was approved by CENELEC on 2012-04-30. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

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European foreword

The text of document 61/4336/FDIS, future edition 3 of IEC 60335-2-17, prepared by IEC/TC 61 "Safety of household and similar electrical appliances" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60335-2-17:2013.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2013-08-22
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2015-04-30

This document supersedes EN 60335-2-17:2002 + A1:2006 + A2:2009.

EN 60335-2-17:2013 includes the following significant technical changes with respect to EN 60335-2-17:2002:

– The definition of PTC heating element has been deleted and the definition in Part 1 now applies. A definition of a heating element with PTC characteristics has been introduced instead (3.117). This has resulted in editorial changes to 5.7, 5.8.2, 7.1, 10.101, 11.2, 21.105, 21.111.1 and 21.112.

– The allowance for class I appliances has been deleted and requirements for appliances incorporating a functional earth have been incorporated (6.1, 7.1, 22.115).

– The working voltage of parts of class III construction is limited to 24 V (22.26).

– Some notes have been deleted or converted to normative text (3.107, 3.111, 3.113, 5.2, 5.3, 5.8.2, 11.8, 11.101, 11.102, 15.1, 15.101, 19.1, 19.13, 19.102, 19.103, 19.105, 19.106, 19.108, 19.109, 19.110, 19.111, 19.112, 21.1, 21.102, 21.103, 21.109, 21.110.3, 21.111.1, 21.111.2, 21.111.3, 21.112, 22.103, 22.114, 25.23, Annex AA, Annex CC 3.1.9, 19.201, 19.203).

– Modification of the marking requirements (7.1, 7.14, 7.15).

– Modification of the instructions (7.12).

– Clarification of the heat stroke test (11.101).

– The figure numbers have been updated to take into account deletion of Figure 103 in EN 60335-2-17:2002.

This part 2 is to be used in conjunction with EN 60335-1:2012.

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

This part 2 supplements or modifies the corresponding clauses in EN 60335-1, so as to convert that publication into the European 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;

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– 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC)

Endorsement notice

The text of the International Standard IEC 60335-2-17:2012 was approved by CENELEC as a European Standard without any modification.

Add to the bibliography of EN 60335-1:2012:

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60335-2-66	NOTE	Harmonized as EN 60335-2-66.
IEC 60335-2-71	NOTE	Harmonized as EN 60335-2-71.
IEC 60335-2-81	NOTE	Harmonized as EN 60335-2-81.
IEC 60601-2-35	NOTE	Harmonized as EN 60601-2-35.

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European foreword to amendment A11

This document (EN 60335-2-17:2013/A11:2019) has been prepared by CLC/TC 61 "Safety of household and similar electrical appliances".

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-01-26
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-07-26

This amendment supplements or modifies the corresponding clauses of EN 60335-1:2012 including its amendments and EN 60335-2-17:2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

For relationship with EU Directive(s), see informative Annex ZZ, which is an integral part of this document.

European foreword to amendment A1

This document (EN 60335-2-17:2013/A1:2020*)* consists of the text of IEC 60335-2-17:2012/A1:2015 prepared by IEC/TC 61 "Safety of household and similar electrical appliances", together with the common modifications prepared by CLC/TC 61 "Safety of household and similar electrical appliances*"*.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-10-24
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2023-04-24

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For the relationship with EU Directive see informative Annex ZZ, which is included in this document.

Endorsement notice

The text of the International Standard IEC 60335-2-17:2013/A1:2019 was approved by CENELEC as a European Standard without any modification.

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu

Addition *to Annex ZA of EN 60335-1:2012:*

Publication	Year	Title	EN/HD	Year
IEC 60320-1 + A1	2001 2007	Appliance couplers for household and similar general purposes - Part 1: General requirements	EN 60320-1 + A1	2001 2007
ISO 2439	-	Flexible cellular polymeric materials - Determination of hardness (indentation technique)	EN ISO 2439	-
ISO 7000	2014	Graphical symbols for use on equipment - Registered symbols	-	-
ISO/IEC Guide 37	-	Instructions for use of products of consumer interest	-	-

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Annex ZZ
(informative)

Relationship between this European Standard and the safety objectives of Directive 2014/35/EU [2014 OJ L96] aimed to be covered

This European Standard has been prepared under a Commission's standardization request relating to harmonized standards in the field of the Low Voltage Directive, M/511, to provide one voluntary means of conforming to safety objectives of Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits [2014 OJ L96].

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding safety objectives of that Directive, and associated EFTA regulations.

Compliance with this Part 2 when used together with the Part 1 provides one means of conformity with the safety objectives.

Table ZZA.1 – Correspondence between this European Standard and Annex I of Directive 2014/35/EU [2014 OJ L96]

Safety objectives of Directive 2014/35/EU	Clause(s) / sub-clause(s) of this EN	Remarks/ Notes
1 a)	Clauses 4, 7	None
1 b)	Clauses 4, 7	None
1 c)	Clauses 4, 7	None
2 a)	Clauses 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31	None
2 b)	Clauses 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31	None
2 c)	Clauses 6, 7, 11, 15, 17, 18, 19, 20, 21, 22, 24, 25, 30, 32	None
2 d)	Clauses 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31	None
3 a)	Clauses 6, 7, 11, 17, 18, 19, 20, 21, 22	None
3 b)	Clauses 7, 11, 15, 19, 22, 25, 32	None
3 c)	Clauses 6, 7, 9, 10, 11, 14, 17, 18, 19, 21, 22	None

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

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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.
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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.

This part of International Standard IEC 60335 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This third edition cancels and replaces the second edition published in 2002 including its Amendment 1 (2006) and its Amendment 2 (2008). It constitutes a technical revision.

The principal changes in this edition as compared with the second edition are as follows (minor changes are not listed):

– The definition of PTC heating element has been deleted and the definition in Part 1 now applies. A definition of a heating element with PTC characteristics has been introduced instead (3.117). This has resulted in editorial changes to 5.7, 5.8.2, 7.1, 10.101, 11.2, 21.105, 21.111.1 and 21.112.
– The allowance for class I appliances has been deleted and requirements for appliances incorporating a functional earth have been incorporated (6.1, 7.1, 22.115).

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– The working voltage of parts of class III construction is limited to 24 V (22.26).
– Some notes have been deleted or converted to normative text (3.107, 3.111, 3.113, 5.2, 5.3, 5.8.2, 11.8, 11.101, 11.102, 15.1, 15.101, 19.1, 19.13, 19.102, 19.103, 19.105, 19.106, 19.108, 19.109, 19.110, 19.111, 19.112, 21.1, 21.102, 21.103, 21.109, 21.110.3, 21.111.1, 21.111.2, 21.111.3, 21.112, 22.103, 22.114, 25.23, Annex AA, Annex CC 3.1.9, 19.201, 19.203).
– Modification of the marking requirements (7.1, 7.14, 7.15).
– Modification of the instructions (7.12).
– Clarification of the heat stroke test (11.101).
– The figure numbers have been updated to take into account deletion of Figure 103 in the previous edition.

The text of this standard is based on the following documents:

FDIS	Report on voting
61/4336/FDIS	61/4352/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fifth edition (2010) 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.

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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.

The committee has decided that the contents of this publication 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.

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).

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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.

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 and generic standards 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. For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or part 2 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.

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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.

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

Appliances not intended for normal household use but which nevertheless may 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 Annex CC.

〚C11〛 This standard deals with the reasonably foreseeable hazards presented by appliances and machines that are encountered by all persons.

However, in general, it does not take into account:

– **children** playing with the appliance;

– the use of the appliance by **very young children**;

– the use of the appliance by **young children** without supervision.

It is recognized that **very vulnerable people** may have needs beyond the level addressed in this standard. 〚C11〛

NOTE 101 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.

NOTE 102 Attention is drawn to the fact that

– for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may 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.

NOTE 103 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);

– appliances specifically intended for use under medical supervision (IEC 60601-2-35).

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2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60320-1:2001, *Appliance couplers for household and similar general purposes – Part 1: General requirements*
Amendment 1 (2007)[1]

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

〖A1〗 ISO 7000:2014, *Graphical symbols for use on equipment – Registered symbols* 〖A1〗

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

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1.9 *Replacement:*

normal operation

operation of the appliance under the following conditions:

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

NOTE 101 The specification for the thermal insulation is given in Annex AA.

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

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

3.101
flexible part
all layers of material forming the permanent enclosure of the appliance together with the **heating element**, 〖A1〗 **electro-conductive textile**, 〖A1〗 **thermostats** and all other current-carrying parts contained within it

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

3.102
blanket
appliance comprising a substantially flat **flexible part** that is intended to form part of the bedding, for heating the bed

[1] There exists a consolidated edition 2.1 (2007) that includes edition 2 and its Amendment 1.

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3.103
underblanket
blanket intended to be used under the occupant of the bed

3.104
[A1] Void [A1]

3.105
overblanket
blanket intended to be used over the occupant of the bed

3.106
duvet
quilted **overblanket** intended to be used without additional bedding over the occupant of the bed, the **heating element**, [A1] **electro-conductive textile**, [A1] providing supplementary heat

3.107
pad
appliance comprising a **flexible part** having a **heated area** not exceeding 0,3 m^2 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 m^2.

3.108
mattress
[A1] 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. [A1]

3.109
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

3.110
heating element
[A1] heating conductor, including any core and insulation, together with any other integrated conductor [A1]

3.111
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**.

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3.112
moisture-proof appliance
appliance having a **flexible part** that is suitable for use under moist conditions

3.113
bonded enclosure
enclosure of the **flexible part** that has the opposite faces joined together by means of an adhesive or by welding

3.114
control unit
device, other than a multi-position cord switch, that does not incorporate components for regulating the power input, external to the **flexible part**, by means of which the average power input of the appliance 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**.

3.115
wrap
appliance comprising a **flexible part** intended to be draped over the human body in order to keep it warm

3.116
electro-conductive textile
〈A1〉 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 〈A1〉

3.117
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.*

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*For **moisture-proof pads** subjected to the tests of 21.110, five additional appliances and 1 m^2 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 19.112.

*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, 22.112, 10, 21.102 to 21.107, 22.108, 13, 15, 16, 17, 20, 25.15, 25.16, 19 (except 19.111), 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, 19.111, 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 d.c. only, the possible influence of polarity on the operation of the appliance is taken into account.

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5.7 *Modification:*

*For **flexible parts** incorporating **heating elements with PTC characteristics**, the tests of Clauses 10, 11 and 19 are carried out at the most unfavourable ambient temperature within the range of 0 °C to 25 °C.*

*For other **controlled blankets** and **mattresses**, the tests of Clauses 10, 11 and 19 are carried out at the most unfavourable ambient temperature within the range of 0 °C to 15 °C.*

5.8.1 *Addition:*

Appliances for d.c. only are tested with d.c.

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

5.12 *Modification:*

In the note, replace "25 %" by "10 %".

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

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 *Modification:*

Appliances shall be **class II** or **class III**. [A1] *Text deleted* [A1]

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 *Modification:*

Appliances shall be marked with the **rated power input**.

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

Addition:

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

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

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

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

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