

INTERNATIONAL STANDARD

IEC
60335-2-17

First edition
1998-11

**Safety of household and similar
electrical appliances –**

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

*Sécurité des appareils électrodomestiques
et analogues –*

*Partie 2-17:
Règles particulières pour les couvertures, coussins
et appareils chauffants souples analogues*

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –

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

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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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International Standard IEC 60335-2-17 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This first edition of IEC 60335-2-17 cancels and replaces IEC 60967 published in 1988, including its amendment 1 (1991) and amendment 2 (1995).

IEC 60967 cancelled and replaced IEC 335-17 published in 1974.

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

FDIS	Report on voting
61/1483/FDIS	61/1524/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 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 third edition (1991) of that standard.

A bilingual version of this standard may be issued at a later date.

This part 2 supplements or modifies the corresponding clauses of IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for electric blankets, pads 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 1 – 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 2. When a definition of part 1 concerns an adjective, the adjective and the associated noun are also in bold.

NOTE 2 – Subclauses, figures and tables which are additional to those in part 1 are numbered starting from 101. Additional annexes to those in part 1 are lettered AA, BB, etc.

The following additional differences exist in some countries:

- 6.1: Class 0 products are allowed (Japan and USA).
- 19.108: The fuse is not required to rupture (Australia).
- 22.102: Thermostats and thermal cut-outs are not allowed in the flexible part of underblankets (Australia and New Zealand).
- Annex AA: Felt is used for the thermal insulation (USA).

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SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –

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

1 Scope

This clause of part 1 is replaced by:

This standard deals with the safety of electric **blankets, pads** and other flexible appliances which heat the bed or human body, for household and similar purposes, their **rated voltage** being not more than 250 V. It also applies to **control units** supplied with the appliance

So far as is practicable, this standard deals with the common hazards presented by appliances which are encountered by all persons in and around the home.

This standard does not in general take into account

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

NOTE 1 – 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 2 – 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;
- for appliances intended to be used in tropical countries, special 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 3 – 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;
- appliances specifically intended for use under medical supervision (IEC 60601-2-35)¹⁾;
- heating appliances for breeding and rearing of animals (IEC 60335-2-71);
- water bed heaters (IEC 60335-2-66);
- foot warmers and heating mats (IEC 60335-2-81).

2 Definitions

This clause of part 1 is applicable except as follows.

¹⁾ IEC 60335-2-35; *Medical electrical equipment – Part 2: Particular requirements for the safety of blankets, pads and mattresses intended for heating in medical use*

2.2.9 Replacement:

normal operation

operation of the appliance under the following condition

The **flexible part** is supported by a piece of plywood, 20 mm thick, situated not less than 300 mm above the floor.

Mattresses are covered by a sheet of thermal insulation.

Duvets are placed on a sheet of thermal insulation but not covered.

Other appliances are placed between sheets of thermal insulation.

The size of the plywood is such that the thermal insulation can be fully supported over its entire area. Unless otherwise specified, 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**.

NOTE – The specification for the thermal insulation is given in annex AA.

2.10.4 Replacement

PTC heating element

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

2.101

flexible part

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

NOTE – The **flexible part** may be inside a **detachable cover**.

2.102

blanket

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

2.103

underblanket

blanket intended to be used under the occupant of the bed

2.104

ruck-resistant blanket

underblanket which has sufficient rigidity to prevent rucking of the **flexible part**

2.105

overblanket

blanket intended to be used over the occupant of the bed

2.106

duvet

quilted **overblanket** intended to be used without additional bedding over the occupant of the bed and in which a **heating element** provides supplementary heat

2.107**pad**

appliance comprising a **flexible part** having a **heated area** not exceeding 0,2 m² on each face and which is intended to heat part of the human body

2.108**mattress**

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

2.109**controlled appliance**

appliance incorporating means in the **flexible part** for sensing changes in temperature when the appliance is operated under **normal operation**, thus automatically controlling the average power input

2.110**heating element**

heating conductor, including the core on which it is wound and the insulation, together with any other integrated conductor

2.111**heated area**

area of the **flexible part** enclosed within the outer perimeter of the **heating element**. 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**.

NOTE 1 – 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**.

NOTE 2 – 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**.

2.112**moisture-proof appliance**

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

2.113**bonded enclosure**

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

NOTE – The bonded enclosure may include several bonded layers of material.

2.114**control unit**

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

NOTE 1 – **Control units** may be incorporated in the **supply cord** or at the end of an **interconnection cord**.

NOTE 2 – Multi-position cord switches are not considered to be **control units** unless they incorporate components for regulating the power input.

3 General requirement

This clause of part 1 is applicable.

4 General conditions for the tests

This clause of part 1 is applicable except as follows.

4.2 Modification:

The tests are carried out on two appliances which are named appliance A and appliance B.

*For appliances having a **bonded enclosure**, an additional appliance is 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.*

*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.*

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

NOTE 1 – An additional appliance may be required for the test of 19.110.

NOTE 2 – Additional samples of **pads** may be required for the test of 30.101.

NOTE 3 – If a further appliance is required in order to continue testing after a test of clause 19, it has to be adequately preconditioned taking into account 21.102 to 21.107.

NOTE 4 – **Duvets** are tested as **overblankets**.

4.3 Replacement:

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

Appliance A: 7, 22.11, 8, 22.114, 10, 11.101, 21.102 to 21.107, 22.108, 13, 15, 16, 17, 20, 25.15, 25.16, 19, 21.108, 22.18, 30, 31 and 32.

Appliance B: 10, 11 (remainder), 21, 21.101, 22 (remainder), 23, 24, 25 (remainder), 26, 27, 28 and 29.

*The **flexible part** of washable appliances is laundered twice in accordance with instructions for use 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.

4.5 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.*

Duvets are tested without a **detachable cover**.

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

4.6 Addition:

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

4.7 Addition:

The tests of clauses 10, 11 and 19 performed on **flexible parts** incorporating **PTC heating elements** 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.

4.8.1 Addition:

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

4.8.2 Addition:

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

NOTE – Appliances incorporating **PTC heating elements** within the **flexible part** are considered to be **controlled appliances**.

5 Void

6 Classification

This clause of part 1 is applicable except as follows.

6.1 Modification:

Appliances shall be of **class II** or **class III**. **Class III appliances** shall have a **rated voltage** not exceeding 24 V.

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**.

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.

Flexible parts and **detachable covers** shall be marked with the substance of the following:

- read the instructions;

NOTE 1 – This marking may be replaced by symbol 1641 of ISO 7000 (see figure 101).

- do not use folded (this marking is not required for **duvets, mattresses** and appliances with **PTC heating elements**);
- do not use rucked (this marking is required only for **underblankets**, other than those with **PTC heating elements**);
- do not insert pins;

NOTE 2 – These markings may be replaced by the relevant symbols shown in figures 101 to 103 for which the rules of ISO 3864 apply.

- underblanket or overblanket, as appropriate;
- do not use if wet (this marking is not required for **moisure-proof appliances**);
- do not use with a helpless person, an infant or a person insensitive to heat;
- overlong application at high setting can result in skin burns (this marking is required only for **pads**, other than those having a timer which switches off the supply after a period not exceeding 1 h).

NOTE 3 – The words "at high setting" are not required on **pads** without temperature adjustment.

The **flexible part** of **blankets** and **detachable covers** shall be marked with the appropriate laundering symbols specified in ISO 3758.

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

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

7.12 *Addition:*

The instructions for use shall contain the following:

Important instructions
Retain for future use

The instructions for use shall contain the substance of the instructions required in 7.1. If symbols are used, they shall be explained.

The instructions for use for **underblankets**, other than **blankets** having a ruck-resistance greater than 1,2 as determined in 22.106, shall state how the **blanket** is to be secured to the bed.

The instructions for use shall specify the appropriate settings of the control for all night use of the appliance.

The instructions for use for **pads** shall contain a warning that the user should not fall asleep when the appliance is in use.

NOTE – The requirement does not apply to **pads** fitted with a timer which switches off the supply after a period not exceeding 1 h.

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

The instructions for use for **duvets** shall state the length and width of the **detachable cover**.

The instructions for use for appliances containing a fuse link or **thermal link**, shall state that the appliance must be returned to the manufacturer or his agent if the link has ruptured.

The instructions for use shall state the substance of the following:

- when not in use, store as follows (quote necessary instructions);
- avoid creasing the appliance (for **blankets** and **pads** only);
- examine the appliance frequently for signs of wear or damage. If there are such signs or if the appliance has been misused, return it to the supplier prior to any further use;
- this appliance is not intended for medical use in hospitals.

The instructions for use for **blankets** shall state the substance of the following:

- do not tuck in;
- do not use on an adjustable bed, or if used on an adjustable bed, check that the blanket or cord cannot become trapped or rucked;
- this blanket is not to be used by young children unless the controls have been preset by a parent or guardian or unless the child has been adequately instructed on how to operate the controls safely.

7.14 Addition:

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

The words "Important instructions – Retain for future use" shall be in lettering having a height of at least 6 mm.

Modification:

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