

# INTERNATIONAL STANDARD

**IEC**  
**60335-2-66**

Second edition  
2002-10

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## Household and similar electrical appliances – Safety –

### Part 2-66: Particular requirements for water-bed heaters

*Appareils électrodomestiques et analogues –  
Sécurité –*

*Partie 2-66:  
Règles particulières pour les dispositifs de chauffage  
pour matelas à eau -2-66:2002*

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Reference number  
IEC 60335-2-66:2002(E)

## Publication numbering

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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

PRICE CODE

**P**

*For price, see current catalogue*

## CONTENTS

FOREWORD .....	3
INTRODUCTION .....	5
1 Scope .....	6
2 Normative references.....	6
3 Definitions .....	6
4 General requirement.....	7
5 General conditions for the tests .....	7
6 Classification .....	7
7 Marking and instructions .....	8
8 Protection against access to live parts .....	9
9 Starting of motor-operated appliances .....	9
10 Power input and current.....	9
11 Heating.....	9
12 Void .....	10
13 Leakage current and electric strength at operating temperature .....	10
14 Transient overvoltages.....	10
15 Moisture resistance.....	10
16 Leakage current and electric strength .....	10
17 Overload protection of transformers and associated circuits.....	10
18 Endurance .....	10
19 Abnormal operation.....	10
20 Stability and mechanical hazards.....	11
21 Mechanical strength.....	11
22 Construction .....	11
23 Internal wiring .....	12
24 Components .....	12
25 Supply connection and external flexible cords.....	12
26 Terminals for external conductors .....	13
27 Provision for earthing.....	13
28 Screws and connections .....	13
29 Clearances, creepage distances and solid insulation .....	13
30 Resistance to heat and fire .....	13
31 Resistance to rusting .....	13
32 Radiation, toxicity and similar hazards .....	13
Annexes.....	15
Bibliography.....	15
Figure 101 – Wood block.....	14

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –  
SAFETY –**
**Part 2-66: Particular requirements for water-bed heaters**

## 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.
- 2) The formal decisions or agreements of the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

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This part of International Standard IEC 60335 has been prepared by IEC technical committee 2002  
61: Safety of household and similar electrical appliances.

This second edition cancels and replaces the first edition published in 1993 and its amendment 1 (2000). It constitutes a technical revision.

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

FDIS	Report on voting
61/2175/FDIS	61/2256/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 fourth edition (2001) 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 electric water-bed heaters.

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 this publication will remain unchanged until 2004. At this date, the publication will be

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

The following differences exist in the countries indicated below.

- 6.1: Class I appliances are not allowed (China, Czech Republic, Norway, Slovakia and Yugoslavia).
- 7.12.1: Additional details of the water mattress are to be stated (USA).
- 11.8: The temperature rise limit is different (USA).
- 11.101: The test is not carried out (USA).
- 21.101: The test is different (USA).
- 24.101: Self-resetting thermal cut-outs are allowed (USA).

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

## 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.

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.

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.

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 2-66: Particular requirements for water-bed heaters

### 1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric **water-bed heaters** and their associated control units, for household and similar purposes, their **rated voltage** being not more than 250 V.

Appliances not intended for normal household use, but that nevertheless may be a source of danger to the public, such as appliances intended to be used in hotels, are within the scope of this standard.

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

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

NOTE 101 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or in 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, the national water supply authorities and similar authorities.

NOTE 102 This standard does not apply to appliances

- for medical purposes (IEC 60601);
- intended for immersion in water during use.

### 2 Normative references

This clause of Part 1 is applicable except as follows.

*Addition:*

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

### 3 Definitions

This clause of Part 1 is applicable except as follows.

#### 3.1.9 *Replacement:*

##### **normal operation**

operation of the appliance after the heater has been installed under a water mattress, taking into account the installation instructions



The appliance is supported by a wooden base that is consistent with the size of the mattress. The top of the base consists of plywood approximately 13 mm thick and is supported 150 mm above the floor by pinewood boards approximately 20 mm thick. The boards are assembled to form a rectangular framework that includes a longitudinal and two transverse members to produce six approximately equal sections.

The wooden base is completely covered by a sheet of open-cell polyether approximately 25 mm thick. The polyether has the following composition:

- cell count:  $18 \begin{smallmatrix} +2 \\ 0 \end{smallmatrix}$  per cm;
- specific mass:  $30 \text{ kg/m}^3 \begin{smallmatrix} +10\% \\ 0 \end{smallmatrix}$
- hardness: 120 N to 170 N at 40 % impression, measured according to ISO 2439.

NOTE 101 This polyether sheet is omitted if the instructions state that the heater is unsuitable for use on a soft support.

NOTE 102 Additional material is placed on the polyether sheet if this is stated in the instructions.

The heater, together with any control, is positioned on the polyether sheet. A piece of the bottom layer of water mattress material, having dimensions 10 mm x 200 mm, is folded to form a crease 50 mm x 200 mm. It is placed on the upper surface of the heater, parallel to the shortest side and approximately in the centre of the longest side.

The mattress is placed over the heater, filled with water and completely covered by a similar piece of polyether sheet approximately 36 mm thick.

### 3.101 water-bed heater

appliance incorporating a heating element within an enclosure and intended for use under a water mattress

NOTE 1 The appliance may be contained in an envelope of the mattress.

NOTE 2 The appliance may incorporate a **thermostat** having a sensing element that has to be positioned during installation.

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## 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.

### 5.3 Addition:

*The test of 21.101 is carried out immediately after the test of Clause 11.*

## 6 Classification

This clause of Part 1 is applicable except as follows.

### 6.1 Addition:

The **rated voltage** of **class III appliances** shall not exceed 24 V.

## 6.2 Addition:

Parts of the appliance, other than those of **class III**, that are intended to be placed under the water mattress shall be at least IPX7.

## 7 Marking and instructions

This clause of Part 1 is applicable except as follows.

### 7.1 Addition:

The appliance shall be marked with the substance of the following:

- read the instructions carefully;
- check that the heater, the mattress and any envelope are laid flat and without folds before filling the mattress with water;
- the support under the heater is to be flat, continuous and without sharp edges;
- use only to heat water-beds;
- this side up, if applicable;
- model or type reference of a detachable control unit, if applicable.

### 7.12 Addition:

The instructions shall include the substance of the following:

- the heater is only to be used with the type of detachable control unit that is marked on the appliance, if applicable;
- the appliance is not intended for use in hospitals;
- the appliance is intended only to heat water-beds;
- sharp objects such as needles and pins must not be inserted in the appliance;
- the orientation of the plug in the socket-outlet of class II appliances provided with a metal screen to minimize the capacitive leakage current and the electrostatic field. The means of checking the orientation shall be given;

NOTE 101 This does not apply to appliances having a polarized plug.

- bedding is not to come into contact with the heater.

#### 7.12.1 Addition:

The installation instructions shall include the substance of the following:

- the details of the installation of the heater and its control. In particular, details shall be given regarding the correct positioning and installation of any temperature sensing element of the control unit, to ensure that it does not easily slip out of position;
- the minimum dimensions of the water mattress and the minimum depth of water with which it is to be filled;
- details of any additional supporting material required if the heater is installed on a soft support, or a statement that the heater is unsuitable for such installation.