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**Gospodinjski in podobni električni aparati - Varnost - 2-96. del: Posebne zahteve za grelnne elemente z zvijavimi ploščami za sobno gretje (IEC 60335-2-96:2002)**

Household and similar electrical appliances - Safety - Part 2-96: Particular requirements for flexible sheet heating elements for room heating

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EUROPEAN STANDARD

**EN 60335-2-96**

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2002

ICS 13.120;97.100.10

English version

**Household and similar electrical appliances -  
Safety  
Part 2-96: Particular requirements for  
flexible sheet heating elements for room heating  
(IEC 60335-2-96:2002)**

Appareils électrodomestiques et  
analogues - Sécurité  
Partie 2-96: Règles particulières pour  
les films souples chauffants pour  
le chauffage des locaux  
(CEI 60335-2-96:2002)

Sicherheit elektrischer Geräte für den  
Hausgebrauch und ähnliche Zwecke  
Teil 2-96: Besondere Anforderungen  
an Flächenheizelemente  
(IEC 60335-2-96:2002)

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This European Standard was approved by CENELEC on 2002-07-02. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

**CENELEC**

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

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## Foreword

The text of document 61/2088/FDIS, future first edition of IEC 60335-2-96, prepared by the IEC Technical Committee 61, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60335-2-96 on 2002-07-02.

The following dates are applicable:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2003-07-01
- date on which national standards conflicting with the EN have to be withdrawn (dow) 2005-07-01

This part 2 has to be used in conjunction with EN 60335-1, Household and similar electrical appliances - Safety — Part 1: General requirements. It was established on the basis of the 2002 edition of that standard. Amendments and revisions of Part 1 have also to be taken into account and the dates when such changes become applicable will be stated in the relevant amendment or revision of Part 1.

This part 2 supplements or modifies the corresponding clauses of EN 60335-1, so as to convert it into the European Standard: Safety requirements for electric flexible sheet heating elements for room heating.

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 of Part 1 is to be adapted accordingly.

NOTE 1 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.

Subclauses, notes and annexes that are additional to those in the IEC standard are prefixed with the letter Z.

NOTE 2 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.

There are no special national conditions causing a deviation from this European Standard, other than those listed in annex ZA to EN 60335-1.

There are no national deviations from this European Standard, other than those listed in annex ZB to EN 60335-1.

p NOTE In this document, p is used in the margin to indicate instructions for preparing the printed version.

## Introduction

p Add:

An investigation by CENELEC TC 61 has shown that all risks from products within the scope of this standard are fully covered by the Low Voltage Directive, 73/23/EEC. For products having mechanical moving parts, a risk assessment in accordance with the Machinery Directive, 98/37/EC, has shown that the risks are mainly of electrical origin and consequently this directive is not applicable. However, the relevant essential safety requirements of the Machinery Directive are covered by this standard together with the principal objectives of the Low Voltage Directive.

## Endorsement notice

The text of the International Standard IEC 60335-2-96:2002 was approved by CENELEC as a European Standard without any modification.

## Annex ZC (normative)

### Normative references to international publications with their corresponding European publications

Addition:

SIST EN 60335-2-96:2003				
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<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60364-7-701	- <sup>1)</sup>	Electrical installations of buildings — Part 7: Requirements for special installations or locations — Section 701: Electrical installations in bathrooms	—	—
IEC 60884-1	- <sup>1)</sup>	Plugs and socket-outlets for household and similar purposes — Part 1: General requirements	—	—

<sup>1)</sup> Undated reference.

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INTERNATIONALE

CEI  
IEC

INTERNATIONAL  
STANDARD

60335-2-96

Première édition  
First edition  
2002-02

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**Appareils électrodomestiques et analogues –  
Sécurité –**

**Partie 2-96:**

**Règles particulières pour les films souples  
chauffants pour le chauffage des locaux**

**(standards.iteh.ai)**

**Household and similar electrical appliances –  
Safety –**

**SIST EN 60335-2-96:2003**  
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**Part 2-96:**

**Particular requirements for flexible sheet  
heating elements for room heating**

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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

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## CONTENTS

FOREWORD.....	7
INTRODUCTION.....	11
1 Scope.....	13
2 Normative references .....	13
3 Definitions .....	15
4 General requirement.....	17
5 General conditions for the tests .....	17
6 Classification.....	17
7 Marking and instructions.....	19
8 Protection against access to live parts.....	27
9 Starting of motor-operated appliances .....	27
10 Power input and current.....	27
11 Heating.....	27
12 Void.....	33
13 Leakage current and electric strength at operating temperature.....	33
14 Transient overvoltages.....	35
15 Moisture resistance .....	35
16 Leakage current and electric strength.....	35
17 Overload protection of transformers and associated circuits .....	37
18 Endurance .....	37
19 Abnormal operation .....	41
20 Stability and mechanical hazards.....	43
21 Mechanical strength .....	43
22 Construction.....	45
23 Internal wiring.....	49
24 Components .....	49
25 Supply connection and external flexible cords .....	49
26 Terminals for external conductors.....	49
27 Provision for earthing .....	51
28 Screws and connections.....	51
29 Clearances, creepage distances and solid insulation .....	51
30 Resistance to heat and fire.....	51
31 Resistance to rusting.....	53
32 Radiation, toxicity and similar hazards.....	53
Annexes .....	67
Annex AA (informative) Summary of installation instructions .....	69
Bibliography.....	71



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –  
SAFETY –Part 2-96: Particular requirements for flexible sheet heating elements  
for room heating

## 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, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the standards dealt with.
- 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.

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

It forms the first edition of IEC 60335-2-96.

The text of this part of IEC 60335 is based on the following documents:

FDIS	Report on voting
61/2088/FDIS	61/2105/RVD

Full information on the voting for the approval of this standard can be found in the voting report 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 electrical flexible sheet heating elements for room heating.

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 of 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;
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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 2003. At this date, the publication will be

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

**iTeh STANDARD PREVIEW**

The following additional differences exist in the countries indicated below.

- Clause 1: Flexible sheet heating elements that are cut on site are not allowed (France, Germany and Israel).
- 6.1: The installation is to be of class II construction (Germany).
- 6.1: Heating units are to be class II (Israel).
- 7.1: The intended installation is not to include walls (Canada and USA).
- 7.12.1 c): The instructions in timber floors shall state that the heating unit is to be covered with additional insulation, be supplied through an isolating transformer, or be class II (Sweden).
- 7.12.1 c): The instructions need not refer to residual current devices (USA).
- 7.12.101 a): The size of the terminals fitted to the grid may be smaller (Canada).
- Clause 18: The tests are different (USA).
- 22.102: The test is different (USA).
- 22.103: The test is different (USA).
- 25.3: Heating units are not allowed to incorporate supply cords (Canada and USA).

## 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 which 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 2-96: Particular requirements for flexible sheet heating elements for room heating

#### 1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of **flexible sheet heating elements** intended to be incorporated into the building to heat the room in which they are located, their **rated voltage** being not more than 250 V for single-phase installations and 480 V for other installations.

**Flexible sheet heating elements** are converted into **heating units** that are incorporated in the building in accordance with the instructions after which the required level of protection against hazards is achieved.

NOTE 101 Attention is drawn to the fact that

- in many countries different wiring rules apply;
- for **heating units** 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 authorities for fire protection, the national authorities for building regulations, the national health authorities, the national authorities responsible for the protection of labour and similar authorities.

NOTE 102 This standard does not apply to

- **heating units** intended exclusively for industrial purposes;
- **heating units** intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- blankets, pads and similar flexible heating appliances (IEC 60335-2-17);
- heated mats and foot warmers (IEC 60335-2-81);
- heating appliances intended to be used under a carpet;
- flexible heating elements incorporated in other appliances.

#### 2 Normative references

This clause of Part 1 is applicable except as follows.

*Addition:*

IEC 60364-7-701, *Electrical installations of buildings – Part 7: Requirements for special installations or locations – Section 701: Electrical installations in bathrooms*

IEC 60884-1, *Plugs and socket-outlets for household and similar purposes – Part 1: General requirements*

### 3 Definitions

This clause of Part 1 is applicable except as follows.

#### 3.1.9 Replacement:

##### normal operation

operation of the **heating unit** after incorporation into the building in accordance with the instructions.

**Flexible sheet heating elements**, the current of which can vary depending on the length of the heating element and those that can supply other **flexible sheet heating elements** are loaded so that the current marked on the heating element flows through the **heating unit**.

**Heating units for storage heating applications** are charged for 75 % of the **rated charging period**.

#### 3.5.4 Addition:

**Heating units** are considered to be **fixed appliances**.

#### 3.101

##### flexible sheet heating element

heating element consisting of sheets of electrical insulation laminated with electrical resistance material, or a base material on which electrically insulated heating wires are fixed

NOTE This definition does not preclude other methods of combining the insulation and resistance materials.

#### 3.102

##### heating unit

**flexible sheet heating element** equipped with means of connection to the supply and with insulation surrounding **live parts**

NOTE The **heating unit** can be partly or completely prefabricated.

#### 3.103

##### modular heating unit

prefabricated assembly consisting of a **heating unit** and other materials to form a rigid construction for mounting on a ceiling

#### 3.104

##### storage heating application

use of **heating units** to heat thermal accumulating material

NOTE The heat is discharged naturally, the heat output being varied by adjusting the energy input.

#### 3.105

##### rated charging period

longest uninterrupted charging period assigned to the **heating unit** by the manufacturer

#### 3.106

##### electrode

conductive part incorporated in a **flexible sheet heating element** for supplying the heating material