

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

AMENDMENT 2  
AMENDEMENT 2

**Household and similar electrical appliances – Safety –  
Part 2-81: Particular requirements for foot warmers and heating mats**

**Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-81: Règles particulières pour les chancelières et les carpettes  
chauffantes électriques**



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## FOREWORD

This amendment has been prepared by committee 61: Safety of household and similar electrical appliances.

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

CDV	Report on voting
61/4102/CDV	61/4200/RVC

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

The French version of this amendment has not been voted upon.

The committee has decided that the contents of this amendment and the base 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- withdrawn,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 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.

## 2 Normative references

Add the following new reference:

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

## 3 Definitions

Add the following new definition:

### 3.103

#### heating element with PTC characteristics

**heating element** of the appliance 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

<sup>1</sup> There exists a consolidated edition 2.1 (2007) that includes edition 2 and its Amendment 1.

## 10 Power input and current

*Replace the existing text by the following:*

This clause of Part 1 is applicable except as follows.

**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.*

## 21 Mechanical strength

**21.101** *In the second sentence of the first paragraph, replace 'A mass of 30 kg' by 'A load'.*

*Add a new third sentence as follows:*

*The total mass of the board, its movable support and the load is 30 kg.*

**21.102.1** *Add the following new paragraph after Note 3:*

*For **heating elements with PTC characteristics**, the power input is measured before and after the test. The measurement is made with the **heating element** suspended vertically in free air and supplied at the **rated voltage** of the appliance. Both measurements are carried out at the same ambient temperature and when the power input has stabilized. The power input shall not increase during the test.*

*Add the following new subclause.*

**21.103** **Heating elements with PTC characteristics** shall be resistant to crushing.

*Compliance is checked by the following test.*

*The **flexible part** is fully supported by a piece of plywood 20 mm thick and supplied as specified in 11.4. When steady conditions are established, the temperature of the **heating element** is measured. A block having dimensions of 100 mm × 300 mm and a mass of 80 kg is applied for 5 min to the surface in the most unfavourable place. After removing the block, the appliance is again operated until steady conditions are established and the temperature of the **heating element** is measured. The temperature of the **heating element** where the block has been applied shall not have increased by more than 10 K.*

NOTE 1 The edges of the block in contact with the **flexible part** are rounded.

NOTE 2 The most unfavourable place to apply the block is usually at a loop in the element.

## 22 Construction

*Add the following new subclause:*

**22.104 Heating mats** shall be constructed so that exposure of insulation of heating element and internal wiring shall be readily observed.

*Compliance is checked by inspection after removing other materials such as carpet pile. The colours of the insulation shall be different from the colours of the other materials.*

## 24 Components

*Add the following new subclause:*

**24.1.3 Modification:**

*Switches are tested for 6 000 cycles of operation.*

## 29 Clearances, creepage distances and solid insulation

*Add the following new subclause:*

**29.2 Addition:**

The microenvironment is pollution degree 3 unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance.

<https://standards.iteh.ai/catalog/standards/sist/607e5f-77dd-430c-82ce-e23718fd22f6/iec-60335-2-81-amd2-2011>

## 30 Resistance to heat and fire

**30.1 Add the following:**

*Modification:*

*Parts of resilient plastic material are subjected to the pressure test of 24.1.3 of IEC 60320-1 instead of the ball pressure test of IEC 60695-10-2.*

NOTE 101 An example of a part of resilient plastic material is a connection block.

*Add the following:*

**30.2.3.2 Addition:**

*The needle-flame test is not carried out on textile materials.*

*Add the following new subclause:*

**30.102** The insulation of **heating elements** and internal wiring shall be sufficiently resistant to heat and fire.

*Compliance is checked by the following test.*

A sample of the **heating element** or internal wiring at least 150 mm long is supported by a grid inclined at 45°. The grid is formed from parallel wires 0,6 mm in diameter and spaced 20 mm apart. The sample is positioned perpendicular to the horizontal wires and centrally between the other wires. A second grid of similar dimensions is placed on top of the sample so that its horizontal wires are displaced by 10 mm from the horizontal wires of the first grid. The wires of both grids that are parallel to the sample are aligned with each other.

The grid is mounted at the centre of a three-sided metal screen in a substantially draught-free location. The screen is approximately 900 mm high, 450 mm wide and 300 mm deep, of rectangular plan with open front and closed top.

A needle flame, as specified in IEC 60695-11-5, is applied to the sample and is maintained until the insulation ceases to burn.

The length of the sample damaged by fire shall not exceed 65 mm, measured from the point where the flame is applied.

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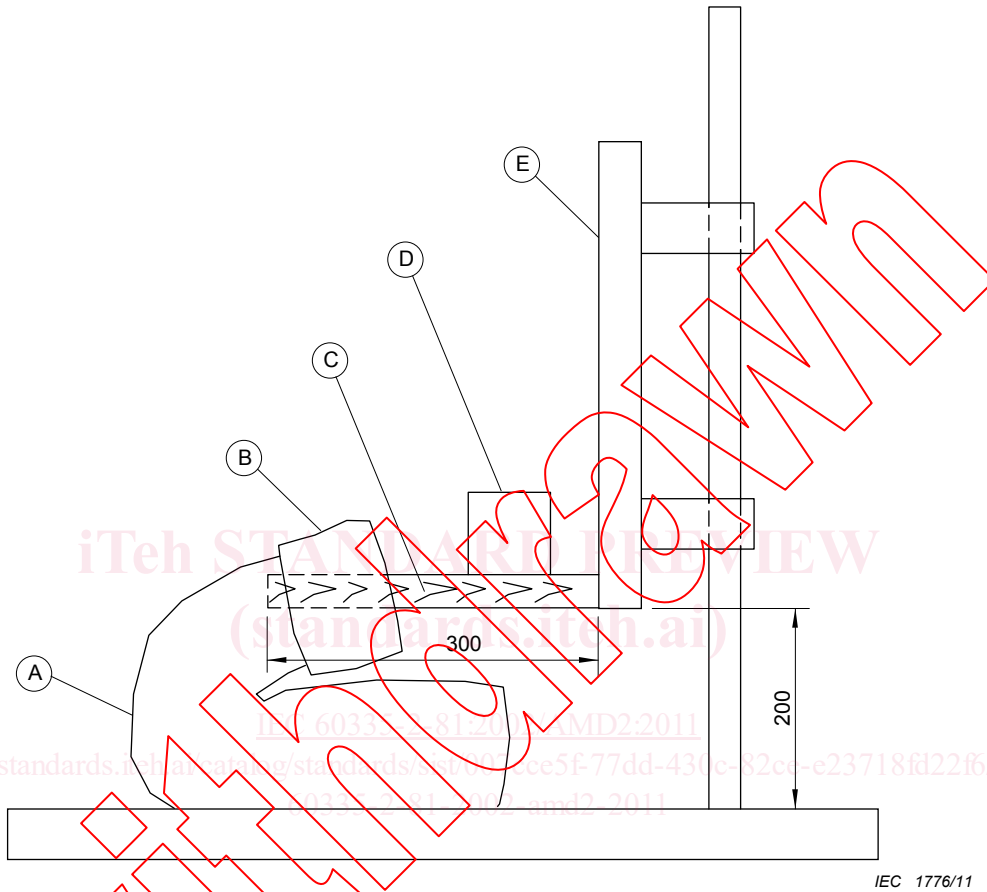
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Withstand

**Figure 101 – Equipment for the flexing test for foot warmers**

Replace the existing figure by the following:

*Dimensions in millimetres*



IEC 1776/11

**Key**

- A foot warmer
- B leg section
- C plywood board, 150 mm wide
- D load
- E movable support

**Figure 101 – Equipment for the flexing test for foot warmers**



WithDrawn

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## AVANT-PROPOS

Le présent amendement a été établi par le comité d'études 61 de la CEI: Sécurité des appareils électrodomestiques et analogues.

Le texte anglais de cet amendement est issu des documents 61/4102/CDV et 61/4200/RVC. Le rapport de vote 61/4200/RVC donne toute information sur le vote ayant abouti à l'approbation de cette norme.

La version française de cet amendement n'a pas été soumise au vote.

Le comité a décidé que le contenu de cet amendement et de la publication de base ne sera pas modifié avant la date de stabilité indiquée sur le site web de la CEI sous "http://webstore.iec.ch" dans les données relatives à la publication recherchée. A cette date, la publication sera

- reconduite,
- supprimée,
- remplacée par une édition révisée, ou
- amendée.

NOTE L'attention des Comités Nationaux est attirée sur le fait que les fabricants d'appareils et les organismes d'essai peuvent avoir besoin d'une période transitoire après la publication d'une nouvelle publication CEI, ou d'une publication amendée ou révisée, pour fabriquer des produits conformes aux nouvelles exigences et pour adapter leurs équipements aux nouveaux essais ou aux essais révisés.

Le comité recommande que le contenu de cette publication soit entériné au niveau national au plus tôt 12 mois et au plus tard 36 mois après la date de publication.

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## 2 Références normatives

*Ajouter la nouvelle référence suivante:*

IEC 60320-1:2001, *Connecteurs pour usages domestiques et usages généraux analogues – Partie 1: Prescriptions générales*  
Amendement 1 (2007)<sup>1</sup>

## 3 Définitions

*Ajouter la nouvelle définition suivante:*

### 3.103

#### **élément chauffant avec des caractéristiques CTP**

**élément chauffant** d'un appareil composé d'une paire de conducteurs séparés par un matériau conducteur qui a une augmentation rapide non linéaire en résistance lorsque la température s'élève à l'intérieur d'une plage particulière

<sup>1</sup> Il existe une édition consolidée 2.1 (2007) comprenant l'édition 2 et son Amendement 1.