

# CONSOLIDATED VERSION

# VERSION CONSOLIDÉE



---

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

**Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-17: Exigences particulières pour les couvertures, coussins, vêtements  
et appareils chauffants souples analogues**



## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2019 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

### About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

### About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

#### IEC publications search - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

#### IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [sales@iec.ch](mailto:sales@iec.ch).

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)

67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

### A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

### A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

#### Recherche de publications IEC -

[webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

#### Service Clients - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: [sales@iec.ch](mailto:sales@iec.ch).

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 000 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

#### Glossaire IEC - [std.iec.ch/glossary](http://std.iec.ch/glossary)

67 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

# CONSOLIDATED VERSION

# VERSION CONSOLIDÉE



---

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

**Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-17: Exigences particulières pour les couvertures, coussins, vêtements  
et appareils chauffants souples analogues**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

---

ICS 13.120; 97.040.50

ISBN 978-2-8322-6731-8

**Warning! Make sure that you obtained this publication from an authorized distributor.  
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**



# REDLINE VERSION

## VERSION REDLINE



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

**Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-17: Exigences particulières pour les couvertures, coussins, vêtements  
et appareils chauffants souples analogues**

## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references .....	9
3 Terms and definitions .....	9
4 General requirement.....	11
5 General conditions for the tests .....	11
6 Classification.....	13
7 Marking and instructions.....	13
8 Protection against access to live parts.....	16
9 Starting of motor-operated appliances .....	16
10 Power input and current .....	16
11 Heating .....	17
12 Void.....	19
13 Leakage current and electric strength at operating temperature.....	19
14 Transient overvoltages .....	20
15 Moisture resistance .....	20
16 Leakage current and electric strength.....	21
17 Overload protection of transformers and associated circuits .....	22
18 Endurance.....	22
19 Abnormal operation .....	22
20 Stability and mechanical hazards .....	26
21 Mechanical strength .....	26
22 Construction .....	34
23 Internal wiring.....	37
24 Components .....	37
25 Supply connection and external flexible cords .....	37
26 Terminals for external conductors.....	38
27 Provision for earthing .....	39
28 Screws and connections.....	39
29 Clearances, creepage distances and solid insulation .....	39
30 Resistance to heat and fire.....	39
31 Resistance to rusting.....	41
32 Radiation, toxicity and similar hazards.....	42
Annexes .....	54
Annex A (informative) Routine tests .....	54
Annex AA (normative) Specification for the thermal insulation.....	56
Annex BB (normative) Equipment for the mechanical strength test for blankets .....	57
Annex CC (normative) Clothing.....	60
Bibliography.....	63

Figure 101 – Symbol for "Do not use folded or rucked" .....	42
Figure 102 – Symbol for "Do not insert pins" .....	42
Figure 103 – Arrangement for measuring leakage current and electric strength of the flexible part.....	43
Figure 104 – Void .....	44
Figure 105 – Void .....	45
Figure 106 – Void .....	46
Figure 107 – Tumbling barrel for testing the mechanical strength of pads .....	47
Figure 108 – Impact apparatus for testing enclosures of moisture-proof appliances .....	48
Figure 109 – Shape of the sample for the tear resistance test.....	49
Figure 110 – Equipment for flexing heating elements and internal wiring .....	49
Figure 111 – Void .....	50
Figure 112 – Equipment for the spark ignition test .....	51
Figure 113 – Equipment for the spark ignition test – Details of the mask.....	52
Figure 114 – Shape of the test piece for the tensile test.....	53
Figure BB.1 – Equipment for the mechanical strength test of blankets .....	58
Figure BB.2 – Detail of the drum and cylinders .....	59
Figure BB.3 – Detail of the clamping bar .....	59
Table 101 – Maximum temperatures .....	18
Table 102 – Maximum temperature rises.....	18
Table A.101 – Test voltages .....	54

## 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.
- 2) The formal decisions or agreements of 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 IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 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.

**DISCLAIMER**

**This Consolidated version is not an official IEC Standard and has been prepared for user convenience. Only the current versions of the standard and its amendment(s) are to be considered the official documents.**

This Consolidated version of IEC 60335-2-17 bears the edition number 3.2. It consists of the third edition (2012-03) [documents 61/4336/FDIS and 61/4352/RVD], its amendment 1 (2015-07) [documents 61/4834/CDV and 61/4910/RVC] and its amendment 2 (2019-03) [documents 61/5756/FDIS and 61/5795/RVD]. The technical content is identical to the base edition and its amendments.

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendments 1 and 2. Additions and deletions are displayed in red, with deletions being struck through. A separate Final version with all changes accepted is available in this publication.



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

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).
- 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.

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.

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 the base publication and its amendments 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).

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**