IEC 60335-2-23

Edition 6.0 2016-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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Household and similar electrical appliances – Safety – Part 2-23: Particular requirements for appliances for skin or hair care

Appareils électrodomestiques et analogues – Sécurité – Partie 2-23: Exigences particulières pour les appareils destinés aux soins de la peau ou des cheveux

IEC 60335-2-23:2016-06(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-23: Particular requirements for appliances for skin or hair care

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

This sixth edition cancels and replaces the fifth edition published in 2003 including its Amendment 1 (2008) and its Amendment 2 (2012). This edition constitutes a technical revision.

The principal changes in this edition as compared with the fourth edition of IEC 60335-2-23 are as follows (minor changes are not listed):

- added hair straighteners to the list of examples covered by the standard;
- modified 7.12 to apply to appliances, and not just to hairdryers.
- added new instructions in 7.12 for hair straighteners and curling irons
- exempted fixed hairdryers and fixed hand dryers from alternative format of instructions;
- excluded detachable curler surfaces from temperature rise requirement in Subclause 11.8;

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- clarified in Subclause 19.7 that the appliance shall not emit flame after the test;
- clarified method of test and compliance criteria in Subclause 21.101;
- added requirement in 22.13 to delineate handles on curling irons and hair straighteners;
- in 22.103, added a requirement for protection against hair being pulled into hair dryer intake;
- revised Subclause 24.101 to indicate that protective devices shall not be self-resetting;
- reviewed and converted notes to normative text in Subclauses 19.7, 22.32, and 25.14.

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

FDIS	Report on voting
61/5135/FDIS	61/5171/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 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 appliances for skin or hair care.

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 the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
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- amended.

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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 the 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.

- 3.1.9: Normal operation is different (USA).
- 6.1: Appliances fitted with a supply cord may be of class 0 (USA).
- 6.2: The addition does not apply (USA).
- Clause 7: Additional markings and instructions are required (USA).
- 11.7: Rest periods are not allowed (USA).
- 11.8: Surface temperature requirement is different (USA).
- 11.101: The test is not carried out (USA).
- 19.2: Different methods are used to restrict heat dissipation (USA).
- 19.101: The test is different (USA).
- 19.102: The test is different (USA).
- 21.101: The test is different (USA).
- Clause 22: Hand-held hairdryers are required to incorporate a protective device to comply with an immersion test (USA).
- 22.36: The requirement does not apply (USA).
- 22.102: The requirement does not apply (USA).
- 24.1.3: The number of cycles of operation is different (USA).
- 24.101: The requirement does not apply (USA).
- 25.7: PVC sheathed cords are not allowed if they could contact surfaces over 121 °C (USA).
- 25.14: The test is different (USA).
- 25.101: The test is different (USA).

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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 and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

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.

NOTE 1 For example, if appliances within the scope of this Part 2 include an ion generator, then IEC 60335-2-65 is applicable as far as is reasonable.

When a part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 2 This means that the technical committees responsible for the part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

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.

NOTE 3 Horizontal and generic standards covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards. For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or part 2 standards.

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 2-23: Particular requirements for appliances for skin or hair care

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric appliances for the care of skin or hair of persons or animals and intended for household and similar purposes, their **rated voltage** being not more than 250 V.

NOTE 101 Examples of appliances that are within the scope of this standard are

– curling combs;
– curling irons;
– curling rollers with separate heaters;
– facial saunas;
– hairdryers;
– hair straighteners;
– hand dryers;
– **heaters for detachable curlers**;
– permanent-wave appliances.

NOTE 102 Appliances covered by this standard may incorporate steam-producing or spray-producing devices.

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 by laymen in shops, in light industry and on farms, are within the scope of this standard.

NOTE 103 Examples are appliances for use in hairdressing salons.

This standard deals with the reasonably foreseeable hazards presented by appliances that are encountered by all persons. However, in general, it does not take into account

– persons (including children) whose
  - physical, sensory or mental capabilities; or
  - lack of experience and knowledge

  prevents them from using the appliance safely without supervision or instruction;
– children playing with the appliance.

NOTE 104 Attention is drawn to the fact that

– it is recognized that persons having very extensive and complex disabilities can have needs beyond the level addressed in this standard.
– for appliances 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 health authorities, the national authorities responsible for the protection of labour and similar authorities.

NOTE 105 This standard does not apply to

– appliances intended exclusively for industrial purposes;
– 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);
– shavers, hair clippers and similar appliances (IEC 60335-2-8);

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– blankets, pads, clothing and similar flexible heating appliances (IEC 60335-2-17);
– appliances for skin exposure to optical radiation (IEC 60335-2-27);
– sauna heating appliances (IEC 60335-2-53);
– cosmetic and beauty care appliances incorporating lasers and intense light sources (IEC 60335-2-113)
– appliances intended for medical purposes (IEC 60601).

2 Normative references

This clause of Part 1 is applicable except as follows:

Addition:

ISO 7010:2011, *Graphical symbols – Safety colours and safety signs – Registered safety signs*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1.9 *Replacement:*

normal operation
operation of the appliance under the following conditions:

Helmet-type hairdryers are operated with the axis of the hood inclined at an angle of 60° to the horizontal or the maximum angle allowed by the construction if this is less. A dull black-painted wooden sphere, 200 mm in diameter, is placed in the hood so that its centre coincides with the axis of the hood, the shortest distance between the sphere and the air-outlet grille being 50 mm.

Hairdryers having a flexible hood attachment are operated with the hood attachment placed over the wire frame of Figure 101, the frame being positioned over the wooden sphere.

Helmet-type hairdryers that are supported by the head are operated as hairdryers having a flexible hood attachment.

Hand-held hairdryers are operated with unrestricted airflow directed downwards.

Permanent-wave appliances are operated in the normal position of use, the curling rollers hanging freely.

Heaters for detachable curlers are operated in the normal position of use together with the curlers.

Curling irons, curling combs and similar appliances are operated with their major axis horizontal.

Appliances having steam-producing or spray-producing devices are operated with the container empty or filled, whichever is more unfavourable. However, if the appliance is marked to indicate that it is to be used with the container filled, the container is filled. Water is added, when necessary, to compensate for evaporation.

Hand dryers are operated in the normal position of use with unrestricted airflow.

Facial saunas are operated in the normal position of use and filled with water. Water is added, when necessary, to maintain the steam output.

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3.101
helmet-type hairdryer
hairdryer having a rigid hood that is placed over the head in normal use

Note 1 to entry: The hood may be supported by a stand or have means for attaching to a support.

3.102
heater for detachable curlers
appliance for heating curling irons or curling rollers that accumulate heat

3.103
swivel connection
means for connecting the **supply cord** so that the appliance can be rotated continuously without twisting the cord

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.

5.2 *Addition:*

*The additional test of 25.14 for **hand-held appliances** is carried out on a separate appliance.*

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 *Replacement:*

Appliances shall be of one of the following classes with respect to protection against electric shock:

– hairdryers, curling irons, curling combs, facial saunas and other steam-producing or spray-producing appliances shall be **class II** or **class III**. However, **fixed hairdryers** intended to be permanently connected to fixed wiring, **helmet-type hairdryers** for hairdressers and steam-producing or spray-producing appliances for hairdressers may be **class I**;
– other appliances shall be **class I**, **class II** or **class III**.

Compliance is checked by inspection and by the relevant tests.

6.2 *Addition:*

Hand dryers shall be at least IPX1.

Curling rollers of permanent-wave appliances shall be at least IPX4.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

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7.1 *Addition:*

Portable hairdryers, curling irons and similar appliances shall be marked with symbol ISO 7010-P026 (2011-05) or with the substance of the following:

WARNING: Do not use this appliance near water.

7.6 *Addition:*

[Symbol ISO 7010-P026 (2011-05)] Do not use this device in a bathtub, shower, or water-filled reservoir

7.12 *Addition:*

The instructions for **portable appliances** shall include the substance of the following:

– when the appliance is used in a bathroom, unplug it after use since the proximity of water presents a hazard even when the appliance is switched off;
– for additional protection, the installation of a residual current device (RCD) having a rated residual operating current not exceeding 30 mA is advisable in the electrical circuit supplying the bathroom. Ask your installer for advice.

If symbol ISO 7010-P026 (2011-05) is used the meaning shall be explained. Instructions shall also state the substance of the following:

WARNING Do not use this appliance near bathtubs, showers, basins or other vessels containing water.

The instructions for facial saunas shall state that after use the appliance should be cleaned to avoid the accumulation of grease and other residues.

The instructions for hair straighteners and curling irons shall include the substance of the following:

– burn hazard. Keep appliance out of reach from young children, particularly during use and cool down;
– when the appliance is connected to the power supply, never leave it unattended;
– always place the appliance with the stand, if any, on a heat-resistant, stable flat surface.

7.12.1 *Addition:*

The installation instructions for **fixed hairdryers** intended for use in bathrooms shall include the substance of the following:

This hairdryer must be fixed out of reach of a person taking a bath or shower.

If the hand-held part of the hairdryer incorporates electrical components, the instructions shall state that the appliance must be fixed so that the hand-held part, when fully extended, is out of reach of a person taking a bath or shower.

7.12.9 *Addition:*

Supplying of instructions in an alternative format is not required for **fixed hand dryers** and **fixed hairdryers**.

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7.14 *Addition:*

The outer diameter of the circle in symbol ISO 7010-P026 (2011-05) shall be at least 10 mm.

Compliance is checked by measurement.

7.15 *Addition:*

The additional marking required for **portable hairdryers**, curling irons and similar appliances may alternatively be on a warning flag tag that is permanently attached to the **supply cord** close to the plug.

NOTE A flag tag is otherwise referred to as a swing tag or cord tag or other permanently affixed label on a cord.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.3 Not applicable.

9 Starting of motor-operated appliances

This clause of Part 1 is not applicable.

10 Power input and current

This clause of part 1 is applicable except as follows:

10.1 *Addition:*

*The representative period for appliances incorporating **PTC heating elements** is 30 min.*

10.2 *Addition:*

*The representative period for appliances incorporating **PTC heating elements** is 30 min.*

11 Heating

This clause of Part 1 is applicable except as follows.

11.1 *Addition:*

*For appliances incorporating a **swivel connection**, compliance is also checked by the test of 11.101.*

11.2 *Addition:*

Appliances intended to be used on a stand or attached to a support are placed to give the most unfavourable results.

***Hand-held appliances** with an integral rest are also tested when placed on their rest away from the walls of the test corner.*

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11.4 *Addition:*

If the temperature rise limits are exceeded in appliances incorporating motors, transformers or ***electronic circuits****, and the power input is lower than the* ***rated power input****, the test is repeated with the appliance supplied at 1,06 times* ***rated voltage****.*

11.6 *Replacement:*

Combined appliances *are operated as* ***heating appliances****.*

11.7 *Replacement:*

Appliances without a timer are operated

– *for 30 min, for* ***hand-held appliances****;*
– *in cycles of 30 s on and 5 s off until steady conditions are established, for hand dryers that are automatically controlled by the presence of the hands;*
– *until steady conditions are established, for other appliances.*

Appliances incorporating a timer are operated in cycles until steady conditions are established. Each cycle consists of the maximum operating time of the timer followed by a rest period of 5 s.

11.8 *Addition:*

The temperature rise limits of motors, transformers and components of ***electronic circuits****, including parts directly influenced by them, may be exceeded when the appliance is operated at 1,15 times* ***rated power input****.*

The temperature rise of the handles of curling irons heated by a ***heater for detachable curlers*** *incorporating a timer is determined at the end of the first cycle.*

The temperature rise of ***detachable curlers*** *is not measured.*

11.101 *Appliances incorporating a* ***swivel connection*** *are positioned with their major axis horizontal, the* ***supply cord*** *hanging vertically. A pull force of 1 N is applied to the* ***supply cord****.*

The appliance is supplied at ***rated voltage****, the current being 1,25 times the* ***rated current****.*

NOTE 1 This condition can be obtained by means of a resistor connected in place of the heating element.

The appliance is rotated about its major axis at a rate of approximately 50 r/min, the direction of rotation being reversed every 20 revolutions. The test is carried out for 1 500 revolutions.

The temperature rise of the sliding contacts shall not exceed 65 K.

NOTE 2 The temperature rise can be determined by melting particles or colour changing indicators.

12 Void

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable.

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