

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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

**Appareils électrodomestiques et analogues - Sécurité -
Partie 2-23: Exigences particulières pour les appareils destinés aux soins des
cheveux et appareils analogues**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

FOREWORD

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IEC 60335-2-23 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This seventh edition cancels and replaces the sixth edition published in 2016 and Amendment 1:2019. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) alignment with IEC 60335-1:2020;
- b) conversion of some notes to normative text (Clause 1, 11.101, 20.1);
- c) change in standard title and relocation of skin care appliances, such as facial saunas and foot care appliances, to IEC 60335-2-115 (Clause 1, 3.1.9, 3.5.103, 6.1, 7.12, 8.1.4, 11.8, 15.2, 21.1);
- d) clarification of testing of appliances with PTC heating elements (10.1, 10.2);

- e) clarification of the application of test probe 18 for appliances for use in hairdressing salons (8.1.1, 20.2, B.22.3, B.22.4);
- f) addition of accessible surface temperature limits including marking of hot surfaces (7.1, 7.6, 7.12, 7.14, 7.15, 11.3, 11.8);
- g) clarification of placement of the appliance in the test corner (19.2);
- h) addition of moisture resistance and strength tests for detachable power supply parts (6.2, 21.102, 21.103, 24.2).

The text of this International Standard is based on the following documents:

Draft	Report on voting
61/7533/FDIS	61/7542/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments unless that edition precludes it; in that case, the latest edition that does not preclude it is used. It was established on the basis of the sixth edition (2020) 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: Particular requirements for hair care and similar 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.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations can 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.

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 this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
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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.

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 supporting documents on the IEC website

<https://www.iec.ch/tc61/supportingdocuments>

This information is given for the convenience of users of this International Standard and does not constitute a replacement for the normative text in this standard.

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 can 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.

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

NOTE 1 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 2 Horizontal publications, basic safety publications and group safety publications 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.

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.

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

- IEC standards published by TC 59 concerning methods of measuring performance;
- CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;
- CISPR 14-2 concerning electromagnetic immunity;
- IEC standards published by TC 111 concerning environmental matters.

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 the hair of persons or animals and similar appliances, intended for household and similar purposes, their **rated voltage** being not more than 250 V including direct current (DC) supplied appliances and **battery-operated appliances**.

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

- curling combs;
- curling irons;
- hairdryers;
- hair straighteners;
- hand dryers;
- **heaters for detachable curlers**;
- permanent-wave appliances.

Appliances covered by this standard can incorporate steam-producing or spray-producing devices.

NOTE 101 Hand dryers can have a feature to redirect the air so that it can be used to dry the face or hair.

Appliances not intended for normal household use but that nevertheless can 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. 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 knowledgeprevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

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 can 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.

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);
- cosmetic and beauty care appliances incorporating lasers and intense light sources (IEC 60335-2-113);
- appliances intended for skin care (IEC 60335-2-115).

2 Normative references

This clause of Part 1 is applicable except as follows:

Addition:

ISO 7010:2019, *Graphical symbols - Safety colours and safety signs - Registered safety signs*

IEC 60584-1, *Thermocouples - Part 1: EMF specifications and tolerances*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1 Definitions relating to physical characteristics

3.1.9 Modification:

normal operation

Replace the first paragraph with the following:

operation of the appliance under the conditions specified in 3.1.9.101 to 3.1.9.107

3.1.9.101 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.

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

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

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

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

3.1.9.106 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.

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

3.5 Definitions relating to types of appliances

3.5.101

helmet-type hairdryer

hairdryer having a rigid hood that is placed over the head in normal use

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

3.5.102

heater for detachable curlers

appliance for heating curling irons or curling rollers that accumulate heat

3.6 Definitions relating to parts of an appliance

3.6.101

swivel connection

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

3.6.102

functional surface

surface that is intentionally heated by an internal heat source and has to be hot to carry out the function for which the appliance is intended

Note 1 to entry: An example is the heated sheath of a heated barrel of a curling iron.

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 test of 25.14 for **hand-held appliances** without a **swivel connection** is carried out on a separate appliance.*

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 Modification:

Replace the first paragraph with the following:

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

- hairdryers, curling irons, curling combs, hair straighteners and 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**.

6.2 Addition:

Hand dryers shall be at least IPX1.

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

Detachable power supply parts in a flexible cord shall be at least IPX4.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

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.

If appliances have external **accessible surfaces**, for which temperature rise limits are specified in Table 101 and for which the provisions of footnote b to Table 101 apply, then the appliance shall be marked with symbol IEC 60417-5041(2002-10), or with the substance of the following:

CAUTION: Hot surfaces.

7.6 Addition:



[symbol ISO 7010-P026
(2011-05)]

do not use this device in a bathtub,
shower or water-filled reservoir



[symbol IEC 60417-5041
(2002-10)]

caution, hot surface

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 IEC 60417-5041 (2002-10) is used, the meaning shall be explained.

If symbol ISO 7010-P026 (2011-05) is used, instructions shall state the substance of the following:

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

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.

If the appliance is intended for use only in hairdressing salons, the instructions shall state that the appliance is intended to be used in hairdressing salons. If the appliance is not suitable for use in **area open to the public**, the instructions shall include the substance of the following:

WARNING: This appliance shall not be used other than in hairdressing salons.

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**.

7.14 Addition:

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

The height of the triangle in symbol IEC 60417-5041 (2002-10) shall be at least 5 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 101 A flag tag is otherwise referred to as a swing tag or cord tag or other permanently affixed label on a cord.

If the hot surface marking in 7.1, or symbol IEC 60417-5041 (2002-10) is marked on the appliance, it shall be visible when the appliance is operated as in normal use. It shall not be placed on a **functional surface**.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.1 Addition:

Test probe 18 of IEC 61032 is not applied to appliances only for use in hairdressing salons.

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. The representative period for appliances incorporating **PTC heating elements** and a timer is 30 min, the maximum setting of the timer, or time until which the appliance automatically shifts to another operation mode with lower power consumption, whichever is less.*

*For curling irons and hair straighteners that incorporate **PTC heating elements** and temperature control, the power input is taken as the arithmetic mean value.*

10.2 Addition:

*The representative period for appliances incorporating **PTC heating elements** is 30 min. The representative period for appliances incorporating **PTC heating elements** and a timer is 30 min, the maximum setting of the timer, or time until which the appliance automatically shifts to another operation mode with lower input current, whichever is less.*

*For curling irons and hair straighteners that incorporate **PTC heating elements** and temperature control, the current is taken as the arithmetic mean value.*

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.*

11.3 Addition:

*Where the external **accessible surfaces** are suitably flat and access permits, then the test probe of Figure 102 is used to measure the temperature rises of external **accessible surfaces** specified in Table 101. The probe is applied with a force of $4\text{ N} \pm 1\text{ N}$ to the surface in such a way that the best possible contact between the probe and the surface is ensured. The measurement is performed after a contact period of 30 s.*

The probe may be held in place using a laboratory stand clamp or similar device. Any measuring instrument giving the same results as the probe may be used.

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 Modification:

Replace the first paragraph with the following:

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.