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Household and similar electrical appliances – Safety –

Part 2-8: Particular requirements for shavers, hair clippers and similar appliances

Appareils électrodomestiques et analogues – Sécurité –

Partie 2-8: Règles particulières pour les rasoirs, les tondeuses et les appareils analogues

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –****Part 2-8: Particular requirements for shavers, hair clippers
and similar appliances**

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.
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- 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.
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- 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.

This fifth edition cancels and replaces the fourth edition published in 1992 and its amendment 1 (2000). It constitutes a technical revision.

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

FDIS	Report on voting
61/2200/FDIS	61/2281/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 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 electric shavers, hair clippers 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.

The committee has decided that the contents of this publication will remain unchanged until 2004. At this date, the publication will be

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- withdrawn;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

The following differences exist in the countries indicated below.

- 6.1: Class 0, class 0I and class I appliances are allowed, provided that they withstand higher test voltages during the electric strength test (USA).
- 6.1: Class 0 appliances are allowed provided that their rated voltage does not exceed 150 V (Japan).
- 11.7: Appliances for household use are operated for 20 min. Other appliances are operated for 5 min with rest periods of 5 min (USA).
- 24.1.3: The test is carried out for 6 000 operations (USA).
- 25.7: Supply cords specially intended for use with electric shavers and hair clippers are allowed (USA).
- 25.14: The tests are not carried out (USA).

A bilingual version of this publication may be issued at a later date.

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 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.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-8: Particular requirements for shavers, hair clippers and similar appliances

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric shavers, hair clippers and similar appliances intended for household and similar purposes, their **rated voltage** being not more than 250 V.

NOTE 101 Examples of similar appliances are those used for manicure and pedicure.

Appliances not intended for normal household use, but which nevertheless may be a source of danger to the public, such as appliances intended to be used by laymen in shops and on farms, are within the scope of this standard.

NOTE 102 Examples of such appliances are **animal clippers**, **animal shearers** and appliances for hairdressers.

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

NOTE 103 Attention is drawn to the fact that

- 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 national health authorities, national authorities responsible for the protection of labour and similar authorities.

NOTE 104 This standard does not apply to

- 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);
- massage appliances (IEC 60335-2-32);
- appliances for medical purposes (IEC 60601).

2 Normative references

This clause of Part 1 is applicable.

3 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

The appliance is held by a clamp, with its major axis and the major axis of the cutting head or other accessory positioned in a horizontal plane, and operated without applying a load.

Appliances having adjustable shearing or clipping heads are operated with the blades adjusted so that the power input is 0,8 times **rated power input**, or 1,2 times the power input obtained after removing any **detachable parts** that could influence the load, whichever is the more unfavourable. No further adjustments are made.

NOTE 101 The clamp is selected so that there is negligible effect on the heat transfer from the appliance.

3.101

animal shearer

appliance for commercial use for shearing the fleece of an animal such as a sheep

3.102

animal clipper

appliance for commercial use in parlours for trimming the hair of an animal such as a dog

3.103

washable shaver

shaver, the hand-held part of which can be cleaned under water

3.104

wet shaver

shaver, the hand-held part of which may be used in a bath or shower

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.

5.8.2 *Addition:*

*If an appliance is marked for use at two different **rated voltages**, and the instructions indicate that it is suitable for use at two different ranges of voltages, the appliance is assumed to have two **rated voltage ranges**.*

6 **Classification**

This clause of Part 1 is applicable except as follows.

6.1 *Modification:*

Animal shearers shall be class I, class II or class III. Other appliances shall be class II or class III.

6.2 Addition:

Washable shavers and **wet shavers** shall be at least IPX7. However, parts that are intended to be fixed, and transformers with pins for insertion into socket-outlets, shall be at least IPX4. This classification does not apply to parts of **class III construction**.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 Addition:

Hand-held parts of **washable shavers** shall be marked with symbol 5574 of IEC 60417-1.

Hand-held parts of **wet shavers** shall be marked with symbol 5582 of IEC 60417-1.

NOTE 101 Symbols 5574 and 5582 of IEC 60417-1 are information signs and the rules of ISO 3864 apply.

7.6 Addition:



[symbol 5574 of IEC 60417-1]

suitable for cleaning under an open water tap



[symbol 5582 of IEC 60417-1]

suitable for use in a bath or shower

7.12 Addition:

The instructions for **animal clippers** shall state that the appliance is intended for trimming purposes only.

If symbol 5574 or 5582 of IEC 60417-1 is used, its meaning shall be explained.

The instructions for shavers, other than **washable shavers** or **wet shavers**, shall include the substance of the following.

WARNING: Keep the appliance dry.

The instructions for **washable shavers** with **detachable interconnection cords** shall include the substance of the following:

WARNING: Detach the hand-held part from the supply cord before cleaning it in water.

7.12.1 Addition:

The installation instructions for **washable shavers** and **wet shavers**, other than those classified IPX7, shall state that the parts that have to be fixed must be installed so they cannot fall into water.

7.14 Addition:

The height of the rectangle superimposed on symbol No. 5574 and symbol No. 5582 shall be at least 7 mm.

8 Protection against access to live parts

This clause of Part 1 is 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.

11 Heating

This clause of Part 1 is applicable except as follows.

11.7 Replacement:

Appliances intended for household use only are operated continuously for 10 min.

Animal shearers are operated until steady conditions are established.

Animal clippers and other appliances are operated for 10 min followed by a rest period of 10 min. This cycle of operation is repeated until steady conditions are established.

11.8 Addition:

The temperature rise of parts that are in contact with skin or hair in normal use, or are held in the hand, shall not exceed the limits specified for handles which are continuously held in normal use.

12 Void

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable.

14 Transient overvoltages

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable.

16 Leakage current and electric strength

This clause of Part 1 is applicable.

17 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable.

18 Endurance

This clause of Part 1 is not applicable.

19 Abnormal operation

This clause of Part 1 is applicable except as follows.

19.1 Addition:

Hand-held appliances are also subjected to the test of 19.101.

19.7 Addition:

Appliances that are not hand-held or are not kept switched on by hand are tested for 5 min.

19.10 Addition:

NOTE 101 The lowest possible load is obtained with the appliance operating under **normal operation** but after removal of any **detachable part** that may influence the load.

19.101 Hand-held appliances are placed on a soft-wood board in the most unfavorable position. They are supplied at **rated voltage** and operated until steady conditions are established.

20 Stability and mechanical hazards

This clause of Part 1 is applicable.

21 Mechanical strength

This clause of Part 1 is applicable except as follows.

Addition:

Blows with an impact energy of 0,5 J are only applied to those parts that could hit the floor if the appliance is dropped. Three blows are applied to other parts with an impact energy of 0,35 J.

Blows are not applied to cutting heads.

22 Construction

This clause of Part 1 is applicable except as follows.

22.26 Addition:

Hand-held parts of **washable shavers** shall be **class III construction** having a **working voltage** not exceeding 24 V.

Hand-held parts of **wet shavers** shall be **class III construction** having a **working voltage** not exceeding 12 V, except when they are being charged when the **working voltage** shall not exceed 24 V.

Compliance is checked by inspection and by measurement.

22.36 Addition:

Hand-held parts shall be **class II construction** or **class III construction**.

22.40 Replacement:

Animal shearers and **animal clippers** shall be fitted with a switch to control the motor.

Compliance is checked by inspection.

22.101 Appliances shall not have openings that would allow small items to penetrate and touch **live parts**.

*Compliance is checked by inspection and by measuring the distance between the supporting surface and **live parts** through openings. This distance shall be at least 6 mm. However, if the appliance is fitted with legs, this distance is increased to 10 mm if the appliance is intended to stand on a table and to 20 mm if it is intended to stand on the floor.*

22.102 Shavers and hair clippers shall be constructed so that the penetration of clippings cannot give rise to electrical or mechanical faults.

Compliance is checked by inspection.

22.103 Washable shavers and **wet shavers**, other than those classified IPX7, shall be constructed so that parts that are intended to be fixed can be fixed securely.

Compliance is checked by inspection.

NOTE Keyhole slots, hooks and similar means, without further means to prevent the appliance from being inadvertently lifted off the support, are not considered to be adequate means for fixing the appliance securely.

23 Internal wiring

This clause of Part 1 is applicable.

24 Components

This clause of Part 1 is applicable except as follows.

24.1.3 Addition:

*Switches incorporated in **animal clippers** and **animal shearers**, and hair clippers for hairdressers, shall be tested for 50 000 cycles of operation.*

25 Supply connection and external flexible cords

This clause of Part 1 is applicable except as follows.

25.5 Addition:

Type Z attachment is allowed for appliances intended for household use only.

25.7 Addition:

Flat twin tinsel cord is allowed for appliances intended for household use only as long as they are fitted with a non-rewirable plug.

Rubber insulated **supply cords** of **animal shearers** shall be polychloroprene sheathed and not be lighter than ordinary polychloroprene sheathed flexible cord (code designation 60245 IEC 57).

Supply cords shall have a length of at least 1,7 m.

25.14 Modification:

*The number of flexings for **type Z attachment** is 100 000 and for other attachments 50 000.*

25.24 Addition:

Interconnection cords of washable shavers shall be detachable.

Wet shavers shall not have an **interconnection cord** unless they cannot be operated when connected to the supply mains.

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable.

28 Screws and connections

This clause of Part 1 is applicable.

29 Clearances, creepage distances and solid insulation

This clause of Part 1 is applicable.

30 Resistance to heat and fire

This clause of Part 1 is applicable except as follows.

30.2.3 Not applicable.

31 Resistance to rusting

This clause of Part 1 is applicable.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.

Annexes

The annexes of Part 1 are applicable except as follows.

Annex C (normative)

Aging test on motors

Modification:

The value of p in Table C.1 is

- 500, for appliances intended for household use only;
- 2 000, for other appliances.

Bibliography

The bibliography of Part 1 is applicable except as follows.

Addition:

IEC 60335-2-32, *Household and similar electrical appliances – Safety – Part 2-32: Particular requirements for massage appliances*
