

INTERNATIONAL STANDARD

IEC
60335-2-31

Fourth edition
2002-10

Household and similar electrical appliances – Safety –

Part 2-31: Particular requirements for range hoods

*Appareils électrodomestiques et analogues –
Sécurité –*

*Partie 2-31:
Règles particulières pour les hottes de cuisine*



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –****Part 2-31: Particular requirements for range hoods**

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.
- 2) The formal decisions or agreements of the 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 National Committees.
- 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 fourth edition cancels and replaces the third edition published in 1995 and its amendment 1 (1998). It constitutes a technical revision.

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

FDIS	Report on voting
61/2206/FDIS	61/2289/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 range hoods.

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:

- 7.12: Warnings are required to be marked on the range hood (USA).
- 7.12.1: Additional requirements are specified for range hoods intended to be placed above gas hobs (Sweden).
- 8.2: The insulation of internal wiring need not be equivalent to IEC 60227 or IEC 60245 (USA).
- 11.2: The test method is different (USA).
- 19.101: The test method is different (USA).
- 20.2: The addition applies only to disposable filters (USA).
- 22.101: Additional fixing means are not required if screws can be tightened in keyhole slots (USA).
- 22.102: Parts located behind a filter are considered to be parts that have to be cleaned (Sweden).
- 30.101: The method of evaluating filters is different (USA).

A bilingual version of this standard 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 2-31: Particular requirements for range hoods

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric **range hoods** intended for installing above household cooking ranges, hobs and similar cooking appliances, their **rated voltage** being not more than 250 V.

NOTE 101 The cooking appliance may be supplied by electricity or other fuels, such as gas.

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.

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 102 Attention is drawn to the fact that

- for appliances incorporating electrostatic air filters, IEC 60335-2-65 also applies;
- 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, the national authorities responsible for buildings and similar authorities.

NOTE 103 This standard does not apply to

- appliances intended for commercial purposes (IEC 60335-2-99);
- 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).

2 Normative references

This clause of Part 1 is applicable.

3 Definitions

This clause of Part 1 is applicable except as follows.

3.101

range hood

motor-operated appliance intended to collect contaminated air from above a hob

NOTE The filtered air may be discharged back into the room or ducted away.

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.

5.10 Modification:

Appliances are not connected to a duct.

6 Classification

This clause of Part 1 is applicable.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 Addition:

Appliances shall be marked on or near the lampholder with the maximum power input of replaceable lamps as follows:

lamp max W

The word "lamp" may be replaced by symbol 5012 of IEC 60417-1.

7.12 Addition:

The instructions shall state the substance of the following:

- there shall be adequate ventilation of the room when the range hood is used at the same time as appliances burning gas or other fuels (not applicable to appliances that only discharge the air back into the room);
- the details concerning the method and frequency of cleaning;
- there is a fire risk if cleaning is not carried out in accordance with the instructions;
- do not flambé under the range hood.

7.12.1 Addition:

The installation instructions shall include the substance of the following:

- the air must not be discharged into a flue that is used for exhausting fumes from appliances burning gas or other fuels (not applicable to appliances that only discharge the air back into the room);
- the minimum distance between the supporting surface for the cooking vessels on the hob and the lowest part of the range hood. When the range hood is located above a gas appliance, this distance shall be at least 65 cm. If the instructions for installation for the gas hob specify a greater distance, this has to be taken into account;
- regulations concerning the discharge of air have to be fulfilled.

7.15 Addition:

The marking for maximum power input of a replaceable lamp shall be visible during replacement of the lamp.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.2 Addition:

After the removal of **detachable parts** during **user maintenance**, the **basic insulation** of internal wiring may be touched provided it is electrically equivalent to the insulation of cords complying with IEC 60227 or IEC 60245.

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.

11.2 Replacement:

Built-in appliances are installed in accordance with the instructions. Other appliances are fixed to a vertical support.

The appliance is located above a hob so that the distance between its lowest point and the hob surface is the minimum distance specified in the instructions. A vertical side wall extending to the top of the **range hood** is placed at right angles to the vertical support, 100 mm from one side of the **range hood**. Dull black-painted plywood approximately 20 mm thick is used for the vertical support, the side wall and for the installation of **built-in range appliances**.

The hob is to have four hob elements, two of 2 kW at the back and two of 1,5 kW at the front. The hob elements are mounted with their centres at the corners of a square with sides approximately 250 mm long. The hob is positioned so that the centre of the square is 350 mm from the vertical support and centrally situated with respect to the **range hood**.

Vessels, without lids, containing water are placed on the hob elements. The diameter of the vessels is approximately equal to that of the hob elements. The hob elements are operated to maintain vigorous boiling.

The appliance is also tested without the hob elements in operation.

11.7 Replacement:

Appliances are operated until steady conditions are established.

11.8 Addition:

The temperature rise limit for external enclosures and wood does not apply when the hob elements are in operation. When the appliance is tested without the hob elements in operation, only the temperature rises of the external enclosure and wood are measured, the temperature rise limit for wood being 65 K.

NOTE 101 Temperature rises, especially those of lampholders, are also determined with the fan motor switched off.

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:

Appliances are also subjected to the test of 19.101.

19.13 Addition:

During the test of 19.101, the temperature of the motor windings shall not exceed the values specified in Table 8. The appliance shall not deform to such an extent that parts fall from it.

19.101 *Appliances are operated above a hob as specified in Clause 11, but without vessels and only the two hob elements at the back being energized.*

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.2 Addition:

Filters are considered to be **detachable parts**.

21 Mechanical strength

This clause of Part 1 is applicable.

22 Construction

This clause of Part 1 is applicable except as follows.

22.8 Replacement:

For appliances having compartments to which access is gained during **user maintenance**, the electrical connections shall be arranged so that they are not subjected to pulling during cleaning or other **user maintenance**.

Compliance is checked by inspection and by the following test.

Detachable parts are removed. It shall not be possible to grasp wiring likely to be touched in such a way that the connections are subjected to undue stress.

*In case of doubt, the wiring is subjected to a pull of 10 N, applied without jerks three times in succession, in the most unfavourable direction likely to occur during **user maintenance**. There shall be no appreciable displacement of the connections.*

NOTE 101 **Interconnection cords** intended to be disconnected before cleaning or **user maintenance** are not subjected to the test.

22.101 Appliances shall be constructed so that they can be fixed securely to a wall or other support. Brackets and similar means shall be of metal that shall not be liable to creep or deform.

Compliance is checked by inspection.

NOTE Keyhole slots, hooks and similar means, without any 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.

22.102 Appliances shall be constructed so that parts liable to accumulate deposits of grease can be cleaned.

Compliance is checked by inspection.

NOTE Parts located behind a filter are not considered to be parts that have to be cleaned.

23 Internal wiring

This clause of Part 1 is applicable.

24 Components

This clause of Part 1 is applicable.

25 Supply connection and external flexible cords

This clause of Part 1 is applicable.

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable except as follows.

27.1 Addition:

Metal parts that become accessible during **user maintenance** are considered to be **accessible metal parts**.

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 except as follows.

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.

30 Resistance to heat and fire

This clause of Part 1 is applicable except as follows.

30.1 Addition:

The ball pressure test is carried out on the exposed parts of the underside of the appliance at a temperature of at least 105 °C.

30.2.2 Not applicable.

30.101 Appliances shall not incorporate combustible material liable to appreciably propagate a fire originating underneath the hood.

Compliance is checked as follows.

Filters of non-metallic material intended for the absorption of grease shall meet the requirements specified in ISO 9772 for category FH3 material, except that the thickness of the specimen is that of the filter.

NOTE 1 It may be necessary to support the specimen during the test.

Lamp diffusers and external air-guides having a total mass not exceeding 0,35 kg are subjected to the glow-wire test of IEC 60695-2-11 at a temperature of 550 °C. The glow-wire test is not carried out on parts of material classified at least HB40 according to IEC 60695-11-10, provided that the test sample was no thicker than the relevant part.

Other **accessible parts** of the enclosure are subjected to the needle-flame test of Annex E.

Internal air-ducts and parts within them, such as fans, are subjected to the needle-flame test of Annex E, droplets of material being ignored.

NOTE 2 Grease filters are not subjected to this test.

31 Resistance to rusting

This clause of Part 1 is applicable.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.

Withdrawing
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Annexes

The annexes of Part 1 are applicable.

Bibliography

The bibliography of Part 1 is applicable except as follows.

Addition:

60335-2-65: *Household and similar electrical appliances – Safety – Part 2-65: Particular requirements for air-cleaning appliances*

60335-2-99: *Household and similar electrical appliances – Safety – Part 2-99: Particular requirements for commercial electric hoods*¹

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