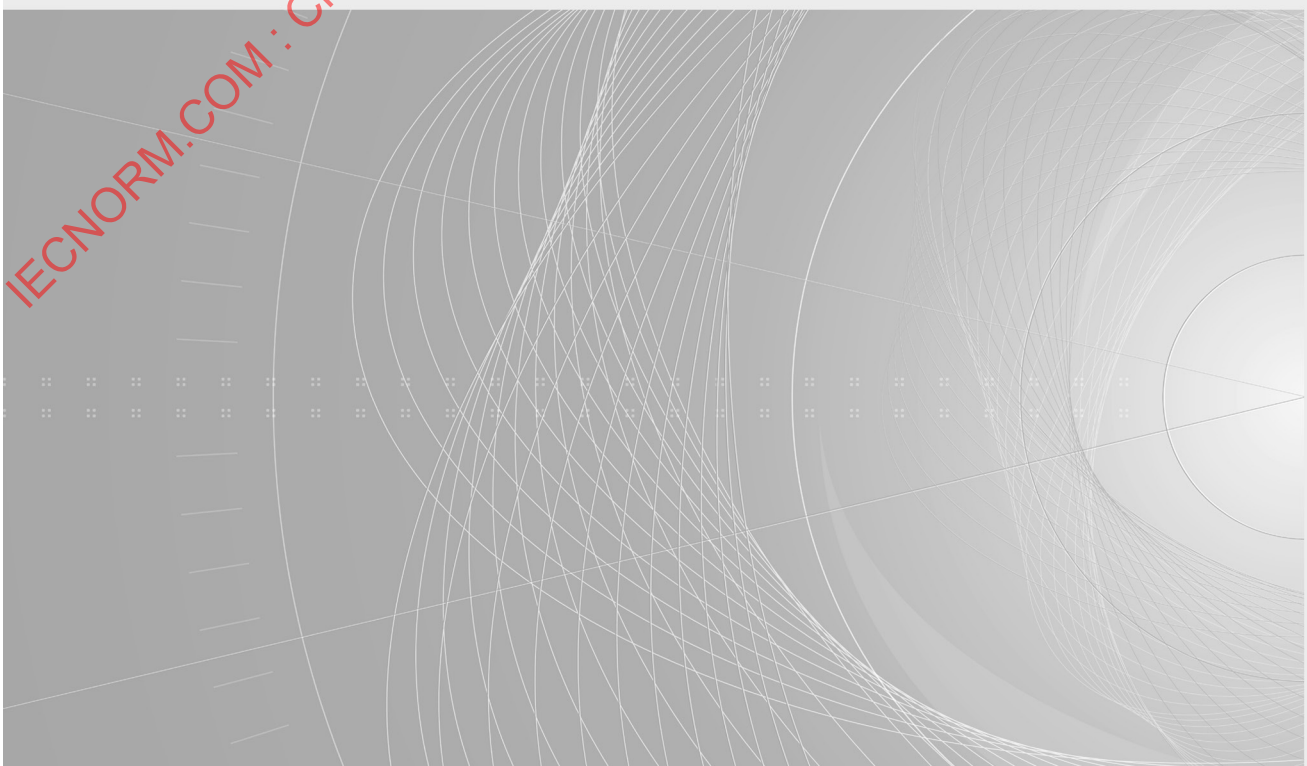
IEC 60335-2-99

Edition 2.1 2025-02
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

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



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-99: Particular requirements for commercial electric hoods

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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9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 60335-2-99 edition 2.1 contains the second edition (2021-11) [documents 61/6371/FDIS and 61/6421/RVD] and its amendment 1 (2025-02) [documents 61/7238/CDV and 61/7358/RVC].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

IEC 60335-2-99 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This second edition cancels and replaces the first edition published in 2003 and Amendment 1:2017. This edition constitutes a technical revision.

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

a) the text has been aligned with IEC 60335-1:2020;
b) some notes have been converted to normative text (Clause 1, 11.7, 22.102, 22.104, 27.2, 30.101);
c) exclusion of battery-operated appliances and appliances used in areas open to the public (Clause 1);
d) addition of requirement for appliances incorporating means for ionizing air (32.101);
e) conciliation of the text of IEC 60335-2-99 with other standards under IEC/TC61/MT32.

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/standardsdev/publications.

A list of all parts in the IEC 60335 series, published under the general title *Household and similar electrical appliances – Safety*, can be found on the IEC website.

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 commercial electric 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 document and its amendment 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,
- withdrawn, or
- revised.

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 01 hoods are allowed (Japan).
– 13.2: Leakage current limits are different (Japan).
– 16.2: Leakage current limits are different (Japan).

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.

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.

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 for 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.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-99: Particular requirements for commercial electric hoods

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electrically operated commercial **hoods** intended for installation above commercial cooking appliances such as ranges, griddles, griddle grills and deep fat fryers, their **rated voltage** being not more than 250 V for single phase **hoods** connected between one phase and neutral, and 480 V for other **hoods**. Only single complete units and **hoods** supplied as separate parts which when assembled form a complete working **hood,** incorporating a fan, are within the scope of the standard including direct current (DC) supplied appliances.

The **hood** may be used above one or more appliance or types of appliances.

The following extraction systems are within the scope of this standard:

– back-draft ventilation systems;
– down-draft ventilation systems;
– fume extraction modules.

These appliances are not intended for household and similar purposes. They are used in areas not open to the public, for example in kitchens of restaurants, canteens, hospitals and in commercial enterprises such as bakeries and butcheries.

As far as is practicable, this standard deals with the common hazards presented by these types of appliances.

Attention is drawn to the fact that:

– for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements can be necessary;
– in many countries additional requirements including ventilation 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:

– domestic range hoods (IEC 60335-2-31);
– purpose-built hoods, although this standard can be used as a guide (a purpose-built hood is either constructed on-site or specially constructed in the factory and is not mass produced);
– appliances not incorporating a fan;
– appliances designed 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)~~;~~.
~~– battery-operated appliances.~~

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60335-2-65:2002, *Household and similar electrical appliances – Safety – Part 2-65: Particular requirements for air-cleaning appliances*
IEC 60335-2-65:2002/AMD1:2008
IEC 60335-2-65:2002/AMD2:2015[1]

ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel – Part 1: Bolts, screws and studs with specified property classes – Coarse thread and fine pitch thread*

ISO 3506-1, *Fasteners – Mechanical properties of corrosion-resistant stainless steel fasteners – Part 1: Bolts, screws and studs with specified grades and property classes*

ISO 3506-2, *Fasteners – Mechanical properties of corrosion-resistant stainless steel fasteners – Part 2: Nuts with specified grades and property classes*

ISO 3506-3, *Mechanical properties of corrosion-resistant stainless steel fasteners – Part 3: Set screws and similar fasteners not under tensile stress*

ISO 3506-4, *Mechanical properties of corrosion-resistant stainless steel fasteners – Part 4: Tapping screws*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1 Definitions relating to physical characteristics

3.1.4 *Addition:*

Note 101 to entry The **rated power input** is the sum of the power inputs of all the individual elements in the appliance that can be on at one time; where several of such combinations are possible, the one giving the highest power input is used in determining the **rated power input**.

3.1.9 ~~*Replacement:*~~
~~**normal operation**~~

Modification:

Replace the first paragraph with the following:

operation of the appliance under the following conditions:

The appliance is operated after installation in accordance with the instructions, except that it is not connected to a duct.

Appliances intended to be used in combination with other appliances are tested in combination with the other appliances in operation. Appliances that are not interlocked with other appliances are also tested with the other appliances in operation and the fan switched off.

[1] There exists a consolidated edition 2.2:2015 that includes edition 2 and its Amendment 1 and Amendment 2.

3.5 Definitions relating to types of appliances

3.5.101
hood
motor-operated appliance intended to collect and remove contaminated air from catering appliances

Note 1 to entry: The contaminated air may pass through filter systems and be discharged back into the room or removed from the room.

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable.

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 *Replacement:*

Appliances shall be **class I** with respect to protection against electric shock.

Compliance is checked by inspection and by the relevant tests.

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 illumination lamps as follows:

lamp max..... W

The word "lamp" may be replaced by symbol IEC 60417-5012 (2002-10).

7.12 *Addition:*

The instructions for use shall state the substance of the following:

– there shall be adequate air intake into the room when the appliance is used at the same time with appliances burning gas or other fuels;
– that filters must be cleaned regularly;
– there is a fire risk if cleaning is not carried out in accordance with the instructions;
– do not flambé under the appliance.

Instructions for **user maintenance**, for example the method and frequency of cleaning, shall also be given. They shall include a statement **that the** appliance **is not to be cleaned with a water jet** or a steam cleaner**.**

The instructions shall include the substance of the following:

> These appliances are intended to be used for commercial applications, for example in kitchens of restaurants, canteens, hospitals and in commercial enterprises such as bakeries, butcheries, etc., but not for continuous mass production of food.

If the manufacturer wants to limit the use of the appliance to less than the above, this has to be clearly stated in the instructions.

Modification:

The instruction concerning persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge and children playing with the appliance is not applicable.

7.12.1 *Replacement:*

The appliance shall be accompanied by instructions detailing any special precautions necessary for installation. The instructions for installation shall state:

– the minimum distance between the appliance and the lowest part of the appliance;
– that regulations concerning the air intake and discharge of exhaust air have to be fulfilled;
– that ventilation requirements specified for the cooking equipment shall be observed;
– that special consideration is needed when there are other open flued appliances in the same room to prevent back-suction of flue gasses;
– that if the appliance is used above a gas appliance, a non-self-resetting device that turns off the gas supply to the appliance if the appliance stops operating must be installed in accordance with national gas regulations;
– that the installation of the appliance must not infringe gas regulations.

Compliance is checked by inspection.

7.12.9 Not applicable.

7.15 *Addition:*

The marking for maximum rated wattage of a replaceable illumination lamp shall be visible during replacement of the lamp.

7.101 Equipotential bonding terminals shall be marked with symbol IEC 60417-1-5021 (2002-10).

The marking shall not be placed on screws, removable washers or other parts which can be removed when conductors are being connected.

Compliance is checked by inspection.

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 applicable except as follows.

9.101 Fan motors providing a cooling effect in order to comply with the requirements of Clause 11 shall start under all voltage conditions which can occur in use.

Compliance is checked by the following tests using a supply source such that its drop in voltage does not exceed 1 % during the tests, the appliance being returned to ***room temperature*** *after each test.*

The appliance is started under the conditions occurring at the beginning of ***normal operation*** *or, for automatic appliances, at the beginning of the normal cycle of operation, a voltage equal to 0,85 times* ***rated voltage*** *being applied to the input terminals of the appliance. For appliances provided with motors having other than centrifugal starting switches, this test is repeated at a voltage equal to 1,06 times* ***rated voltage*** *being applied to the input terminals of the appliance.*

The test is carried out three times.

In all cases, the motor shall start and it shall function in such a way that safety is not affected, and the overload ***protective devices*** *of the motor shall not operate.*

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:*

Appliances intended to be placed above a hob are installed so that the distance between their lowest point and the hob surface is the minimum distance specified in the instructions for installation. The hob selected for the test shall have uniformly arranged gas burners with a total heat input equal to 30 kW/m^2 of the gross area (width times depth) of the appliance. Vessels containing water are placed without lids on the gas burners, which are operated to maintain boiling. The diameters or sizes of the vessels are approximately equal to that of the cooking zones.

Other appliances are installed according to the manufacturer's instructions.

Appliances are placed in a test corner as follows:

- *appliances normally fixed to a wall are fixed to one of the walls, as near to the other wall and floor or ceiling as is likely to occur, taking into account the instructions;*
- *appliances normally fixed to a ceiling are fixed to the ceiling as near to the walls as is likely to occur, taking into account the instructions;*
- *other appliances are placed as near to the walls as possible.*

Dull black-painted plywood approximately 20 mm thick is used for the test corner.

Appliances intended to be used in combination with other appliances are placed as required for the other appliances.

11.7 ~~*Replacement:*~~

Modification:

Replace the first paragraph with the following:

Appliances are operated until steady conditions are established.

The duration of the test may consist of more than one cycle of operation.

11.8 *Modification:*

The temperature rise limit for external enclosures is not applicable.

12 Charging of metal-ion batteries

This clause of Part 1 is ~~not~~ applicable.

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable except as follows.

13.2 *Modification:*

*Instead of the permissible leakage current for **stationary class I appliances**, the following applies:*

– *for cord and plug connected appliances*	*0,75 mA or 1 mA per kW **rated power input** of the appliance with a maximum of 10 mA, whichever is higher;*
– *for other appliances*	*0,75 mA or 1 mA per kW **rated power input** of the appliance with no maximum, whichever is higher.*

*For **portable class I appliances**, instead of the permissible leakage current, the following applies:*

– *for cord and plug connected appliances*	*0,75 mA or 1 mA per kW **rated power input** of the appliance with a maximum of 10 mA, whichever is higher.*

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 except as follows.

16.2 *Modification:*

*Instead of the permissible leakage current for **stationary class I appliances**, the following applies:*

– *for cord and plug connected appliances*	*0,75 mA or 1 mA per kW **rated power input** of the appliance with a maximum of 10 mA, whichever is higher;*
– *for other appliances*	*0,75 mA or 1 mA per kW **rated power input** of the appliance with no maximum, whichever is higher.*

*For **portable class I appliances**, instead of the permissible leakage current, the following applies:*

– *for cord and plug connected appliances*	*0,75 mA or 1 mA per kW **rated power input** of the appliance with a maximum of 10 mA, whichever is higher.*

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:*

Compliance is also checked by 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 shown in Table 8 of 19.7.

The appliance shall not deform to such an extent that parts fall from it.

19.101 *Appliances intended to be placed above a hob are operated as specified in 11.2, but without vessels and with all gas burners switched on.*

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.1 *Addition:*

Portable appliances *provided with wheels are placed in the most unfavourable position against an edge with a height equal to the radius of the wheels plus 10 mm. If the wheels differ in size, that edge height that is the most unfavourable is chosen.*

A force equal to 8 % of the mass of the fully equipped appliance is applied horizontally to the middle of the top edge of the appliance but not higher than 900 mm, in the most unfavourable direction.

The appliance shall not tilt.

Modification:

The test with the angle of inclination increased to 15° is not carried out.

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 manual test.

Detachable parts *are removed. It shall not be possible to grasp wiring 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.*

22.101 Appliances shall be protected in such a manner that moisture and grease will not collect in such a way as to affect **creepage distance** and **clearance** values. Electrical insulation for which **creepage distances** and **clearances** are specified shall not be located in air ducts.

Compliance is checked by inspection.

22.102 For multi-phase appliances, **thermal cut-outs** protecting motors the unexpected starting of which can cause a hazard shall be of the non-self-resetting and trip-free type, and shall provide **all-pole disconnection** from related supply circuits.

For single-phase appliances, **thermal cut-outs** protecting motors the unexpected starting of which can cause a hazard shall be of the non-self-resetting and trip-free type, and shall provide at least one-pole disconnection.

If the **non-self-resetting thermal cut-out** is only accessible after removing parts with the aid of a **tool**, the trip-free type is not required.

NOTE Trip-free is an automatic action that is independent of manipulation or position of the actuating member.

Compliance is checked by inspection and by manual test.

22.103 Lights, switches or push-buttons for the indication of danger, alarm or similar situations shall be coloured red.

Compliance is checked by inspection.

22.104 Appliances shall be constructed so that they can be fixed securely to a wall or other support. Key-hole slots, hooks and similar means, without any further means to prevent the appliance from being inadvertently lifted off the wall or other support shall not be used. Brackets and similar means shall be of metal which shall not be liable to creep or deform.

Compliance is checked by inspection.

22.105 Appliances shall be constructed so that parts liable to accumulate deposits of grease, including parts located behind a filter, can be cleaned.

Compliance is checked by inspection.

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 except as follows.

25.3 *Addition:*

Appliances with a mass greater than 40 kg, intended for permanent connection to fixed wiring and not provided with rollers, castors or similar means shall be constructed so that the connection can be done after the appliance has been installed in accordance with the manufacturer's instructions.

The connection to the fixed wiring of **built-in appliances** may be made before the appliance is installed.

Terminals for permanent connection of cables to fixed wiring may also be suitable for the **type X attachment** of a **supply cord**. In this case, a cord anchorage complying with 25.16 shall be fitted to the appliance.

25.7 *Modification:*

Instead of the types of supply cords specified, the following applies:

Supply cords shall be oil-resistant, sheathed flexible cable not lighter than ordinary polychloroprene or other equivalent synthetic elastomer sheathed cord (code designation 60245 IEC 57).

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 which become accessible during **user maintenance** are considered to be **accessible parts**.

27.2 *Addition:*

Appliances shall be provided with a terminal for the connection of an external equipotential conductor. This terminal shall

– be in effective electrical contact with all fixed exposed metal parts of the appliance, except small fixed exposed metal parts such as nameplates and similar parts;

– allow the connection of a conductor having a nominal cross-sectional area of 2,5 mm^2 to 6 mm^2; and

– be located in a position convenient for the connection of the bonding conductor after installation of the appliance.

28 Screws and connections

This clause of Part 1 is applicable except as follows.

28.1 *Addition:*

Screws made of carbon steel and alloy steel shall be made in accordance with ISO 898-1.

Screws made of corrosion-resistant stainless-steel shall be made in accordance with ISO 3506-1, or ISO 3506-2, or ISO 3506-3, or ISO 3506-4.

28.4 *Addition:*

Screws that make mechanical connections and electrical connections shall be so designed that the contact pressure does not change appreciably through loosening of the screwed assembly parts during operational stress and contact corrosion.

Screws that make mechanical connections and provide earthing continuity shall be so designed that the contact pressure does not change appreciably through loosening of the screwed assembly parts due to operational stress and contact corrosion. They shall be designed so that a minimum contact pressure remains.

Compliance is checked by inspection and by measuring the assembling torques for screwed connections providing earthing continuity by applying a torque as specified in Table 101 to turn the screw in the fastening direction. The screw shall not turn.

The screw shall not have been unfastened prior to performing this test.

Table 101 – Assembling torques for screwed connections providing earthing continuity

Outer thread diameter of the screw *mm*	***Assembling torque*** *Nm*	
	Screwed connections for the mechanical strength of the screws A2-70 according to ISO 3506-1, or ISO 3506-2, or ISO 3506-3, or ISO 3506-4 and 5.8 according to ISO 898-1	***Screwed connections for the mechanical strength of the screws > 8.8 according to ISO 898-1***
> 2,8 and ≤ 3,6	*0,8*	*1,3*
> 3,6 and ≤ 4,2	*1,9*	*3,0*
> 4,2 and ≤ 5,3	*3,7*	*6,0*
> 5,3 and ≤ 6,3	*6,5*	*10,0*
M 8	*15,0*	*25,0*
M 10	*31,0*	*50,0*

29 Clearances, creeping distances and solid insulation

This clause of Part 1 is applicable except as follows.

29.2 *Addition:*

The microenvironment is pollution degree 3 and the insulation shall have a comparative tracking index (CTI) not less than 250, 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 appliance at a temperature of at least 105 °C ± 2 °C.

30.2.1 *Modification:*

The glow-wire test is carried out at 650 °C. The glow-wire flammability index (GWFI) according to IEC 60695-2-12 shall be at least 650 °C.

30.2.2 Not applicable.

30.101 Appliances shall not incorporate combustible material liable to extend a fire originating from a cooking surface.

Compliance is checked as follows.

Filters of non-metallic material or metallic filters coated with non-metallic material intended for the absorption of fumes and/or grease are subjected to the burning test specified in ISO 9772 for category HBF material, if relevant, or shall be classified at least HB40 according to IEC 60695-11-10, except that the thickness of the specimen is that of the filter. For the burning test specified in ISO 9772, it may be necessary to support the specimen.

External parts having a total mass not exceeding 0,25 kg are subjected to the glow-wire test at a temperature of 650 °C.

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

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

Grease filters are not subjected to the test of normative Annex E.

31 Resistance to rusting

This clause of Part 1 is applicable.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable except as follows.

32.101 For appliances incorporating a filter system with means for ionizing the air, the ozone concentration produced shall not be excessive.

Compliance is checked by the test specified in IEC 60335-2-65:2002 and IEC 60335-2-65:2002/AMD2:2015, 32.101.

Annexes

The annexes of Part 1 are applicable except as follows.

~~**Annex B**~~
~~(normative)~~

~~**Battery-operated appliances, separable batteries and detachable batteries for battery-operated appliances**~~

~~This annex of Part 1 is not applicable.~~

Annex P
(informative)

Guidance for the application of this standard to appliances used in tropical climates

This annex of Part 1 is applicable except as follows.

13 Leakage current and electric strength at operating temperature

13.2 *Modification:*

*Instead of the permissible leakage current for **stationary class I appliances**, the following applies:*

– *for cord and plug connected appliances*	*0,5 mA or 0,5 mA per kW **rated power input** of the appliance with a maximum of 5 mA, whichever is higher;*
– *for other appliances*	*0,5 mA or 0,5 mA per kW **rated power input** of the appliance with no maximum, whichever is higher.*

*For **portable class I appliances**, instead of the permissible leakage current, the following applies:*

– *for cord and plug connected appliances*	*0,5 mA or 0,5 mA per kW **rated power input** of the appliance with a maximum of 5 mA, whichever is higher.*

16 Leakage current and electric strength

16.2 *Modification:*

*Instead of the permissible leakage current for **stationary class I appliances**, the following applies:*

– *for cord and plug connected appliances*	*0,5 mA or 0,5 mA per kW **rated power input** of the appliance with a maximum of 5 mA, whichever is higher;*
– *for other appliances*	*0,5 mA or 0,5 mA per kW **rated power input** of the appliance with no maximum, whichever is higher.*

*For **portable class I appliances**, instead of the permissible leakage current, the following applies:*

– *for cord and plug connected appliances*	*0,5 mA or 0,5 mA per kW **rated power input** of the appliance with a maximum of 5 mA, whichever is higher.*

Bibliography

The bibliography of Part 1 is applicable except as follows.

Addition:

IEC 60335-2-31, *Household and similar electrical appliances – Safety – Part 2-31: Particular requirements for range hoods and other cooking fume extractors*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-99: Particular requirements for commercial electric hoods

FOREWORD

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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 60335-2-99 edition 2.1 contains the second edition (2021-11) [documents 61/6371/FDIS and 61/6421/RVD] and its amendment 1 (2025-02) [documents 61/7238/CDV and 61/7358/RVC].

This Final version does not show where the technical content is modified by amendment 1. A separate Redline version with all changes highlighted is available in this publication.

IEC 60335-2-99 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This second edition cancels and replaces the first edition published in 2003 and Amendment 1:2017. This edition constitutes a technical revision.

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

a) the text has been aligned with IEC 60335-1:2020;
b) some notes have been converted to normative text (Clause 1, 11.7, 22.102, 22.104, 27.2, 30.101);
c) exclusion of battery-operated appliances and appliances used in areas open to the public (Clause 1);
d) addition of requirement for appliances incorporating means for ionizing air (32.101);
e) conciliation of the text of IEC 60335-2-99 with other standards under IEC/TC61/MT32.

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/standardsdev/publications.

A list of all parts in the IEC 60335 series, published under the general title *Household and similar electrical appliances – Safety*, can be found on the IEC website.

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 commercial electric 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 document and its amendment 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,
- withdrawn, or
- revised.

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 01 hoods are allowed (Japan).
– 13.2: Leakage current limits are different (Japan).
– 16.2: Leakage current limits are different (Japan).

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.

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.

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 for 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.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-99: Particular requirements for commercial electric hoods

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electrically operated commercial **hoods** intended for installation above commercial cooking appliances such as ranges, griddles, griddle grills and deep fat fryers, their **rated voltage** being not more than 250 V for single phase **hoods** connected between one phase and neutral, and 480 V for other **hoods**. Only single complete units and **hoods** supplied as separate parts which when assembled form a complete working **hood,** incorporating a fan, are within the scope of the standard including direct current (DC) supplied appliances.

The **hood** may be used above one or more appliance or types of appliances.

The following extraction systems are within the scope of this standard:

– back-draft ventilation systems;
– down-draft ventilation systems;
– fume extraction modules.

These appliances are not intended for household and similar purposes. They are used in areas not open to the public, for example in kitchens of restaurants, canteens, hospitals and in commercial enterprises such as bakeries and butcheries.

As far as is practicable, this standard deals with the common hazards presented by these types of appliances.

Attention is drawn to the fact that:

– for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements can be necessary;
– in many countries additional requirements including ventilation 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:

– domestic range hoods (IEC 60335-2-31);
– purpose-built hoods, although this standard can be used as a guide (a purpose-built hood is either constructed on-site or specially constructed in the factory and is not mass produced);
– appliances not incorporating a fan;
– appliances designed 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).

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60335-2-65:2002, *Household and similar electrical appliances – Safety – Part 2-65: Particular requirements for air-cleaning appliances*
IEC 60335-2-65:2002/AMD1:2008
IEC 60335-2-65:2002/AMD2:2015[1]

ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel – Part 1: Bolts, screws and studs with specified property classes – Coarse thread and fine pitch thread*

ISO 3506-1, *Fasteners – Mechanical properties of corrosion-resistant stainless steel fasteners – Part 1: Bolts, screws and studs with specified grades and property classes*

ISO 3506-2, *Fasteners – Mechanical properties of corrosion-resistant stainless steel fasteners – Part 2: Nuts with specified grades and property classes*

ISO 3506-3, *Mechanical properties of corrosion-resistant stainless steel fasteners – Part 3: Set screws and similar fasteners not under tensile stress*

ISO 3506-4, *Mechanical properties of corrosion-resistant stainless steel fasteners – Part 4: Tapping screws*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1 Definitions relating to physical characteristics

3.1.4 *Addition:*

Note 101 to entry The **rated power input** is the sum of the power inputs of all the individual elements in the appliance that can be on at one time; where several of such combinations are possible, the one giving the highest power input is used in determining the **rated power input**.

3.1.9 *Modification:*

Replace the first paragraph with the following:

operation of the appliance under the following conditions:

The appliance is operated after installation in accordance with the instructions, except that it is not connected to a duct.

Appliances intended to be used in combination with other appliances are tested in combination with the other appliances in operation. Appliances that are not interlocked with other appliances are also tested with the other appliances in operation and the fan switched off.

[1] There exists a consolidated edition 2.2:2015 that includes edition 2 and its Amendment 1 and Amendment 2.

3.5 Definitions relating to types of appliances

3.5.101
hood
motor-operated appliance intended to collect and remove contaminated air from catering appliances

Note 1 to entry: The contaminated air may pass through filter systems and be discharged back into the room or removed from the room.

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable.

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 *Replacement:*

Appliances shall be **class I** with respect to protection against electric shock.

Compliance is checked by inspection and by the relevant tests.

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 illumination lamps as follows:

lamp max..... W

The word "lamp" may be replaced by symbol IEC 60417-5012 (2002-10).

7.12 *Addition:*

The instructions for use shall state the substance of the following:

– there shall be adequate air intake into the room when the appliance is used at the same time with appliances burning gas or other fuels;
– that filters must be cleaned regularly;
– there is a fire risk if cleaning is not carried out in accordance with the instructions;
– do not flambé under the appliance.

Instructions for **user maintenance**, for example the method and frequency of cleaning, shall also be given. They shall include a statement **that the** appliance **is not to be cleaned with a water jet** or a steam cleaner**.**

The instructions shall include the substance of the following:

> These appliances are intended to be used for commercial applications, for example in kitchens of restaurants, canteens, hospitals and in commercial enterprises such as bakeries, butcheries, etc., but not for continuous mass production of food.

If the manufacturer wants to limit the use of the appliance to less than the above, this has to be clearly stated in the instructions.

Modification:

The instruction concerning persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge and children playing with the appliance is not applicable.

7.12.1 *Replacement:*

The appliance shall be accompanied by instructions detailing any special precautions necessary for installation. The instructions for installation shall state:

– the minimum distance between the appliance and the lowest part of the appliance;
– that regulations concerning the air intake and discharge of exhaust air have to be fulfilled;
– that ventilation requirements specified for the cooking equipment shall be observed;
– that special consideration is needed when there are other open flued appliances in the same room to prevent back-suction of flue gasses;
– that if the appliance is used above a gas appliance, a non-self-resetting device that turns off the gas supply to the appliance if the appliance stops operating must be installed in accordance with national gas regulations;
– that the installation of the appliance must not infringe gas regulations.

Compliance is checked by inspection.

7.12.9 Not applicable.

7.15 *Addition:*

The marking for maximum rated wattage of a replaceable illumination lamp shall be visible during replacement of the lamp.

7.101 Equipotential bonding terminals shall be marked with symbol IEC 60417-1-5021 (2002-10).

The marking shall not be placed on screws, removable washers or other parts which can be removed when conductors are being connected.

Compliance is checked by inspection.

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 applicable except as follows.

9.101 Fan motors providing a cooling effect in order to comply with the requirements of Clause 11 shall start under all voltage conditions which can occur in use.

Compliance is checked by the following tests using a supply source such that its drop in voltage does not exceed 1 % during the tests, the appliance being returned to ***room temperature*** *after each test.*

The appliance is started under the conditions occurring at the beginning of ***normal operation*** *or, for automatic appliances, at the beginning of the normal cycle of operation, a voltage equal to 0,85 times* ***rated voltage*** *being applied to the input terminals of the appliance. For appliances provided with motors having other than centrifugal starting switches, this test is repeated at a voltage equal to 1,06 times* ***rated voltage*** *being applied to the input terminals of the appliance.*

The test is carried out three times.

In all cases, the motor shall start and it shall function in such a way that safety is not affected, and the overload ***protective devices*** *of the motor shall not operate.*

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:*

Appliances intended to be placed above a hob are installed so that the distance between their lowest point and the hob surface is the minimum distance specified in the instructions for installation. The hob selected for the test shall have uniformly arranged gas burners with a total heat input equal to 30 kW/m^2 of the gross area (width times depth) of the appliance. Vessels containing water are placed without lids on the gas burners, which are operated to maintain boiling. The diameters or sizes of the vessels are approximately equal to that of the cooking zones.

Other appliances are installed according to the manufacturer's instructions.

Appliances are placed in a test corner as follows:

- *appliances normally fixed to a wall are fixed to one of the walls, as near to the other wall and floor or ceiling as is likely to occur, taking into account the instructions;*
- *appliances normally fixed to a ceiling are fixed to the ceiling as near to the walls as is likely to occur, taking into account the instructions;*
- *other appliances are placed as near to the walls as possible.*

Dull black-painted plywood approximately 20 mm thick is used for the test corner.

Appliances intended to be used in combination with other appliances are placed as required for the other appliances.

11.7 *Modification:*

Replace the first paragraph with the following:

Appliances are operated until steady conditions are established.

The duration of the test may consist of more than one cycle of operation.

11.8 *Modification:*

The temperature rise limit for external enclosures is not applicable.

12 Charging of metal-ion batteries

This clause of Part 1 is applicable.

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable except as follows.

13.2 *Modification:*

*Instead of the permissible leakage current for **stationary class I appliances**, the following applies:*

– *for cord and plug connected appliances*	*0,75 mA or 1 mA per kW **rated power input** of the appliance with a maximum of 10 mA, whichever is higher;*
– *for other appliances*	*0,75 mA or 1 mA per kW **rated power input** of the appliance with no maximum, whichever is higher.*

*For **portable class I appliances**, instead of the permissible leakage current, the following applies:*

– *for cord and plug connected appliances*	*0,75 mA or 1 mA per kW **rated power input** of the appliance with a maximum of 10 mA, whichever is higher.*

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 except as follows.

16.2 *Modification:*

*Instead of the permissible leakage current for **stationary class I appliances**, the following applies:*

– *for cord and plug connected appliances*	*0,75 mA or 1 mA per kW **rated power input** of the appliance with a maximum of 10 mA, whichever is higher;*
– *for other appliances*	*0,75 mA or 1 mA per kW **rated power input** of the appliance with no maximum, whichever is higher.*

*For **portable class I appliances**, instead of the permissible leakage current, the following applies:*

– *for cord and plug connected appliances*	*0,75 mA or 1 mA per kW **rated power input** of the appliance with a maximum of 10 mA, whichever is higher.*

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:*

Compliance is also checked by 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 shown in Table 8 of 19.7.

The appliance shall not deform to such an extent that parts fall from it.

19.101 *Appliances intended to be placed above a hob are operated as specified in 11.2, but without vessels and with all gas burners switched on.*

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.1 *Addition:*

Portable appliances *provided with wheels are placed in the most unfavourable position against an edge with a height equal to the radius of the wheels plus 10 mm. If the wheels differ in size, that edge height that is the most unfavourable is chosen.*

A force equal to 8 % of the mass of the fully equipped appliance is applied horizontally to the middle of the top edge of the appliance but not higher than 900 mm, in the most unfavourable direction.

The appliance shall not tilt.

Modification:

The test with the angle of inclination increased to 15° is not carried out.

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 manual test.

Detachable parts *are removed. It shall not be possible to grasp wiring 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.*

22.101 Appliances shall be protected in such a manner that moisture and grease will not collect in such a way as to affect **creepage distance** and **clearance** values. Electrical insulation for which **creepage distances** and **clearances** are specified shall not be located in air ducts.

Compliance is checked by inspection.