# IEC 60335-2-64

Edition 4.0 2021-12
COMMENTED VERSION

# INTERNATIONAL STANDARD

colour inside

## Household and similar electrical appliances – Safety – Part 2-64: Particular requirements for commercial electric kitchen machines



IEC 60335-2-64:2021-12 CMV(en)

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## Household and similar electrical appliances – Safety – Part 2-64: Particular requirements for commercial electric kitchen machines

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

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## FOREWORD

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**This commented version (CMV) of the official standard IEC 60335-2-64:2021 edition 4.0 allows the user to identify the changes made to the previous IEC 60335-2-64:2002 +AMD1:2007+AMD2:2017 CSV edition 3.2. Futhermore, comments from IEC TC 61 experts are provided to explain the reasons of the most relevant changes.**

**A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.**

**This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.**

IEC 60335-2-64 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2002, Amendment 1: 2007 and Amendment 2:2017. 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, modified or deleted (1, 7.12, 9.101, 10.1, 11.7, 15.3, 20.2, 20.116, 20.117, 20.117.2, 20.117.3, 20.119, 22.101, 23.3, 27.2);
c) clarifications to some test specifications have been made (9.101, 15.1.1, 15.2, 22.113);
d) exclusion of appliances used in areas open to the public (Clause 1);
e) clarification of requirements for battery-operated appliances (Clause 1, 11.7, B.3.1.1, B.11.1);
f) relocation of cleaning instructions from 7.12.1 to 7.12;
g) conciliation of the text of IEC 60335-2-64 with other standards under IEC/TC61/MT32.

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

| Draft | Report on voting |
|---|---|
| 61/6372/FDIS | 61/6422/RVD |

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

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

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

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

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 kitchen machines.

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 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,
- replaced by a revised edition, or
- amended.

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 appliances are allowed if their rated voltage does not exceed 150 V (Japan).

– 13.2: Leakage current limits are different (Japan).

– 16.2: Leakage current limits are different (Japan).

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

# INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

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

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

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

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules 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. **1**

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. **1**

# HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

## Part 2-64: Particular requirements for commercial electric kitchen machines

## 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 **kitchen machines** ~~not intended for household and similar use~~, their **rated voltage** being not more than 250 V for single phase appliances connected between one phase and neutral, and 480 V for other appliances including direct current (DC) supplied appliances and **battery operated appliances**. 1

~~NOTE 101~~ These appliances are not intended for household and similar purposes. They are used for commercial processing of food in areas not open to the public, for example in kitchens of restaurants, canteens, hospitals and in commercial enterprises such as bakeries~~,~~ and butcheries~~, etc~~. 2

~~NOTE 102~~ Examples of **kitchen machines** are

– mixers;
– liquid or food blenders;
– kneaders;
– beaters;
– shredders;
– graters;
– mincers;
– slicers;
– peelers;
– tin openers;
– coffee grinders;
– machines used for washing and/or drying food;
– portioning machines;
– pastry rollers;
– noodle strip cutters;
– food processors;
– beam mixers.

This standard also applies to appliances which, in order to facilitate transport, are supplied in several parts (sub-assemblies) which, when assembled at the place of installation, form a constructional unit without the use of any additional parts.

The electrical part of appliances making use of other forms of energy is also within the scope of this standard.

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

~~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~~ can 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 water supply authorities and similar authorities.

~~NOTE 104~~ This standard does not apply to

– 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);
– appliances for continuous mass production of food;
– independent conveying equipment, such as food distribution belts.

## 2 Normative references

This clause of Part 1 is applicable except as follows.

*Addition:*

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 there are several such combinations possible, that giving the highest power input is used in determining **the rated power input**.

**3.1.9** ~~*Replacement*~~ *Addition:* **3**
~~**normal operation**~~
operation of the appliance under the following conditions:

The appliance is operated without load. The appliance is then loaded in appropriate steps, the supply voltage being maintained at its original value. For each step, steady conditions have to be established before increasing the load. This operation is repeated until just before an overload release operates, or until the steady condition with the highest temperature has been attained.

Note 101 to entry: The load may be achieved by using an electrical or mechanical brake.

Where it is not possible or is impractical to apply effectively an electrical or mechanical brake, the load is 115 % of the input measured when the appliance is operated without load at **rated voltage** and normal operating temperature, and with controls intended to be adjusted by the user set at maximum.

Note 102 to entry: Examples of such appliances are

– liquid blenders;
– slicers;
– peelers;
– coffee grinders;
– machines used for washing and/or drying food;
– portioning machines.

## 3.6 Definitions relating to parts of an appliance

**3.~~10~~36.101**
**guard plate**
plate similar to a slice thickness plate, fitted to machines with automatic product feeding

**3.~~10~~46.102**
**product holder**
support for the product to be sliced

Note 1 to entry: The **product holder** can be equipped with a **pusher** or a **feed carriage** and/or a clamping device

**3.~~10~~56.103**
**sliding feed table**
device that supports the **product holder** and allows it to move forwards and backwards

**3.~~10~~66.104**
**feed carriage**
device on which the product is placed and that slides on top of the **product holder** in order to move the product towards the blade

**3.~~10~~76.105**
**pusher**
device used to move the product along the **product holder** against the thickness plate

**3.~~10~~86.106**
**last slice device**
plate with which the last portion of the product is fed to the cutting blade

Note 1 to entry: The plate can be fitted on the **pusher**, clamping device or **feed carriage**.

### 3.8 Definitions relating to miscellaneous matters

**3.8.101**
**indicated level**
mark on the appliance to indicate the maximum liquid level for correct operation

**3.8.102**
**installation wall**
special fixed construction containing supply facilities for appliances installed in conjunction with it

## 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** *Addition:*

*Appliances intended for installation in a bank of other appliances and appliances intended to be fixed to an* ***installation wall*** *are enclosed to obtain protection against electric shock and harmful ingress of water equivalent to that obtained when installed in accordance with the instructions provided with the appliance.*

NOTE ~~101~~ Appropriate enclosures or additional appliances ~~may~~ can be needed for test purposes.

**5.101** *Appliances are tested as* ***heating appliances*** *when during a mode of operation electrical heaters are energized. If no electrical heaters are energized, the appliances are tested as* ***motor-operated appliances*** ~~*, even if they incorporate a* ***heating element***~~*.* **4**

**5.102** *Appliances, when assembled in combination with or incorporating other appliances, are tested in accordance with the requirements of this standard. The other appliances are operated simultaneously in accordance with the requirements of the relevant standards.*

## 6 Classification

This clause of Part 1 is applicable except as follows.

**6.1** *Replacement:*

**Hand-held appliances** shall be **class II** or **class III** with respect to protection against electric shock. Other appliances shall be **class I**, **class II** or **class III** with respect to protection against electric shock.

*Compliance is checked by inspection and by the relevant tests.*

**6.2** ~~*Modification*~~ *Addition:*

~~Instead of the requirement, the following applies.~~

Appliances shall be at least IPX1 with respect to protection against harmful ingress of water.

## 7 Marking and instructions

This clause of Part 1 is applicable except as follows.

**7.1** *Addition:*

If the appliance is marked with rated "on" and "off" periods, the marking shall correspond to normal use. The marking of the "on" period shall precede the marking of the "off" period, both markings being separated by an oblique stroke.

If the reversal of a motor could cause a hazard, then the direction of rotation should be clearly and visibly indicated on the motor, if the direction of rotation depends on the way the motor is connected to the supply.

**7.12** *Addition:*

The instructions for use shall include the operating times and speed settings for accessories, unless this information is marked on the appliance.

The instructions for use shall warn against misuse, and shall state that care is needed when handling cutting blades during cleaning.

Instructions for **user maintenance**, for example 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. **5** The instructions for use shall contain instructions for cleaning of all surfaces coming into contact with food during normal use.

Operating instructions included in the operating manual shall clearly indicate how to use particular or special safeguards provided with the appliance, and shall draw the attention of the user to any remaining hazards and give information about preventative measures to be taken by the user for the safe use of the appliance.

NOTE 101 Examples of appliances with remaining hazards are those that are not subjected to the test with the test probe in 20.2.

Information shall also be given about the correct assembly and safe use of accessories provided with the appliance and, if relevant, about possible hazards that might arise when using accessories other than those provided with the appliance. The instructions for use shall warn the user to use a suitable bowl with attachable accessories such as egg beaters and sieving machines, and shall indicate that the accessory must not project from the upper part of the bowl.

The instructions for use for hand-held blenders and whisks shall contain a warning against the use of these appliances when not in contact with the product.

The instructions for use for food processors shall state that care is needed when handling cutting blades, especially when removing the blades from the bowl, emptying the bowl and during cleaning.

The instructions for use for mincers, where the required safety at the discharge outlets depends entirely on perforated discs provided with the appliance, shall contain a warning against use of perforated discs with oval shaped holes or holes of a greater diameter.

The instructions for use for slicers shall give details for assembly and removal of blades and shall require that the slice thickness plate or **guard plate** shall be set to the zero position during the cleaning of the blade while still installed in the appliance.

The instructions for use shall identify separate sharpening devices suitable for use with the appliance, and shall state that only those devices shall be used.

~~NOTE 102~~ A code or similar means may be used for identification purposes.

If symbol IEC 60417-5021 (2002-10) is marked on the appliance, its meaning shall be explained.

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

**7.12.1** ~~*Replacement*~~ *Addition:*

The appliance shall be accompanied by instructions detailing any special precautions necessary for installation. For appliances intended for installation in a bank of other appliances, and appliances intended to be fixed to an **installation wall**, details of how to ensure appropriate protection against electric shock and harmful ingress of water shall be supplied. If the controls of more than one appliance are combined in a separate enclosure, detailed installation instructions shall be supplied. ~~Instructions for **user maintenance**, for example 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.~~ **5**

For appliances that are permanently connected to fixed wiring, and for which leakage currents ~~may~~ can exceed 10 mA, particularly if disconnected or not used for long periods, or during initial installation, the instructions shall give recommendations regarding the rating of **protective devices**, such as ~~earth leakage relays~~ residual current devices (RCDs), to be installed. **4**

If a **stationary appliance** is intended to be moved for cleaning, this shall be stated.

For **stationary appliances** equipped with rollers or castors or intended to be moved for cleaning, the instructions shall state the substance of the following.

This appliance is to be connected with flexible connections for equipotential bonding and connection to services such as electricity supply, water supply, gas supply and steam supply such that the appliance can be moved in the direction required for cleaning a distance not less than the dimension of the appliance in the direction of movement plus 500 mm without the flexible connections becoming taut or being subject to strain.

*Compliance is checked by inspection.*

**7.12.9** Not applicable.

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

These markings shall not be placed on screws, removable washers or other parts that can be removed when conductors are being connected.

*Compliance is checked by inspection.*

**7.102** ~~Appliances~~ Containers intended to be filled by hand or by a manually operated tap shall be marked with an **indicated level**.

*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** Motors incorporated in the appliance shall start within 3 s, if delayed starting could result in a hazard.

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

~~*Compliance is checked by starting the motor three times at a voltage equal to 0,85 times* ***rated voltage****, the motor being at room temperature at the beginning of the test.*~~

*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 is returned to* ***room temperature*** *after each test.*

*The ~~motor~~ appliance is started ~~each time~~ under the conditions occurring at the beginning of* ***normal operation*** *or, for automatic appliances, at the beginning of the normal cycle of operation, ~~the motor being allowed to come to rest between successive starts~~ 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 tests are 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 ~~protection~~* ***protective devices*** *of the motor shall not operate.* **6**

~~NOTE The supply source is such that, during the test, the drop in voltage does not exceed 1 %.~~

## 10 Power input and current

This clause of Part 1 is applicable except as follows.

**10.1** *Addition:*

~~NOTE 101~~ *For appliances having more than one heating unit that can be on at the same time, the total power input may be determined by measuring the power input of each heating unit separately (see also 3.1.4).*

## 11 Heating

This clause of Part 1 is applicable except as follows.

**11.2** *Addition:*

*Appliances intended to be fixed to the floor, and appliances with a mass greater than 40 kg and not provided with rollers, castors or similar means, are installed in accordance with the manufacturer's instructions. If no instructions are given, these appliances are considered as appliances normally placed on the floor.*

**11.7** ~~*Replacement*~~ *Modification:* **7**

*Appliances are operated until steady conditions are established.*

~~NOTE 101~~ *The duration of the test may consist of more than one cycle of operation. If the appliance is marked with rated "on" and "off" periods,* ~~*it is*~~ *they are taken into account.*

*For appliances incorporating* ***integral batteries*** *or* ***separable batteries*** *not disconnected from the appliance for charging purposes:*

- *the* ***battery*** *that has been* ***fully discharged*** *is charged for 1 h, while the appliance is operated as specified, if allowed by the construction of the appliance;*
- *the* ***battery*** *that has been* ***fully discharged*** *is charged, for a duration of 24 h or until it is* ***fully charged*** *whichever is shorter, without the* ***battery-operated appliance*** *performing its intended function.* **8**

## 12 ~~Void~~ Charging metal-ion batteries **1**

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 except as follows.

**15.1.1** *Addition:*

*In addition, ~~IPX1, IPX2, IPX3 and IPX4~~ appliances, except those marked IPX5 and IPX6, are subjected for 5 min to the following splash test.*

*The apparatus shown in Figure 101 is used. The appliance is placed in the normal position of use and adjustable feet shall be set in accordance with the instructions for use in the most unfavourable height.*

*For appliances normally used on the floor, the bowl is placed on the floor and is moved around in such a way as to splash the appliance from all directions. During the test, the water pressure is so regulated that the water splashes up 150 mm above the bottom of the bowl. ~~The bowl is placed on the floor for appliances normally used on the floor. For all other appliances, on a horizontal support 50 mm below the lowest edge of the appliance, the bowl is so moved around as to splash the appliance from all directions.~~ The bowl is not positioned underneath the appliance.*

*For all other appliances, the bowl is placed on the same plane where the appliance is placed and is moved around in such a way as to splash the appliance from all directions. During the test, the water pressure is so regulated that the water splashes up 100 mm above the bottom of the bowl. The bowl is not positioned underneath the appliance.* **9**

*Care is taken that the appliance is not hit by the direct jet.*

**15.1.2** *Modification:*

*Appliances normally used on a table are placed on a support having dimensions that are 15 cm ± 5 cm in excess of those of the orthogonal projection of the appliance on the support.*

**15.2** ~~*Replacement:*~~

~~Appliances shall be constructed so that spillage of liquid in normal use does not affect their electrical insulation.~~

~~*Compliance is checked by the following test using a spillage solution comprising water containing approximately 1 % NaCl and 0,6 % rinsing agent.*~~

~~*Any commercially available non-ionic rinsing agent may be used, but if there is any doubt with regards to the test results, the rinsing agent shall have the following properties:*~~

- ~~*viscosity* *17 mPa·s*~~
- ~~*pH* *2,2 (1 % in water)*~~

~~*and its composition shall be:*~~

| Substance | Parts by mass % |
|---|---|
| Plurafac ® LF 221[1] | 15,0 |
| Cumene sulfonate (40 % solution) | 11,5 |
| Citric acid (anhydrous) | 3,0 |
| Deionized water | 70,5 |

*Appliances with **type X attachment**, except those having a specially prepared cord, are fitted with the lightest permissible type of flexible cable or cord of the smallest cross-sectional area specified in 26.6, and other appliances are tested as delivered.*

***Detachable parts** are removed or in position, whichever is the most unfavourable.*

*Modification:*

*Water outlets, if any, are blocked.*

*The water containers of appliances intended to be filled with water by hand are completely filled with the spillage solution and a further quantity, equal to 15 % of the capacity of the container but not more than 10 l, is poured in steadily over a period of 1 min.*

*Appliances intended to be filled by a manually operated tap or automatically are connected to a water supply having the maximum supply pressure indicated by the manufacturer. The means for controlling the incoming water is held fully open, and the filling continued for 1 min after the first evidence of overflow, or until a further protective system operates to stop the inflow.*

*With the container filled with water, the appliance is then operated at rated voltage for 15 s. Lids or covers are in position or removed, whichever is the most unfavourable.*

*The appliance shall then withstand the electric strength test of 16.3, and inspection shall show that there is no trace of water on the insulation that could result in a reduction of **clearances** and **creepage distances** below the values specified in Clause 29.* **1**

**15.3** *Addition:*

NOTE 101 *If it is not possible to place the whole appliance in the humidity cabinet, parts containing electrical components are tested separately, taking into account the conditions that occur in the appliance.*

**15.101** Appliances that are provided with a tap intended for filling or cleaning shall be constructed so that the water from the tap cannot come into contact with **live parts**.

*Compliance is checked by the following test.*

*The tap is fully opened for 1 min with the appliance connected to a water supply having the maximum water pressure indicated by the manufacturer. Tiltable and movable parts, including lids, are tilted or placed in the most unfavourable position. Swivelling outlets of water taps are so positioned as to direct water on to those parts that will give the most unfavourable result.*

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[1] Plurafac ® LF 221 is the trade name of a product supplied by BASF. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of this product.

*Immediately following this treatment, the appliance shall withstand an electric strength test as specified in 16.3.*

## 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 applicable.

## 19 Abnormal operation

This clause of Part 1 is applicable except as follows.

**19.1** *Addition:*

*A control or switching device that is intended for different settings corresponding to different functions of the same part of the appliance ~~that are covered by different standards~~ is~~,~~ in addition~~,~~ set in the most ~~severe~~ unfavourable setting irrespective of the instructions for use.*

**19.2** *Addition:*

*Appliances are operated with empty heated containers.*

## 20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

**20.2** *Addition:*

~~*Add the following after the second paragraph of the requirement.*~~

Covers and the like, protecting danger zones within the operating range of the appliance, shall be **detachable** only when the risk is excluded by other means.

~~NOTE 101~~ Parts that do not move more than 4 mm away from each other are not regarded as dangerous crushing (squashing) and shearing zones.

NOTE ~~102~~ 101 Drawing-in zones can only occur during operations where uncovered movable parts move past parts that are stationary ~~and/~~or other moving parts.

~~*Add the following after the first paragraph of the test specification.*~~

~~*However,*~~*For feed apertures and discharge apertures, unless otherwise specified, the test is carried out with test probe B of IEC 61032, but having a non-circular stop face with a diameter of 56 mm instead of 50 mm and with the distance between the tip of the test probe and the stop face being 120 mm. The 75 mm diameter guard is removed. The test probe is applied with a force of 5 N.* **10** *The test probe is not inserted into the aperture for a linear distance of more than 850 mm, measured from the tip of the probe, if the aperture has a largest dimension of less than 150 mm.*

~~NOTE 103~~ *Moving parts that can be touched by the test probe through discharge apertures are not considered to be dangerous if they have a smooth surface or are constructed so that the risk of entrapment or injury is negligible.*

*For some appliances complete protection is impracticable and the test with the test probe is therefore not carried out. Examples of such appliances are*

– *hand-held appliances;*
– *slicers;*
– *tin openers;*
– *pastry rollers;*
– *noodle strip cutters;*
– *sieving machines;*
– *peelers (discharge apertures only);*
– *bone saws (circular or band type);*
– *citrus juice squeezers;*
– *egg beaters designated as attachable accessories;*
– *knife sharpeners.*

~~*Modification:*~~

~~Delete Note 1.~~

**20.101** Locking devices, the release of which could create a hazard, shall be constructed so that they cannot be actuated accidentally.

*Compliance is checked by a test with test probe B of IEC 61032 with a force of 5 N.* **10** *It shall not be possible to release the locking device with the probe.*

**20.102** Fixing devices of functional parts, such as attachable accessories, shall not work loose unintentionally. Driven shafts that might constitute a hazard, except within the operating range, shall be adequately protected against accidental contact.

*Compliance is checked by inspection and by a test using test probe B of IEC 61032 with a force of 5 N.* **10**

**20.103** Appliances, or parts of appliances, that are designed to tilt in normal use shall not give rise to ~~any~~ a hazard. Accidental tilting from any position, even in the case of supply interruption, shall be prevented and there shall be no crushing zone between the tilting part and the appliance except at the bumper point when the part is fully tilted.

NOTE The requirement ~~may~~ can be met by, for example, one of the following means:

– providing switches that have to be kept switched on by hand;

– limiting the rate of motion (peripheral speed) to 50 mm/s;

– protecting danger zones by means of appropriate guards;

– maintaining moving parts securely in position, even in the case of a fault.

If the appliance or part is tilted manually, it shall not be possible to adversely influence the tilting action other than by the intended means.

*Compliance is checked by*

– *inspection;*

– *manual test;*

– *switching off the supply to the appliance at any time during the tilting operation;*

– *applying a force of 340 N at any point on the tiltable part.*

**20.104** Moving rollers shall be adequately protected at their drawing-in zones, that is by means of a safety screen or non-driven protective rollers and/or bars, unless they are spring-loaded with a maximum pressure of 50 kPa, with an emergency switching device, and that the gap between the pair of rollers is at least 60 mm.

*Compliance is checked by inspection, measurement and manual test.*

**20.105** Switches shall be positioned within easy reach of the operator's hand. Start switches shall be secured against accidental actuation, if their actuation could result in a hazard.

*Compliance is checked by inspection and by applying a cylindrical rod having a diameter of 40 mm and a hemispherical end to the switch. The test rod is applied with a force not exceeding 5 N.* **10** *The appliance shall not operate.*

**20.106** Devices, such as sliding feed tables, **product holders**, stop plates~~, etc.,~~ and the like shall ensure safe working within the operating range.

NOTE This requirement ~~may~~ can be met by using for example

– a **product holder** that protects the whole of the operating range and that is so undetachably fixed to the sliding feed table, that it automatically drops when the feed table is folded back, and that cannot be moved more than 80 mm away from the knife;

– a **product holder** that is automatically moved up to the knife, and that is provided with a guard at the stop plate and a finger guard at the sliding feed table;

– in the case of gravity driven systems, a back wall on the feed table, with a height equal to the diameter of the knife.

*Compliance is checked by inspection, measurement and manual test.*

**20.107** Accidental contact with devices of driven shafts that engage on attachable accessories shall be prevented, unless their movement is possible only after attachable accessories have been engaged.

NOTE The requirement ~~is considered to~~ can be met, for example, if the devices are recessed in their housing or are constructed so that contact would not result in a hazard.

*Compliance is checked by inspection and by manual test.*

**20.108** Circular saws shall be provided with covers where the operating range is opened only by the workpiece itself, as far as is necessary, and where the operating range is automatically covered again, when the operating cycle comes to an end.

*Compliance is checked by inspection and by manual test.*

**20.109** Blades of hand-held blenders shall be completely screened from above and shall not be able to touch a flat surface when rotating.

*Compliance is checked by inspection and by applying a cylindrical rod from any position between the vertical and an angle of 45° to the upper side of the blending blade. The rod has a diameter of 8,0 mm ± 0,1 mm and unlimited length. The test rod is applied with a force not exceeding 5 N.* **10**

*It shall not be possible to touch the blades with the end of the test rod.*

**20.110** Appliances for washing and drying foodstuffs, that have a rotating drum with a kinetic energy of more than 200 J, shall be provided with a cover interlocked so that the appliance will not start when the cover is open. If the cover is opened while the appliance is operating, the drum shall stop within 2 s.

*Compliance is checked by inspection, measurement and manual test. The appliance is supplied at **rated voltage** and without a load.*

**20.111** Dangerous moving parts that are accessible after covers or lids are opened shall stop within 2 s after the cover or lid has been opened or removed. When closed again, the automatic restarting of the appliance shall be possible only if this does not result in a hazard.

*Compliance is checked by operating the appliance without load and at the highest speed.*

**20.112** Appliances shall be constructed so that the omission or replacement in an incorrect position of **detachable parts** will not result in a hazard.

*Compliance is checked by inspection and manual test.*

**20.113** Hand-held whisks shall be provided with a guard to avoid accidental slipping of the hand into the tool. Its dimensions shall be at least 30 mm greater than the dimensions of the handgrip zone and it shall be located between the handgrip zone and the tool.

*Compliance is checked by inspection, measurement and manual test.*

**20.114** Beam mixers shall automatically switch off when the head is raised to a height of 300 mm above the supporting surface, unless the appliance incorporates a switch that has to be kept switched on by hand.

*Compliance is checked by inspection and by measurement.*

**20.115** Unloading of the product from peelers shall not cause a hazard.

NOTE The requirement ~~may~~ can be met by, for example

– suitable guards preventing contact, except by a deliberate action, with rotating plates involving hazards of trap or injury;

– for rotating plates provided with cutting blades, the need to use one hand to keep the discharge door or lid open and the provision of a switch that has to be kept switched on by hand to allow for unloading of the product.

*Compliance is checked by inspection and manual test.*

**20.116** Slicing machines shall be stable when in use.

~~NOTE 1~~ This requirement does not apply to **fixed appliances**.

*Compliance is checked by the following test.*

*The slicing machine is placed in accordance with the instructions for use on a plain glass plate that is placed on a horizontal surface.*

~~NOTE 2~~ *The glass surface is prevented from sliding by a stop.*

*A force of 50 N is applied horizontally to the appliance in the most unfavourable direction at a point 10 mm below the upper surface of the base carrying the sliding feed table.*

*The appliance shall not move on the glass plate.*

~~NOTE 3 Suction cups are suitable means, if any, to hold the appliance in place and allow it to be released after use.~~

**20.117** Blades of slicing machines shall be adequately protected.

The requirements may be met by the ~~following provisions~~ requirements in 20.117.1 to 20.117.8.

Alternative requirements to those given in 20.117.1 to 20.117.8 that give an equivalent or greater degree of protection may also meet the requirements.

*Compliance is checked by inspection, measurement and manual test.*

~~NOTE Alternative provisions giving an equivalent or greater degree of protection may also meet the requirements.~~

**20.117.1** A guard surrounding the circular blade shall be provided, its open sector being no larger than required for using the appliance. The angle θ (theta) of the upper part of the open sector shown in Figure 102 shall not exceed 60°.

The radial distance $a$ between the outer circumference of the blade and the blade guard shall not exceed 6 mm, and the guard shall project at least 1 mm beyond the plane of the blade (distance $b$).

**20.117.2** When the slice thickness plate is set to the zero position, the distance $c$ between the outer circumference of the blade and the slice thickness plate shall not exceed 6 mm and the thickness plate shall project at least 1 mm beyond the plane of the blade. At the upper and lower points of the open sector, the distance $e$ between the slice thickness plate and any other protecting part shall not exceed 5 mm.

~~NOTE 1~~ If the distance $e$ is shielded, the limit does not apply.

Additional guarding shall be provided if slices thicker than 15 mm can be cut.

NOTE ~~2~~ An extension of the upper end of the slice thickness plate or an extension of the blade guard are examples of additional guarding.

Appliances shall not be capable of cutting slices thicker than 40 mm.

If the appliance is equipped with a slice support, this shall project at least 1 mm beyond the plane of the blade.

**20.117.3** Slicing machines shall incorporate a **sliding feed table**, a thumb guard and a **product holder**. The thumb guard shall screen the full height of the open sector and shall be constructed so that the other fingers remain at least 30 mm away from the blade (distance *f*). The distance *d* between the plane of the thumb guard and the blade shall not exceed 6 mm. At the end of the forward movement of the **sliding feed table**, the thumb guard shall project at least 10 mm beyond the outer circumference of the blade.

~~NOTE~~ For slicing machines with automatic feeding, the requirement applies to the guard plate.

It is not required to provide a thumb guard if the **product holder** incorporates means for clamping the food. In this case

– the handle of the **sliding feed table** shall be protected by a plate having dimensions at least 30 mm in excess of those of the handle. The handle shall be at least 80 mm from the blade;
– the handle of the clamping device shall be protected either by a guard or a **last slice device**, having dimensions of at least 50 mm in excess of those of the handle;
– it shall not be possible to remove the **feed carriage** from the **product holder**.

It shall only be possible to lift or remove the **product holder** when the plate that sets the thickness of the slices is in the zero position. It shall not be possible to change this setting when the **product holder** has been lifted or removed.

**20.117.4** Sharpening devices integral with the appliance shall be constructed so that during normal use of the appliance, a continuous cover over the blade is ensured in the same manner as the blade guard.

In the sharpening position, that part of the blade that is exposed shall not project more than 6 mm from each side of the abrasive wheels used for grinding.

Separate sharpening devices shall, when fixed to the appliance, have a suitable guard to cover the exposed parts of the blade. Any gap between the abrasive wheels used for grinding and the guard shall not exceed 6 mm.

The construction of both integral and separate sharpening devices shall not allow the blade to be sharpened when the gap between the blade and the blade guard exceeds 6 mm.

**20.117.5** **Pushers** of slicing machines shall cover the exposed cutting sector of the blade or have a handle provided with a protective plate that is always at least 150 mm from the blade.

It shall only be possible for the **pusher** to remain in the raised position when the distance between the **pusher** and the blade is at least 60 mm. It shall not be possible to remove the arm of the **pusher** or to swing it outside of the **sliding feed table**.

**20.117.6** Manual **feed carriages** shall be provided with a handle meeting the same dimensional requirements of 20.117.3 or 20.117.5 as appropriate. If they can be raised for cleaning, they shall fall back to the normal working position when released.

**20.117.7** Slicing machines with automatic product feeding and not provided with a plate that sets the thickness of the slices shall incorporate a **guard plate** that covers the exposed cutting sector of the blade and extends beyond the front of the stroke of the **product holder** by at least 10 mm. It shall not be possible to move the **guard plate** away from the blade by more than the maximum slice thickness plus 3 mm. The provisions applicable to slice thickness plates apply to **guard plates**.

**20.117.8** Slicing machines with a power-driven **sliding feed table** shall be constructed so that gaps between moving parts and other parts do not give rise to trapping or crushing hazards.

NOTE This requirement ~~is considered to be~~ can met if~~, for example,~~ the gap is less than 6 mm or more than 25 mm.

**20.118** The discharge apertures of mincers shall be adequately protected.

*Compliance is checked by inspection and by a test with the test ~~finger~~ probe for feed and discharge apertures described in 20.2 with a force of 5 N.* **10** *The appliance is tested with the protective perforated disc in place as in normal use, even if the disc is a* ***detachable. part****. The test ~~finger~~ probe shall not touch dangerous parts.*

~~**20.119** Void~~

**20.~~120~~119** Hazardous moving parts of bone saws of the band type shall be adequately protected. When these parts are accessible after lids, doors or guards are opened, the requirements of 20.111 apply.

Appliances with a cutting height not exceeding 250 mm shall be provided with a fixed table, a slice thickness plate of a height of at least 100 mm and a hinged **pusher** that protects the whole of the operating range and that automatically drops to its protective position when released. It shall be possible to change the blade without removing the **pusher**.

Appliances with a cutting height exceeding 250 mm with a fixed table shall be provided with a slice thickness plate of a height of at least 100 mm and a **last slice device** with a minimum height of 150 mm. The appliance shall incorporate an adjustable blade guard protecting the part of the blade not used for cutting. It shall be possible to lower the blade guard to at least 105 mm from the table. It shall also be possible to change the blade without removing the blade guard.

If the appliance is provided with a sliding table, its rear edge shall have a height of at least 60 mm and shall incorporate a finger guard at least 100 mm high and 50 mm wide. At the end of the forward movement of the sliding table the finger guard shall project at least 10 mm beyond the blade. The other requirements for appliances with a cutting height not exceeding 250 mm are also applicable.

~~NOTE~~ The requirements may be met by alternative means that provide at least the same degree of protection.

*Compliance is checked by inspection, measurement and manual test.*

## 21 Mechanical strength

This clause of Part 1 is applicable except as follows.

**21.1** *Addition:*

*The test is also made on* ***detachable parts*** *that are necessary for protection against mechanical hazards.*

**21.101** **Detachable parts** and **non-detachable parts** that are necessary for protection against mechanical hazards shall have adequate resistance to distortion.

*Compliance is checked by applying a force of 50 N to the parts in the most unfavourable direction. The test is repeated three times.*

*After the test, protective guards and the like shall show no damage within the meaning of this standard; in particular, guards and the like protecting blades and cutting knives shall not be distorted or deflected in such a way as to impair compliance with 20.2 and other relevant additional subclauses.*

## 22 Construction

This clause of Part 1 is applicable except as follows.

**22.101** For ~~3~~ multi-phase appliances, **thermal cut-outs** protecting circuits with heating elements, and those for motors of which the unexpected starting ~~may~~ 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 and for single-phase heating elements and/or motors connected between one phase and neutral or between phase and phase, **thermal cut-outs** protecting circuits with heating elements, and those for motors of which the unexpected starting ~~may~~ 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 ~~1 **Thermal cut-outs** of the trip-free type have an automatic action, with a reset actuating member, so constructed that the automatic action is independent of manipulation or position of the reset mechanism.~~ Trip-free is an automatic action that is independent of manipulation or position of the actuating member. **11**

**Thermal cut-outs** of the bulb and capillary type that operate during the tests of Clause 19 shall be such that rupture of the capillary tube shall not impair compliance with the requirements of 19.13.

~~NOTE 2 Care must be taken to ensure that the rupture does not seal the capillary tube.~~

*Compliance is checked by inspection and by manual test and by rupturing the capillary tube in such a way that the rupture does not seal the tube.*

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

*Compliance is checked by inspection.*

**22.103** Drain cocks and other emptying devices for hot liquids shall be constructed so that they cannot be opened inadvertently.

This requirement is met if the emptying device handle is such that

– when released, it returns the emptying device automatically to the closed position; or
– it is of the wheel type; or
– it is placed in a recess such that it cannot be placed in the open position by means of test probe B of IEC 61032 using a single action with a force of 10 N. **12**

Moreover, it shall not be possible to withdraw drain plugs inadvertently.

*Compliance is checked by inspection and by manual test.*

~~NOTE For example, this requirement is met when the valve handle is such that, when released, it returns automatically to the closed position, or is of the wheel type or is placed in a recess.~~

**22.104** Means provided to allow drainage of liquid from appliances shall discharge the liquid in such a manner that electrical insulation is not affected.

*Compliance is checked by inspection and by manual test.*

**22.105** Accessories requiring an electrical supply shall have that supply derived from the appliance.

*Compliance is checked by inspection.*

**22.106** Appliances shall be constructed so that lubricants, abrasives and the like cannot come into contact with the ingredients.

*Compliance is checked by inspection.*

**22.107** **Portable appliances** shall not have openings on the underside 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 the table and to 20 mm if it is intended to stand on the floor.*

**22.108** The level to which manually filled ~~appliances~~ containers have to be filled shall be so located as to be readily visible when filling.

*Compliance is checked by inspection.*

**22.109** Appliances shall be constructed so that food or liquids are prevented from penetrating places that could cause electrical or mechanical faults.

*Compliance is checked by inspection.*

**22.110** Switches in the **off position** shall disconnect electronic circuits.

*Compliance is checked by inspection.*

**22.111** The appliance shall not automatically restart when the supply is re-established after a temporary disconnection, if restarting could result in a hazard, for example mechanical (moving parts) or thermal (hot parts or liquids).

*Compliance is checked by the following test.*

*The appliance is operated at **rated voltage** and in accordance with the instructions ~~for use~~.*

*At any time during the operating cycle the supply to the appliance is switched off and any moving parts are allowed to come to rest.*

*The supply is then restored.*

**22.112** For appliances provided with one device or separate devices for the start and the stop functions, the stop function shall be unambiguously identifiable and shall always override the start function.

*Compliance is checked by inspection and by manual test.*

**22.113** Appliances fitted with wheels or similar means shall be provided with an efficient means of locking while the appliance is stationary.

*Compliance is checked by inspection and by the following test.*

*The appliance, fully loaded in accordance with the manufacturer's instructions, is placed on a rigid plane coated with aluminium oxide paper (grain size 80) and inclined at 10° to the horizontal, with the locking mechanism applied. The appliance shall not move by more than 100 mm.* **4**

## 23 Internal wiring

This clause of Part 1 is applicable except as follows.

**23.3** *Addition:*

*~~When~~ If the capillary tube of the* ***thermostat*** *is liable to flexing in normal use the following applies:*

– *where the capillary tube is fitted as part of the internal wiring, Part 1 applies;*

– *where the capillary tube is separate, it ~~shall be~~ is subjected to 1 000 flexings at a rate not exceeding 30 per minute.*

~~NOTE 101 If, in any of the above cases, it is not possible to move the movable part of the appliance at the given rate, due for example to the mass of the part, the rate of flexing may be reduced.~~

*The rate of flexing may be reduced if it is not possible to move the movable part of the appliance at the given rate due to the mass of the movable part.*

*After the test, the capillary tube shall show no sign of damage within the meaning of this standard and no damage impairing its further use.*

*However, if a rupture of the capillary tube renders the appliance inoperative (fail-safe), separate capillary tubes are not tested, and those fitted as part of the internal wiring are not inspected for compliance with the requirements.*

*Compliance in this instance is checked by rupturing the capillary tube in such a way that the rupture does not seal the capillary tube.*

~~NOTE 102 Care must be taken to ensure that the rupture does not seal the capillary tube.~~ **4**

## 24 Components

This clause of Part 1 is applicable except as follows.

**24.1.3** *Modification:*

*Switches operating during each cycle of operation of the appliance are tested for 50 000 cycles of operation. Other switches are tested for 10 000 cycles of operation. Instead of the rate of operation specified, switches are tested at a rate of one operation per minute.*

**24.4** *Addition:*

Socket-outlets for the connection of accessories shall be protected against short circuit and~~/or~~ overload.

## 25 Supply connection and external flexible cords

This clause of Part 1 is applicable except as follows.

**25.1** *Modification:*

Appliances shall not be provided with an appliance inlet.

**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.

~~If the appliance is provided with a set of terminals allowing the connection of a flexible cord, the terminals shall be suitable for the **type X attachment** of the cord.~~

~~In both cases the instructions shall give full particulars of the **supply cord**.~~

~~*Compliance is checked by inspection.*~~

If the appliance uses a **type X attachment** the instructions shall state the size and type of the **supply cord** to be used. **4**

**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.

**27.2** *Addition:*

**Stationary 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 name-plates and similar parts;

– allow the connection of a conductor having a nominal cross-sectional area of up to 10 mm$^2$; and

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

~~NOTE 101 Small fixed exposed metal parts, for example name-plates and the like, are not required to be in electrical contact with the terminal.~~

## 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, creepage 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.

**30.2** *Addition:*

*For peelers and machines used for washing and/or drying food, 30.2.3 is applicable.*

*For other appliances, 30.2.2 is applicable.*

**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.*

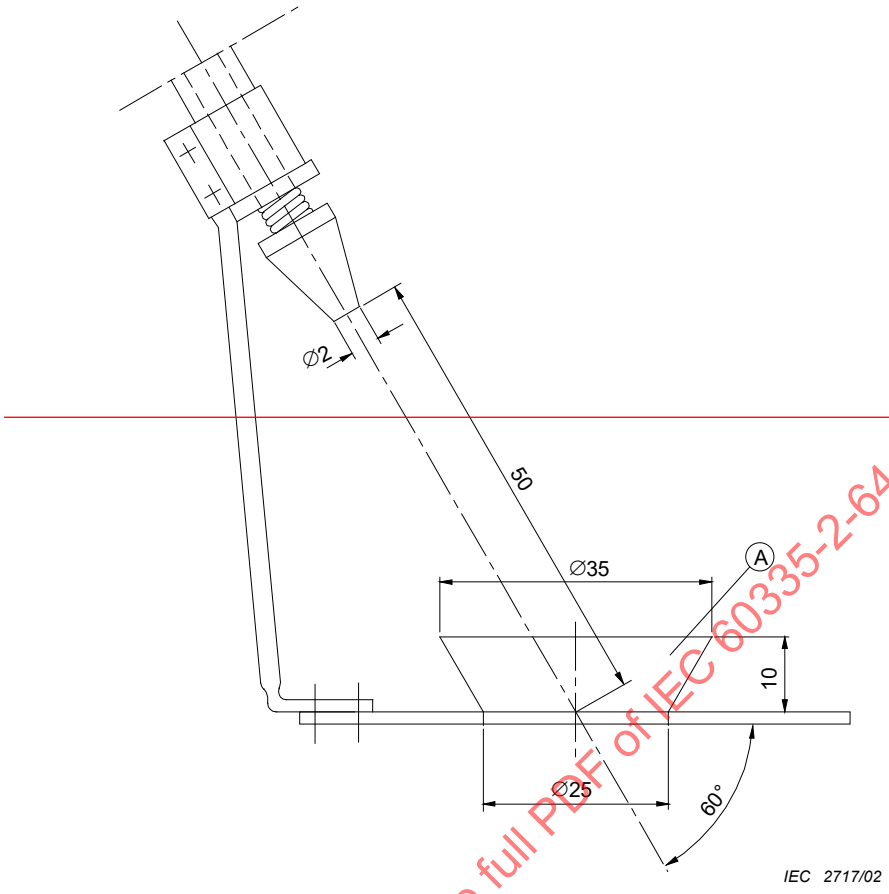
## 31 Resistance to rusting

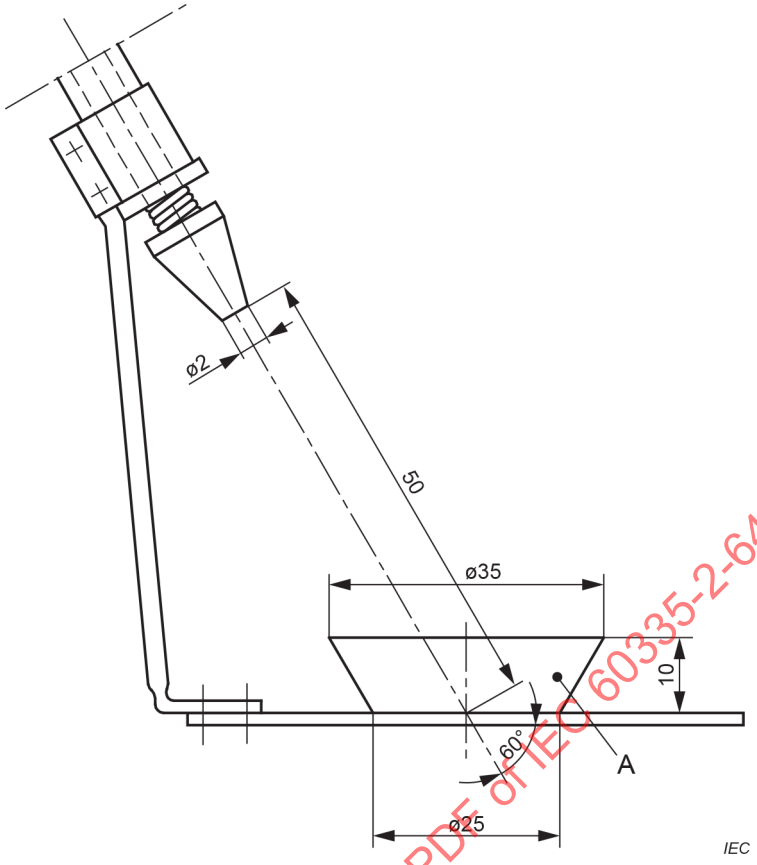
This clause of Part 1 is applicable.

## 32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.

Dimensions in millimetres

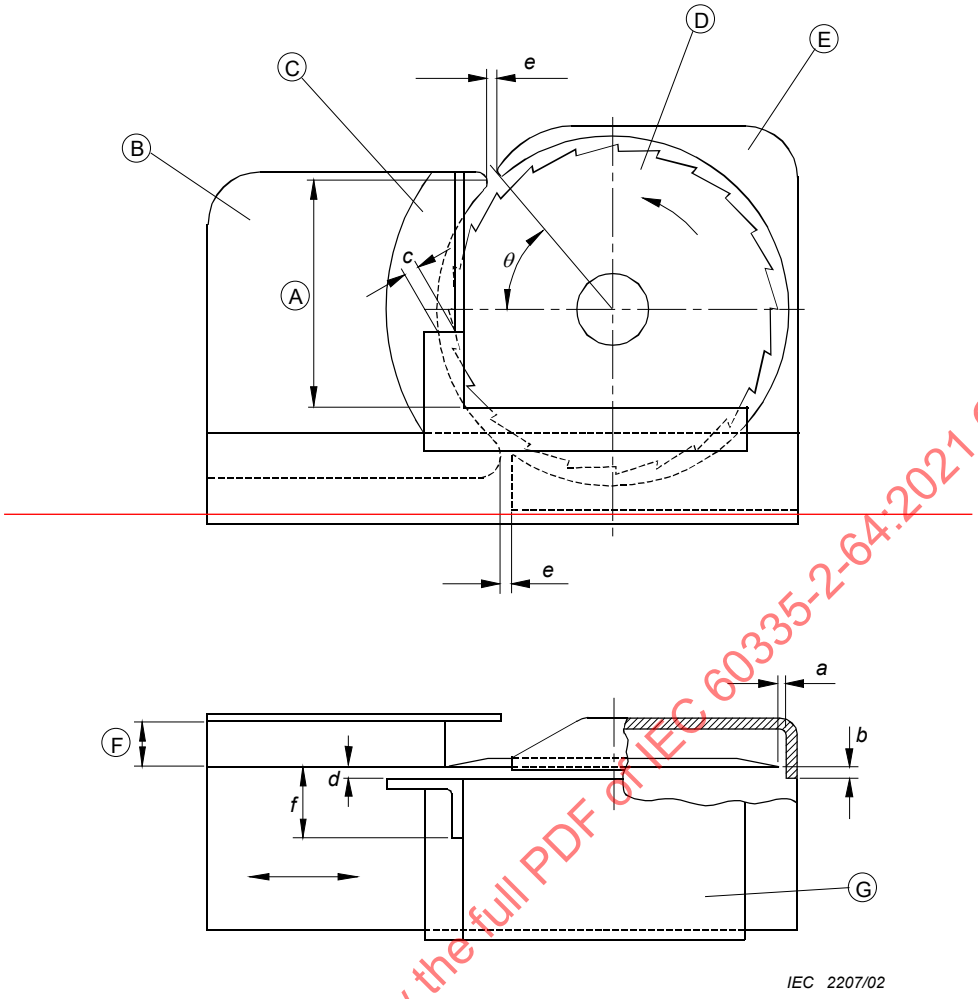


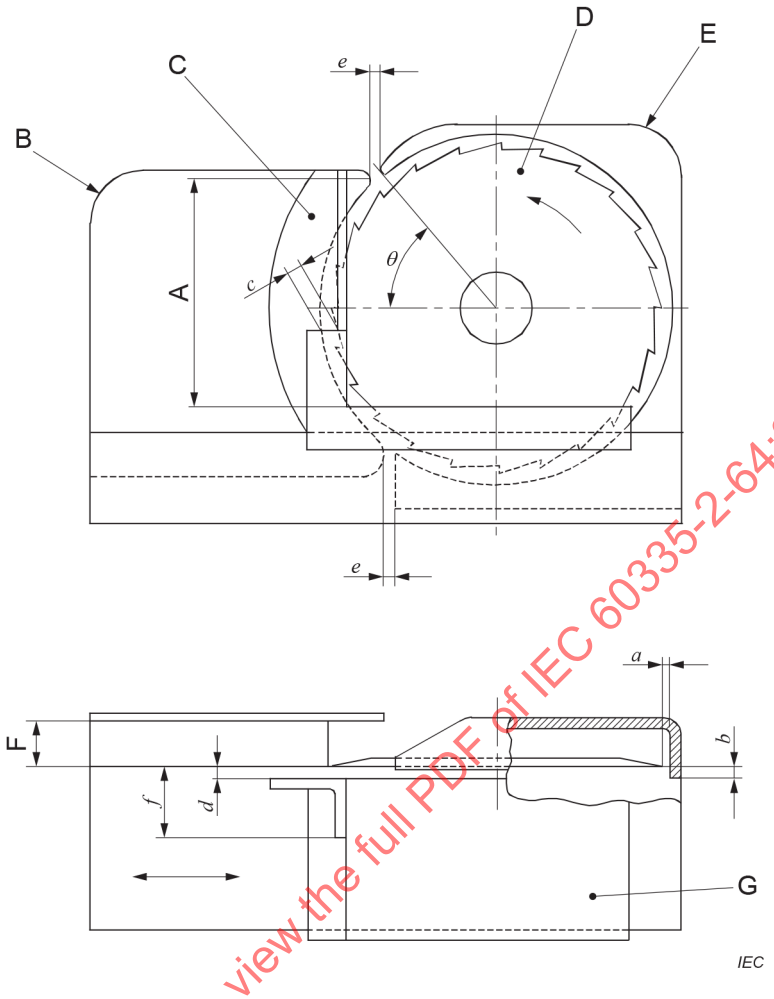



**Key**

A bowl

**Figure 101 – Splash apparatus**






**Key**

A full height of the open section
B plate that sets the thickness of the slices
C thumb guard
D rotating blade
E blade guard
F thickness of slices
G sliding feed table

**Figure 102 – Protection devices for slicing machines**

## Annexes

The annexes of Part 1 are applicable except as follows.

~~**Annex N**~~
~~(normative)~~

~~**Proof tracking test**~~

~~**6.3** *Addition:*~~

~~Add 250 V to the list of specified voltages.~~ **1**

# Annex B
(normative)

# Battery-operated appliances, separable batteries and detachable batteries for battery-operated appliances 8

Annex B of Part 1 is applicable except as follows.

**B.3.1.1** *Modification:*

Note 1 to entry: Operation of the appliance to perform its intended function is specified in 3.1.9.

**B.11.1** *Replacement:*

*Battery-operated appliances are tested under the conditions of normal operation.*

***Battery-operated appliances** with **non-rechargeable batteries,** with **detachable batteries**, and those incorporating **integral batteries** or **separable batteries** not disconnected from the appliance for charging purposes, and that cannot perform their intended function while the batteries are being charged, are operated until depletion of the **battery** or until steady conditions are established, whichever occurs first.*

*For appliances with **non-rechargeable batteries** and **detachable batteries** or **separable batteries** that are disconnected from the appliance for charging purposes, the depleted **battery** is immediately replaced with another **battery** that is **fully charged**, the **battery** being the model or type reference of the **battery** provided or indicated in the instructions. The test is repeated until the appliance no longer operates due to depletion of the **battery** or until the temperature rises have stabilized to values not more than 5 K higher than the temperature rises measured at the same locations during the first test, whichever occurs first.*

# Annex P
(informative)

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

Annex P 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.

## List of comments

1 This revision is for alignment with IEC 60335-1:2020.

2 Appliances intended for household use or use in areas open to the public are not covered by this Part 2 Standard.

3 This revision maintains the normal operation while charging as specified in IEC 60335-1:2020.

4 This is modified to align with other Part 2 Standards for commercial catering equipment.

5 This is relocated from 7.12.1 to 7.12 because it is not related to installation instructions.

6 The test is clarified with respect to the test supply source and the sequence of the tests.

7 This revision maintains the test duration while charging as specified in IEC 60335-1:2020.

8 The test specification is modified from IEC 60335-1:2020 to align with anticipated normal use of battery-operated commercial kitchen machines.

9 Clarification of the testing procedure regarding the position of adjustable feet and positioning the apparatus so that it is not splashing on the bottom of the appliance.

10 Due to the addition of 5.21 in the Part 1, the force applied to test probe B is specified to align with that specified in 20.2 of Part 1.

11 This is modified to align with IEC 60335-1:2020 and other Part 2 Standards for commercial catering equipment.

12 The Note is clarified and converted to normative text. Due to the addition of 5.21 in the Part 1, the force applied to test probe B is specified to align with that specified in IEC 61032.

# IEC 60335-2-64

Edition 4.0 2021-12

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



## Household and similar electrical appliances – Safety – Part 2-64: Particular requirements for commercial electric kitchen machines

## Appareils électrodomestiques et analogues – Sécurité – Partie 2-64: Exigences particulières pour les machines de cuisine électriques à usage commercial

IEC 60335-2-64:2021-11(en-fr)

# CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

# HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

## Part 2-64: Particular requirements for commercial electric kitchen machines

## 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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IEC 60335-2-64 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2002, Amendment 1: 2007 and Amendment 2:2017. 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, modified or deleted (1, 7.12, 9.101, 10.1, 11.7, 15.3, 20.2, 20.116, 20.117, 20.117.2, 20.117.3, 20.119, 22.101, 23.3, 27.2);
c) clarifications to some test specifications have been made (9.101, 15.1.1, 15.2, 22.113);
d) exclusion of appliances used in areas open to the public (Clause 1);

e) clarification of requirements for battery-operated appliances (Clause 1, 11.7, B.3.1.1, B.11.1);

f) relocation of cleaning instructions from 7.12.1 to 7.12;

g) conciliation of the text of IEC 60335-2-64 with other standards under IEC/TC61/MT32.

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

| Draft | Report on voting |
|---|---|
| 61/6372/FDIS | 61/6422/RVD |

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

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

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

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

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 kitchen machines.

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 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,
- replaced by a revised edition, or
- amended.

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 appliances are allowed if their rated voltage does not exceed 150 V (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 and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another Part 2 of IEC 60335, the relevant Part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

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 2-64: Particular requirements for commercial electric kitchen machines

## 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 **kitchen machines**, their **rated voltage** being not more than 250 V for single phase appliances connected between one phase and neutral, and 480 V for other appliances including direct current (DC) supplied appliances and **battery operated appliances**.

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

Examples of **kitchen machines** are

– mixers;
– liquid or food blenders;
– kneaders;
– beaters;
– shredders;
– graters;
– mincers;
– slicers;
– peelers;
– tin openers;
– coffee grinders;
– machines used for washing and/or drying food;
– portioning machines;
– pastry rollers;
– noodle strip cutters;
– food processors;
– beam mixers.

This standard also applies to appliances which, in order to facilitate transport, are supplied in several parts (sub-assemblies) which, when assembled at the place of installation, form a constructional unit without the use of any additional parts.

The electrical part of appliances making use of other forms of energy is also within the scope of this standard.

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 are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

This standard does not apply to

– 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);
– appliances for continuous mass production of food;
– independent conveying equipment, such as food distribution belts.

## 2 Normative references

This clause of Part 1 is applicable except as follows.

*Addition:*

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 there are several such combinations possible, that giving the highest power input is used in determining **the rated power input**.

**3.1.9** *Addition:*
operation of the appliance under the following conditions:

The appliance is operated without load. The appliance is then loaded in appropriate steps, the supply voltage being maintained at its original value. For each step, steady conditions have to be established before increasing the load. This operation is repeated until just before an overload release operates, or until the steady condition with the highest temperature has been attained.

Note 101 to entry: The load may be achieved by using an electrical or mechanical brake.

Where it is not possible or is impractical to apply effectively an electrical or mechanical brake, the load is 115 % of the input measured when the appliance is operated without load at **rated voltage** and normal operating temperature, and with controls intended to be adjusted by the user set at maximum.

Note 102 to entry: Examples of such appliances are

– liquid blenders;
– slicers;
– peelers;
– coffee grinders;
– machines used for washing and/or drying food;
– portioning machines.

## 3.6 Definitions relating to parts of an appliance

**3.6.101**
**guard plate**
plate similar to a slice thickness plate, fitted to machines with automatic product feeding

**3.6.102**
**product holder**
support for the product to be sliced

Note 1 to entry: The **product holder** can be equipped with a **pusher** or a **feed carriage** and/or a clamping device

**3.6.103**
**sliding feed table**
device that supports the **product holder** and allows it to move forwards and backwards

**3.6.104**
**feed carriage**
device on which the product is placed and that slides on top of the **product holder** in order to move the product towards the blade

**3.6.105**
**pusher**
device used to move the product along the **product holder** against the thickness plate

**3.6.106**
**last slice device**
plate with which the last portion of the product is fed to the cutting blade

Note 1 to entry: The plate can be fitted on the **pusher**, clamping device or **feed carriage**.

## 3.8 Definitions relating to miscellaneous matters

**3.8.101**
**indicated level**
mark on the appliance to indicate the maximum liquid level for correct operation

**3.8.102**
**installation wall**
special fixed construction containing supply facilities for appliances installed in conjunction with it

## 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** *Addition:*

*Appliances intended for installation in a bank of other appliances and appliances intended to be fixed to an **installation wall** are enclosed to obtain protection against electric shock and harmful ingress of water equivalent to that obtained when installed in accordance with the instructions provided with the appliance.*

NOTE Appropriate enclosures or additional appliances can be needed for test purposes.

**5.101** *Appliances are tested as **heating appliances** when during a mode of operation electrical heaters are energized. If no electrical heaters are energized, the appliances are tested as **motor-operated appliances**.*

**5.102** *Appliances, when assembled in combination with or incorporating other appliances, are tested in accordance with the requirements of this standard. The other appliances are operated simultaneously in accordance with the requirements of the relevant standards.*

## 6 Classification

This clause of Part 1 is applicable except as follows.

**6.1** *Replacement:*

**Hand-held appliances** shall be **class II** or **class III** with respect to protection against electric shock. Other appliances shall be **class I**, **class II** or **class III** with respect to protection against electric shock.

*Compliance is checked by inspection and by the relevant tests.*

**6.2** *Addition:*

Appliances shall be at least IPX1 with respect to protection against harmful ingress of water.

## 7 Marking and instructions

This clause of Part 1 is applicable except as follows.

**7.1** *Addition:*

If the appliance is marked with rated "on" and "off" periods, the marking shall correspond to normal use. The marking of the "on" period shall precede the marking of the "off" period, both markings being separated by an oblique stroke.

If the reversal of a motor could cause a hazard, then the direction of rotation should be clearly and visibly indicated on the motor, if the direction of rotation depends on the way the motor is connected to the supply.

**7.12** *Addition:*

The instructions for use shall include the operating times and speed settings for accessories, unless this information is marked on the appliance.

The instructions for use shall warn against misuse, and shall state that care is needed when handling cutting blades during cleaning.

Instructions for **user maintenance**, for example 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 for use shall contain instructions for cleaning of all surfaces coming into contact with food during normal use.

Operating instructions included in the operating manual shall clearly indicate how to use particular or special safeguards provided with the appliance, and shall draw the attention of the user to any remaining hazards and give information about preventative measures to be taken by the user for the safe use of the appliance.

NOTE 101 Examples of appliances with remaining hazards are those that are not subjected to the test with the test probe in 20.2.

Information shall also be given about the correct assembly and safe use of accessories provided with the appliance and, if relevant, about possible hazards that might arise when using accessories other than those provided with the appliance. The instructions for use shall warn the user to use a suitable bowl with attachable accessories such as egg beaters and sieving machines, and shall indicate that the accessory must not project from the upper part of the bowl.

The instructions for use for hand-held blenders and whisks shall contain a warning against the use of these appliances when not in contact with the product.

The instructions for use for food processors shall state that care is needed when handling cutting blades, especially when removing the blades from the bowl, emptying the bowl and during cleaning.

The instructions for use for mincers, where the required safety at the discharge outlets depends entirely on perforated discs provided with the appliance, shall contain a warning against use of perforated discs with oval shaped holes or holes of a greater diameter.

The instructions for use for slicers shall give details for assembly and removal of blades and shall require that the slice thickness plate or **guard plate** shall be set to the zero position during the cleaning of the blade while still installed in the appliance.

The instructions for use shall identify separate sharpening devices suitable for use with the appliance, and shall state that only those devices shall be used. A code or similar means may be used for identification purposes.

If symbol IEC 60417-5021 (2002-10) is marked on the appliance, its meaning shall be explained.

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 and butcheries, 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** *Addition:*

The appliance shall be accompanied by instructions detailing any special precautions necessary for installation. For appliances intended for installation in a bank of other appliances, and appliances intended to be fixed to an **installation wall**, details of how to ensure appropriate protection against electric shock and harmful ingress of water shall be supplied. If the controls of more than one appliance are combined in a separate enclosure, detailed installation instructions shall be supplied.

For appliances that are permanently connected to fixed wiring, and for which leakage currents can exceed 10 mA, particularly if disconnected or not used for long periods, or during initial installation, the instructions shall give recommendations regarding the rating of **protective devices**, such as residual current devices (RCDs), to be installed.

If a **stationary appliance** is intended to be moved for cleaning, this shall be stated.

For **stationary appliances** equipped with rollers or castors or intended to be moved for cleaning, the instructions shall state the substance of the following.

This appliance is to be connected with flexible connections for equipotential bonding and connection to services such as electricity supply, water supply, gas supply and steam supply such that the appliance can be moved in the direction required for cleaning a distance not less than the dimension of the appliance in the direction of movement plus 500 mm without the flexible connections becoming taut or being subject to strain.

*Compliance is checked by inspection.*

**7.12.9** Not applicable.

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

These markings shall not be placed on screws, removable washers or other parts that can be removed when conductors are being connected.

*Compliance is checked by inspection.*

**7.102** Containers intended to be filled by hand or by a manually operated tap shall be marked with an **indicated level**.

*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** Motors incorporated in the appliance shall start within 3 s, if delayed starting could result in a hazard.

Fan motors providing a cooling effect in order to comply with the requirements of Clause 11 shall start under all voltage conditions that 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 is 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 tests are 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 except as follows.

**10.1** *Addition:*

*For appliances having more than one heating unit that can be on at the same time, the total power input may be determined by measuring the power input of each heating unit separately (see also 3.1.4).*

## 11 Heating

This clause of Part 1 is applicable except as follows.

**11.2** *Addition:*

*Appliances intended to be fixed to the floor, and appliances with a mass greater than 40 kg and not provided with rollers, castors or similar means, are installed in accordance with the manufacturer's instructions. If no instructions are given, these appliances are considered as appliances normally placed on the floor.*

**11.7** *Modification:*

*Appliances are operated until steady conditions are established.*

*The duration of the test may consist of more than one cycle of operation. If the appliance is marked with rated "on" and "off" periods, they are taken into account.*

*For appliances incorporating **integral batteries** or **separable batteries** not disconnected from the appliance for charging purposes:*

- *the **battery** that has been **fully discharged** is charged for 1 h, while the appliance is operated as specified, if allowed by the construction of the appliance;*
- *the **battery** that has been **fully discharged** is charged, for a duration of 24 h or until it is **fully charged** whichever is shorter, without the **battery-operated appliance** performing its intended function.*

## 12 Charging 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 except as follows.

**15.1.1** *Addition:*

*In addition, appliances, except those marked IPX5 and IPX6, are subjected for 5 min to the following splash test.*

*The apparatus shown in Figure 101 is used. The appliance is placed in the normal position of use and adjustable feet shall be set in accordance with the instructions for use in the most unfavourable height.*

*For appliances normally used on the floor, the bowl is placed on the floor and is moved around in such a way as to splash the appliance from all directions. During the test, the water pressure is so regulated that the water splashes up 150 mm above the bottom of the bowl. The bowl is not positioned underneath the appliance.*

*For all other appliances, the bowl is placed on the same plane where the appliance is placed and is moved around in such a way as to splash the appliance from all directions. During the test, the water pressure is so regulated that the water splashes up 100 mm above the bottom of the bowl. The bowl is not positioned underneath the appliance.*

*Care is taken that the appliance is not hit by the direct jet.*

**15.1.2** *Modification:*

*Appliances normally used on a table are placed on a support having dimensions that are 15 cm ± 5 cm in excess of those of the orthogonal projection of the appliance on the support.*

**15.2** *Modification:*

*Water outlets, if any, are blocked.*

*The water containers of appliances intended to be filled with water by hand are completely filled with the spillage solution and a further quantity, equal to 15 % of the capacity of the container but not more than 10 l, is poured in steadily over a period of 1 min.*

*Appliances intended to be filled by a manually operated tap or automatically are connected to a water supply having the maximum supply pressure indicated by the manufacturer. The means for controlling the incoming water is held fully open, and the filling continued for 1 min after the first evidence of overflow, or until a further protective system operates to stop the inflow.*

*With the container filled with water, the appliance is then operated at rated voltage for 15 s. Lids or covers are in position or removed, whichever is the most unfavourable.*

**15.3** *Addition:*

*If it is not possible to place the whole appliance in the humidity cabinet, parts containing electrical components are tested separately, taking into account the conditions that occur in the appliance.*

**15.101** Appliances that are provided with a tap intended for filling or cleaning shall be constructed so that the water from the tap cannot come into contact with **live parts**.

*Compliance is checked by the following test.*

*The tap is fully opened for 1 min with the appliance connected to a water supply having the maximum water pressure indicated by the manufacturer. Tiltable and movable parts, including lids, are tilted or placed in the most unfavourable position. Swivelling outlets of water taps are so positioned as to direct water on to those parts that will give the most unfavourable result.*

*Immediately following this treatment, the appliance shall withstand an electric strength test as specified in 16.3.*

## 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 applicable.

## 19 Abnormal operation

This clause of Part 1 is applicable except as follows.

**19.1** *Addition:*

*A control or switching device that is intended for different settings corresponding to different functions of the same part of the appliance is in addition set in the most unfavourable setting irrespective of the instructions for use.*

**19.2** *Addition:*

*Appliances are operated with empty heated containers.*

## 20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

**20.2** *Addition:*

Covers and the like, protecting danger zones within the operating range of the appliance, shall be **detachable** only when the risk is excluded by other means.

Parts that do not move more than 4 mm away from each other are not regarded as dangerous crushing (squashing) and shearing zones.

NOTE 101 Drawing-in zones can only occur during operations where uncovered movable parts move past parts that are stationary or other moving parts.

*For feed apertures and discharge apertures, unless otherwise specified, the test is carried out with test probe B of IEC 61032, but having a non-circular stop face with a diameter of 56 mm instead of 50 mm and with the distance between the tip of the test probe and the stop face being 120 mm. The 75 mm diameter guard is removed. The test probe is applied with a force of 5 N. The test probe is not inserted into the aperture for a linear distance of more than 850 mm, measured from the tip of the probe, if the aperture has a largest dimension of less than 150 mm.*

*Moving parts that can be touched by the test probe through discharge apertures are not considered to be dangerous if they have a smooth surface or are constructed so that the risk of entrapment or injury is negligible.*

*For some appliances complete protection is impracticable and the test with the test probe is therefore not carried out. Examples of such appliances are*

– *hand-held appliances;*
– *slicers;*
– *tin openers;*
– *pastry rollers;*
– *noodle strip cutters;*
– *sieving machines;*
– *peelers (discharge apertures only);*
– *bone saws (circular or band type);*
– *citrus juice squeezers;*
– *egg beaters designated as attachable accessories;*
– *knife sharpeners.*

**20.101** Locking devices, the release of which could create a hazard, shall be constructed so that they cannot be actuated accidentally.

*Compliance is checked by a test with test probe B of IEC 61032 with a force of 5 N. It shall not be possible to release the locking device with the probe.*

**20.102** Fixing devices of functional parts, such as attachable accessories, shall not work loose unintentionally. Driven shafts that might constitute a hazard, except within the operating range, shall be adequately protected against accidental contact.

*Compliance is checked by inspection and by a test using test probe B of IEC 61032 with a force of 5 N.*

**20.103** Appliances, or parts of appliances, that are designed to tilt in normal use shall not give rise to a hazard. Accidental tilting from any position, even in the case of supply interruption, shall be prevented and there shall be no crushing zone between the tilting part and the appliance except at the bumper point when the part is fully tilted.

NOTE The requirement can be met by, for example, one of the following means:

– providing switches that have to be kept switched on by hand;
– limiting the rate of motion (peripheral speed) to 50 mm/s;
– protecting danger zones by means of appropriate guards;
– maintaining moving parts securely in position, even in the case of a fault.

If the appliance or part is tilted manually, it shall not be possible to adversely influence the tilting action other than by the intended means.

*Compliance is checked by*

– *inspection;*
– *manual test;*
– *switching off the supply to the appliance at any time during the tilting operation;*
– *applying a force of 340 N at any point on the tiltable part.*

**20.104** Moving rollers shall be adequately protected at their drawing-in zones, that is by means of a safety screen or non-driven protective rollers and/or bars, unless they are spring-loaded with a maximum pressure of 50 kPa, with an emergency switching device, and that the gap between the pair of rollers is at least 60 mm.

*Compliance is checked by inspection, measurement and manual test.*

**20.105** Switches shall be positioned within easy reach of the operator's hand. Start switches shall be secured against accidental actuation, if their actuation could result in a hazard.

*Compliance is checked by inspection and by applying a cylindrical rod having a diameter of 40 mm and a hemispherical end to the switch. The test rod is applied with a force not exceeding 5 N. The appliance shall not operate.*

**20.106** Devices, such as sliding feed tables, **product holders**, stop plates and the like shall ensure safe working within the operating range.

NOTE This requirement can be met by using for example

– a **product holder** that protects the whole of the operating range and that is so undetachably fixed to the sliding feed table, that it automatically drops when the feed table is folded back, and that cannot be moved more than 80 mm away from the knife;
– a **product holder** that is automatically moved up to the knife, and that is provided with a guard at the stop plate and a finger guard at the sliding feed table;
– in the case of gravity driven systems, a back wall on the feed table, with a height equal to the diameter of the knife.

*Compliance is checked by inspection, measurement and manual test.*

**20.107** Accidental contact with devices of driven shafts that engage on attachable accessories shall be prevented, unless their movement is possible only after attachable accessories have been engaged.

NOTE The requirement can be met, for example, if the devices are recessed in their housing or are constructed so that contact would not result in a hazard.

*Compliance is checked by inspection and by manual test.*

**20.108** Circular saws shall be provided with covers where the operating range is opened only by the workpiece itself, as far as is necessary, and where the operating range is automatically covered again, when the operating cycle comes to an end.

*Compliance is checked by inspection and by manual test.*

**20.109** Blades of hand-held blenders shall be completely screened from above and shall not be able to touch a flat surface when rotating.

*Compliance is checked by inspection and by applying a cylindrical rod from any position between the vertical and an angle of 45° to the upper side of the blending blade. The rod has a diameter of 8,0 mm ± 0,1 mm and unlimited length. The test rod is applied with a force not exceeding 5 N.*

*It shall not be possible to touch the blades with the end of the test rod.*

**20.110** Appliances for washing and drying foodstuffs, that have a rotating drum with a kinetic energy of more than 200 J, shall be provided with a cover interlocked so that the appliance will not start when the cover is open. If the cover is opened while the appliance is operating, the drum shall stop within 2 s.

*Compliance is checked by inspection, measurement and manual test. The appliance is supplied at **rated voltage** and without a load.*

**20.111** Dangerous moving parts that are accessible after covers or lids are opened shall stop within 2 s after the cover or lid has been opened or removed. When closed again, the automatic restarting of the appliance shall be possible only if this does not result in a hazard.

*Compliance is checked by operating the appliance without load and at the highest speed.*

**20.112** Appliances shall be constructed so that the omission or replacement in an incorrect position of **detachable parts** will not result in a hazard.

*Compliance is checked by inspection and manual test.*

**20.113** Hand-held whisks shall be provided with a guard to avoid accidental slipping of the hand into the tool. Its dimensions shall be at least 30 mm greater than the dimensions of the handgrip zone, and it shall be located between the handgrip zone and the tool.

*Compliance is checked by inspection, measurement and manual test.*

**20.114** Beam mixers shall automatically switch off when the head is raised to a height of 300 mm above the supporting surface, unless the appliance incorporates a switch that has to be kept switched on by hand.

*Compliance is checked by inspection and by measurement.*

**20.115** Unloading of the product from peelers shall not cause a hazard.

NOTE The requirement can be met by, for example

– suitable guards preventing contact, except by a deliberate action, with rotating plates involving hazards of trap or injury;

– for rotating plates provided with cutting blades, the need to use one hand to keep the discharge door or lid open and the provision of a switch that has to be kept switched on by hand to allow for unloading of the product.

*Compliance is checked by inspection and manual test.*

**20.116** Slicing machines shall be stable when in use.

This requirement does not apply to **fixed appliances**.

*Compliance is checked by the following test.*

*The slicing machine is placed in accordance with the instructions for use on a plain glass plate that is placed on a horizontal surface.*

*The glass surface is prevented from sliding by a stop.*

*A force of 50 N is applied horizontally to the appliance in the most unfavourable direction at a point 10 mm below the upper surface of the base carrying the sliding feed table.*

*The appliance shall not move on the glass plate.*

**20.117** Blades of slicing machines shall be adequately protected.

The requirements may be met by the requirements in 20.117.1 to 20.117.8.

Alternative requirements to those given in 20.117.1 to 20.117.8 that give an equivalent or greater degree of protection may also meet the requirements.

*Compliance is checked by inspection, measurement and manual test.*

**20.117.1** A guard surrounding the circular blade shall be provided, its open sector being no larger than required for using the appliance. The angle θ (theta) of the upper part of the open sector shown in Figure 102 shall not exceed 60°.

The radial distance $a$ between the outer circumference of the blade and the blade guard shall not exceed 6 mm, and the guard shall project at least 1 mm beyond the plane of the blade (distance $b$).

**20.117.2** When the slice thickness plate is set to the zero position, the distance $c$ between the outer circumference of the blade and the slice thickness plate shall not exceed 6 mm and the thickness plate shall project at least 1 mm beyond the plane of the blade. At the upper and lower points of the open sector, the distance $e$ between the slice thickness plate and any other protecting part shall not exceed 5 mm.

If the distance $e$ is shielded, the limit does not apply.

Additional guarding shall be provided if slices thicker than 15 mm can be cut.

NOTE An extension of the upper end of the slice thickness plate or an extension of the blade guard are examples of additional guarding.

Appliances shall not be capable of cutting slices thicker than 40 mm.

If the appliance is equipped with a slice support, this shall project at least 1 mm beyond the plane of the blade.

**20.117.3** Slicing machines shall incorporate a **sliding feed table**, a thumb guard and a **product holder**. The thumb guard shall screen the full height of the open sector and shall be constructed so that the other fingers remain at least 30 mm away from the blade (distance *f*). The distance *d* between the plane of the thumb guard and the blade shall not exceed 6 mm. At the end of the forward movement of the **sliding feed table**, the thumb guard shall project at least 10 mm beyond the outer circumference of the blade.

For slicing machines with automatic feeding, the requirement applies to the guard plate.

It is not required to provide a thumb guard if the **product holder** incorporates means for clamping the food. In this case

– the handle of the **sliding feed table** shall be protected by a plate having dimensions at least 30 mm in excess of those of the handle. The handle shall be at least 80 mm from the blade;
– the handle of the clamping device shall be protected either by a guard or a **last slice device**, having dimensions of at least 50 mm in excess of those of the handle;
– it shall not be possible to remove the **feed carriage** from the **product holder**.

It shall only be possible to lift or remove the **product holder** when the plate that sets the thickness of the slices is in the zero position. It shall not be possible to change this setting when the **product holder** has been lifted or removed.

**20.117.4** Sharpening devices integral with the appliance shall be constructed so that during normal use of the appliance, a continuous cover over the blade is ensured in the same manner as the blade guard.

In the sharpening position, that part of the blade that is exposed shall not project more than 6 mm from each side of the abrasive wheels used for grinding.

Separate sharpening devices shall, when fixed to the appliance, have a suitable guard to cover the exposed parts of the blade. Any gap between the abrasive wheels used for grinding and the guard shall not exceed 6 mm.

The construction of both integral and separate sharpening devices shall not allow the blade to be sharpened when the gap between the blade and the blade guard exceeds 6 mm.

**20.117.5** **Pushers** of slicing machines shall cover the exposed cutting sector of the blade or have a handle provided with a protective plate that is always at least 150 mm from the blade.

It shall only be possible for the **pusher** to remain in the raised position when the distance between the **pusher** and the blade is at least 60 mm. It shall not be possible to remove the arm of the **pusher** or to swing it outside of the **sliding feed table**.

**20.117.6** Manual **feed carriages** shall be provided with a handle meeting the same dimensional requirements of 20.117.3 or 20.117.5 as appropriate. If they can be raised for cleaning, they shall fall back to the normal working position when released.

**20.117.7** Slicing machines with automatic product feeding and not provided with a plate that sets the thickness of the slices shall incorporate a **guard plate** that covers the exposed cutting sector of the blade and extends beyond the front of the stroke of the **product holder** by at least 10 mm. It shall not be possible to move the **guard plate** away from the blade by more than the maximum slice thickness plus 3 mm. The provisions applicable to slice thickness plates apply to **guard plates**.

**20.117.8** Slicing machines with a power-driven **sliding feed table** shall be constructed so that gaps between moving parts and other parts do not give rise to trapping or crushing hazards.

NOTE This requirement can met if the gap is less than 6 mm or more than 25 mm.

**20.118** The discharge apertures of mincers shall be adequately protected.

*Compliance is checked by inspection and by a test with the test probe for feed and discharge apertures described in 20.2 with a force of 5 N. The appliance is tested with the protective perforated disc in place as in normal use, even if the disc is a **detachable. part**. The test probe shall not touch dangerous parts.*

**20.119** Hazardous moving parts of bone saws of the band type shall be adequately protected. When these parts are accessible after lids, doors or guards are opened, the requirements of 20.111 apply.

Appliances with a cutting height not exceeding 250 mm shall be provided with a fixed table, a slice thickness plate of a height of at least 100 mm and a hinged **pusher** that protects the whole of the operating range and that automatically drops to its protective position when released. It shall be possible to change the blade without removing the **pusher**.

Appliances with a cutting height exceeding 250 mm with a fixed table shall be provided with a slice thickness plate of a height of at least 100 mm and a **last slice device** with a minimum height of 150 mm. The appliance shall incorporate an adjustable blade guard protecting the part of the blade not used for cutting. It shall be possible to lower the blade guard to at least 105 mm from the table. It shall also be possible to change the blade without removing the blade guard.

If the appliance is provided with a sliding table, its rear edge shall have a height of at least 60 mm and shall incorporate a finger guard at least 100 mm high and 50 mm wide. At the end of the forward movement of the sliding table the finger guard shall project at least 10 mm beyond the blade. The other requirements for appliances with a cutting height not exceeding 250 mm are also applicable.

The requirements may be met by alternative means that provide at least the same degree of protection.

*Compliance is checked by inspection, measurement and manual test.*

## 21 Mechanical strength

This clause of Part 1 is applicable except as follows.

**21.1** *Addition:*

*The test is also made on **detachable parts** that are necessary for protection against mechanical hazards.*

**21.101** **Detachable parts** and **non-detachable parts** that are necessary for protection against mechanical hazards shall have adequate resistance to distortion.

*Compliance is checked by applying a force of 50 N to the parts in the most unfavourable direction. The test is repeated three times.*

*After the test, protective guards and the like shall show no damage within the meaning of this standard; in particular, guards and the like protecting blades and cutting knives shall not be distorted or deflected in such a way as to impair compliance with 20.2 and other relevant additional subclauses.*

## 22 Construction

This clause of Part 1 is applicable except as follows.

**22.101** For multi-phase appliances, **thermal cut-outs** protecting circuits with heating elements, and those for motors of which the unexpected starting 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 and for single-phase heating elements and/or motors connected between one phase and neutral or between phase and phase, **thermal cut-outs** protecting circuits with heating elements, and those for motors of which the unexpected starting 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.

**Thermal cut-outs** of the bulb and capillary type that operate during the tests of Clause 19 shall be such that rupture of the capillary tube shall not impair compliance with the requirements of 19.13.

*Compliance is checked by inspection and by manual test and by rupturing the capillary tube in such a way that the rupture does not seal the tube.*

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

*Compliance is checked by inspection.*

**22.103** Drain cocks and other emptying devices for hot liquids shall be constructed so that they cannot be opened inadvertently.

This requirement is met if the emptying device handle is such that

– when released, it returns the emptying device automatically to the closed position; or
– it is of the wheel type; or
– it is placed in a recess such that it cannot be placed in the open position by means of test probe B of IEC 61032 using a single action with a force of 10 N.

Moreover, it shall not be possible to withdraw drain plugs inadvertently.

*Compliance is checked by inspection and by manual test.*

**22.104** Means provided to allow drainage of liquid from appliances shall discharge the liquid in such a manner that electrical insulation is not affected.

*Compliance is checked by inspection and by manual test.*

**22.105** Accessories requiring an electrical supply shall have that supply derived from the appliance.

*Compliance is checked by inspection.*

**22.106** Appliances shall be constructed so that lubricants, abrasives and the like cannot come into contact with the ingredients.

*Compliance is checked by inspection.*

**22.107** **Portable appliances** shall not have openings on the underside 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 the table and to 20 mm if it is intended to stand on the floor.*

**22.108** The level to which manually filled containers have to be filled shall be so located as to be readily visible when filling.

*Compliance is checked by inspection.*

**22.109** Appliances shall be constructed so that food or liquids are prevented from penetrating places that could cause electrical or mechanical faults.

*Compliance is checked by inspection.*

**22.110** Switches in the **off position** shall disconnect electronic circuits.

*Compliance is checked by inspection.*

**22.111** The appliance shall not automatically restart when the supply is re-established after a temporary disconnection, if restarting could result in a hazard, for example mechanical (moving parts) or thermal (hot parts or liquids).

*Compliance is checked by the following test.*

*The appliance is operated at **rated voltage** and in accordance with the instructions.*

*At any time during the operating cycle the supply to the appliance is switched off and any moving parts are allowed to come to rest.*

*The supply is then restored.*

**22.112** For appliances provided with one device or separate devices for the start and the stop functions, the stop function shall be unambiguously identifiable and shall always override the start function.

*Compliance is checked by inspection and by manual test.*

**22.113** Appliances fitted with wheels or similar means shall be provided with an efficient means of locking while the appliance is stationary.

*Compliance is checked by inspection and by the following test.*

*The appliance, fully loaded in accordance with the manufacturer's instructions, is placed on a rigid plane coated with aluminium oxide paper (grain size 80) and inclined at 10° to the horizontal, with the locking mechanism applied. The appliance shall not move by more than 100 mm.*

## 23 Internal wiring

This clause of Part 1 is applicable except as follows.

**23.3** *Addition:*

*If the capillary tube of the* ***thermostat*** *is liable to flexing in normal use the following applies:*

– *where the capillary tube is fitted as part of the internal wiring, Part 1 applies;*
– *where the capillary tube is separate, it is subjected to 1 000 flexings at a rate not exceeding 30 per minute.*

*The rate of flexing may be reduced if it is not possible to move the movable part of the appliance at the given rate due to the mass of the movable part.*

*After the test, the capillary tube shall show no sign of damage within the meaning of this standard and no damage impairing its further use.*

*However, if a rupture of the capillary tube renders the appliance inoperative (fail-safe), separate capillary tubes are not tested, and those fitted as part of the internal wiring are not inspected for compliance with the requirements.*

*Compliance in this instance is checked by rupturing the capillary tube in such a way that the rupture does not seal the capillary tube.*

## 24 Components

This clause of Part 1 is applicable except as follows.

**24.1.3** *Modification:*

*Switches operating during each cycle of operation of the appliance are tested for 50 000 cycles of operation. Other switches are tested for 10 000 cycles of operation. Instead of the rate of operation specified, switches are tested at a rate of one operation per minute.*

**24.4** *Addition:*

Socket-outlets for the connection of accessories shall be protected against short circuit and overload.

## 25 Supply connection and external flexible cords

This clause of Part 1 is applicable except as follows.

**25.1** *Modification:*

Appliances shall not be provided with an appliance inlet.

**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.

If the appliance uses a **type X attachment** the instructions shall state the size and type of the **supply cord** to be used.

**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.

**27.2** *Addition:*

**Stationary 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 name-plates and similar parts;

– allow the connection of a conductor having a nominal cross-sectional area of up to 10 $mm^2$; 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, creepage 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.

**30.2** *Addition:*

*For peelers and machines used for washing and/or drying food, 30.2.3 is applicable.*

*For other appliances, 30.2.2 is applicable.*

**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.*

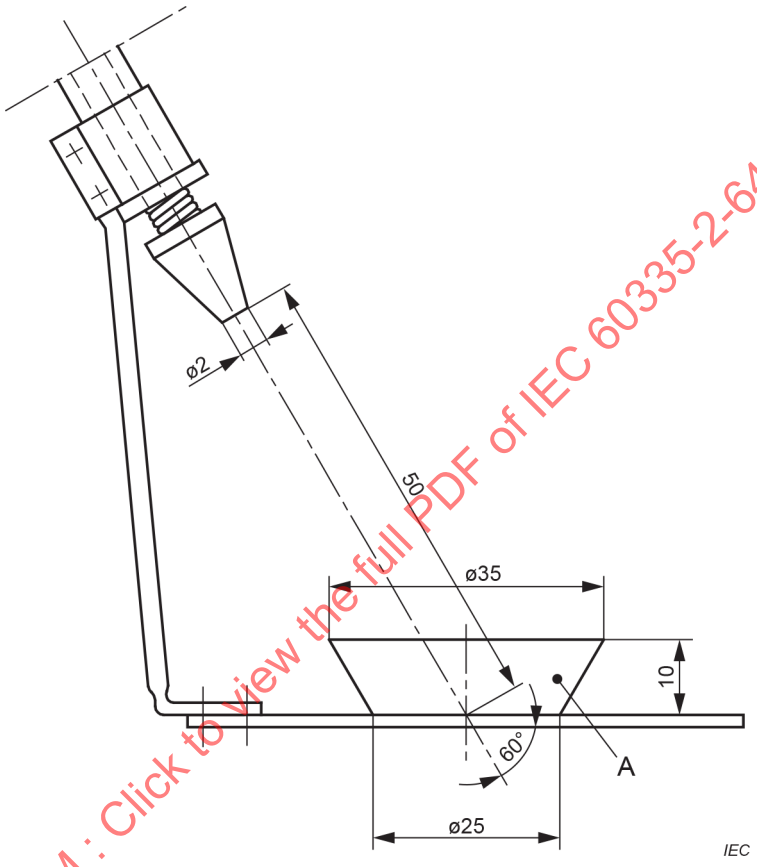
## 31 Resistance to rusting

This clause of Part 1 is applicable.

## 32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.

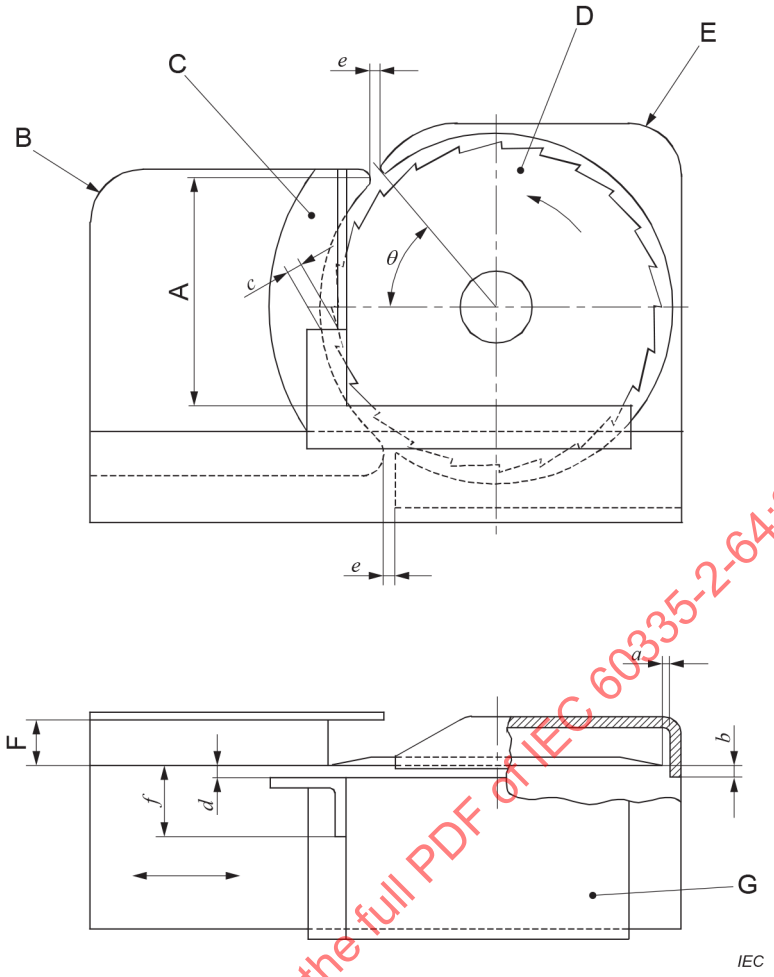
Dimensions in millimetres




**Key**

A bowl

**Figure 101 – Splash apparatus**




**Key**

A full height of the open section
B plate that sets the thickness of the slices
C thumb guard
D rotating blade
E blade guard
F thickness of slices
G sliding feed table

**Figure 102 – Protection devices for slicing machines**

## 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

Annex B of Part 1 is applicable except as follows.

**B.3.1.1** *Modification:*

Note 1 to entry: Operation of the appliance to perform its intended function is specified in 3.1.9.

**B.11.1** *Replacement:*

*Battery-operated appliances are tested under the conditions of normal operation.*

***Battery-operated appliance**s with **non-rechargeable batteries,** with **detachable batteries**, and those incorporating **integral batteries** or **separable batteries** not disconnected from the appliance for charging purposes, and that cannot perform their intended function while the batteries are being charged, are operated until depletion of the **battery** or until steady conditions are established, whichever occurs first.*

*For appliances with **non-rechargeable batteries** and **detachable batterie**s or **separable batteries** that are disconnected from the appliance for charging purposes, the depleted **battery** is immediately replaced with another **battery** that is **fully charged**, the **battery** being the model or type reference of the **battery** provided or indicated in the instructions. The test is repeated until the appliance no longer operates due to depletion of the **battery** or until the temperature rises have stabilized to values not more than 5 K higher than the temperature rises measured at the same locations during the first test, whichever occurs first.*

# Annex P
(informative)

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

Annex P 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.

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# SOMMAIRE

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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# APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

## Partie 2-64: Exigences particulières pour les machines de cuisine électriques à usage commercial

## AVANT-PROPOS

1) La Commission Electrotechnique Internationale (IEC) est une organisation mondiale de normalisation composée de l'ensemble des comités électrotechniques nationaux (Comités nationaux de l'IEC). L'IEC a pour objet de favoriser la coopération internationale pour toutes les questions de normalisation dans les domaines de l'électricité et de l'électronique. A cet effet, l'IEC – entre autres activités – publie des Normes internationales, des Spécifications techniques, des Rapports techniques, des Spécifications accessibles au public (PAS) et des Guides (ci-après dénommés "Publication(s) de l'IEC"). Leur élaboration est confiée à des comités d'études, aux travaux desquels tout Comité national intéressé par le sujet traité peut participer. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec l'IEC, participent également aux travaux. L'IEC collabore étroitement avec l'Organisation Internationale de Normalisation (ISO), selon des conditions fixées par accord entre les deux organisations.
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5) L'IEC elle-même ne fournit aucune attestation de conformité. Des organismes de certification indépendants fournissent des services d'évaluation de conformité et, dans certains secteurs, accèdent aux marques de conformité de l'IEC. L'IEC n'est responsable d'aucun des services effectués par les organismes de certification indépendants.
6) Tous les utilisateurs doivent s'assurer qu'ils sont en possession de la dernière édition de cette publication.
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8) L'attention est attirée sur les références normatives citées dans cette publication. L'utilisation de publications référencées est obligatoire pour une application correcte de la présente publication.
9) L'attention est attirée sur le fait que certains des éléments de la présente Publication de l'IEC peuvent faire l'objet de droits de brevet. L'IEC ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de brevets.

L'IEC 60335-2-64 a été établie par le comité d'études 61 de l'IEC: Sécurité des appareils électrodomestiques et analogues. Il s'agit d'une Norme internationale.

Cette quatrième édition annule et remplace la troisième édition parue en 2002, l'Amendement 1:2007 et l'Amendement 2:2017. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

a) alignement du texte sur l'IEC 60335-1:2020;

b) conversion en texte normatif, modification ou suppression de certaines notes (Article 1, 7.12, 9.101, 10.1, 11.7, 15.3, 20.2, 20.116, 20.117, 20.117.2, 20.117.3, 20.119, 22.101, 23.3, 27.2);

c) clarification de certaines modalités d'essais (9.101, 15.1.1, 15.2, 22.113);

d) exclusion des appareils utilisés dans des lieux ouverts au public (Article 1);

e) clarification des exigences pour les appareils alimentés par batteries (Article 1, 11.7, B.3.1.1, B.11.1);

f) déplacement des instructions pour le nettoyage du 7.12.1 au 7.12;

g) alignement du texte de l'IEC 60335-2-64 sur d'autres normes sous l'IEC/TC61/MT32.

Le texte de cette Norme internationale est issu des documents suivants:

| Projet | Rapport de vote |
|---|---|
| 61/6372/FDIS | 61/6422/RVD |

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous www.iec.ch/members_experts/refdocs. Les principaux types de documents développés par l'IEC sont décrits plus en détail sous www.iec.ch/standardsdev/publications.

Une liste de toutes les parties de la série IEC 60335, publiées sous le titre général *Appareils électrodomestiques et analogues – Sécurité*, se trouve sur le site web de l'IEC.

La présente Partie 2 doit être utilisée conjointement avec la dernière édition de l'IEC 60335-1 et ses amendements, sauf si cette édition l'exclut. Dans ce cas, la dernière édition qui n'exclut pas la présente Partie 2 est utilisée. Elle a été établie sur la base de la sixième édition (2020) de cette norme.

NOTE 1 L'expression "la Partie 1" utilisée dans la présente norme fait référence à l'IEC 60335-1.

La présente Partie 2 complète ou modifie les articles correspondants de l'IEC 60335-1, de façon à transformer cette publication en norme IEC: Exigences particulières pour les machines de cuisine électriques à usage commercial.

Lorsqu'un paragraphe particulier de la Partie 1 n'est pas mentionné dans cette Partie 2, ce paragraphe s'applique pour autant que cela soit raisonnable. Lorsque la présente norme mentionne "addition", "modification" ou "remplacement", le texte correspondant de la Partie 1 doit être adapté en conséquence.

NOTE 2 Le système de numérotation suivant est utilisé:

– les paragraphes, tableaux et figures qui s'ajoutent à ceux de la Partie 1 sont numérotés à partir de 101;

– à l'exception de celles qui sont dans un nouveau paragraphe ou de celles qui concernent des notes de la Partie 1, les notes sont numérotées à partir de 101, y compris celles des articles ou paragraphes qui sont remplacés;

– les annexes qui sont ajoutées sont désignées AA, BB, etc.

NOTE 3 Les caractères d'imprimerie suivants sont utilisés:

– exigences: caractères romains;

– *modalités d'essais: caractères italiques;*

– notes: petits caractères romains.

Les termes en **gras** dans le texte sont définis à l'Article 3. Lorsqu'une définition concerne un adjectif, l'adjectif et le nom associé figurent également en gras.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous webstore.iec.ch dans les données relatives au document recherché. A cette date, le document sera

- reconduit,
- supprimé,
- remplacé par une édition révisée, ou
- amendé.

NOTE 4 L'attention des Comités nationaux est attirée sur le fait que les fabricants d'appareils et les organismes d'essai peuvent avoir besoin d'une période transitoire après la publication d'une nouvelle publication IEC, ou d'une publication amendée ou révisée, pour fabriquer des produits conformes aux nouvelles exigences et pour adapter leurs équipements aux nouveaux essais ou aux essais révisés.

Le comité recommande que le contenu de cette publication soit entériné au niveau national au plus tôt 12 mois et au plus tard 36 mois après la date de publication.

Les différences suivantes existent dans les pays indiqués ci-après.

– 6.1: les appareils de la classe 01 sont admis si leur tension assignée ne dépasse pas 150 V (Japon);

– 13.2: les limites de courant de fuite sont différentes (Japon);

– 16.2: les limites de courant de fuite sont différentes (Japon).

# INTRODUCTION

Il a été considéré en établissant cette Norme internationale que l'exécution de ses dispositions était confiée à des personnes expérimentées et ayant une qualification appropriée.

Les documents de recommandations concernant l'application des exigences de sécurité pour les appareils peuvent être consultés dans les documents de support du CE 61, accessibles sur le site web de l'IEC à l'adresse:

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

Cette information est donnée à l'intention des utilisateurs de la présente Norme internationale et n'a pas pour objet de remplacer le texte normatif de la présente norme.

La présente norme reconnaît le niveau de protection internationalement accepté contre les dangers électriques, mécaniques, thermiques, liés au feu et au rayonnement des appareils, lorsqu'ils fonctionnent comme en usage normal en tenant compte des instructions du fabricant. Elle couvre également les situations anormales auxquelles on peut s'attendre dans la pratique et elle tient compte de la façon dont les phénomènes électromagnétiques peuvent affecter le fonctionnement sûr des appareils.

Cette norme tient compte autant que possible des exigences de l'IEC 60364, de façon à rester compatible avec les règles d'installation quand l'appareil est raccordé au réseau d'alimentation. Cependant, des règles nationales d'installation peuvent être différentes.

Si un appareil relevant du domaine d'application de la présente norme comporte également des fonctions couvertes par une autre Partie 2 de l'IEC 60335, la Partie 2 correspondante est appliquée à chaque fonction séparément, dans la limite du raisonnable. Si cela est applicable, on tient compte de l'influence d'une fonction sur les autres fonctions.

Lorsqu'une Partie 2 ne comporte pas d'exigences complémentaires pour couvrir les risques traités dans la Partie 1, la Partie 1 s'applique.

NOTE 1 Cela signifie que les comités d'études responsables pour les Parties 2 ont déterminé qu'il n'était pas nécessaire de spécifier des exigences particulières pour l'appareil en question en plus des exigences générales.

Cette norme est une norme de famille de produits traitant de la sécurité d'appareils et a préséance sur les normes horizontales et génériques couvrant le même sujet.

NOTE 2 Les publications horizontales, les publications fondamentales de sécurité et les publications groupées de sécurité couvrant un risque ne sont pas applicables parce qu'elles ont été prises en considération lorsque les exigences générales et particulières ont été étudiées pour la série de normes IEC 60335.

Un appareil conforme au texte de la présente norme ne sera pas nécessairement jugé conforme aux principes de sécurité de la norme si, lorsqu'il est examiné et soumis aux essais, il apparaît qu'il présente d'autres caractéristiques qui compromettent le niveau de sécurité visé par ces exigences.

Un appareil utilisant des matériaux ou présentant des modes de construction différents de ceux décrits dans les exigences de cette norme peut être examiné et essayé en fonction de l'objectif poursuivi par ces exigences et, s'il est jugé pratiquement équivalent, il peut être estimé conforme aux principes de sécurité de la norme.

NOTE 3 Les normes traitant des aspects non relatifs à la sécurité des appareils électrodomestiques sont:

– les normes IEC publiées par le comité d'études 59 concernant les méthodes de mesure d'aptitude à la fonction;
– les normes CISPR 11 et CISPR 14-1, ainsi que les normes applicables de la série IEC 61000-3 concernant les émissions électromagnétiques;
– la norme CISPR 14-2 concernant l'immunité électromagnétique;
– les normes IEC publiées par le comité d'études 111 concernant l'environnement.

# APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

## Partie 2-64: Exigences particulières pour les machines de cuisine électriques à usage commercial

## 1 Domaine d'application

L'article de la Partie 1 est remplacé par le texte suivant.

La présente partie de l'IEC 60335 traite de la sécurité des **machines de cuisine** électriques à usage commercial, dont la **tension assignée** est inférieure ou égale à 250 V pour les appareils monophasés raccordés entre un conducteur de phase et le conducteur de neutre, et à 480 V pour les autres appareils, y compris les appareils alimentés en courant continu et les **appareils alimentés par batteries**.

Ces appareils ne sont pas destinés à un usage domestique ou analogue. Ils sont destinés à un usage commercial pour le traitement des aliments dans des zones non ouvertes au public, par exemple dans les cuisines de restaurants, les cantines, les hôpitaux et les entreprises commerciales, telles que les boulangeries et les boucheries.

Des exemples de **machines de cuisine** sont:

– les mélangeurs;
– les mélangeurs pour produits liquides et solides;
– les pétrins;
– les batteurs;
– les coupe-légumes;
– les râpes;
– les hachoirs;
– les trancheurs;
– les éplucheuses;
– les ouvre-boîtes;
– les moulins à café;
– les machines utilisées pour le lavage et/ou le séchage des aliments;
– les portionneuses;
– les laminoirs à pâte;
– les machines à découper les pâtes alimentaires;
– les préparateurs culinaires;
– les broyeurs verticaux à moteur montés sur chariot.

La présente norme s'applique également aux appareils qui, afin de faciliter le transport, sont livrés en plusieurs parties (sous-ensembles) qui, lorsqu'elles sont assemblées sur le lieu de l'installation, forment une unité de construction sans utilisation de parties supplémentaires.

La partie électrique des appareils qui utilise d'autres formes d'énergie est également comprise dans le domaine d'application de la présente norme.

Dans la mesure du possible, la présente norme traite des dangers courants que présentent ces types d'appareils.

L'attention est attirée sur le fait que:

– pour les appareils destinés à être utilisés dans des véhicules ou à bord de navires ou d'avions, des exigences supplémentaires peuvent être nécessaires;
– dans de nombreux pays, des exigences supplémentaires sont spécifiées par les autorités sanitaires nationales, les organismes nationaux en charge de la protection des travailleurs, les agences nationales de l'eau et des organismes analogues.

La présente norme ne s'applique pas

– aux appareils prévus exclusivement pour des usages industriels;
– aux appareils destinés à être utilisés dans des locaux qui présentent des conditions particulières, telles que la présence d'une atmosphère corrosive ou explosive (poussière, vapeur ou gaz);
– aux appareils conçus pour la production continue en masse d'aliments;
– aux convoyeurs indépendants, tels que les tapis roulants pour la distribution d'aliments.

## 2 Références normatives

L'article de la Partie 1 est applicable, avec l'exception suivante.

*Addition:*

ISO 898-1, *Caractéristiques mécaniques des éléments de fixation en acier au carbone et en acier allié – Partie 1: Vis, goujons et tiges filetées de classes de qualité spécifiées – Filetages à pas gros et filetages à pas fin*

ISO 3506-1, *Fixations – Caractéristiques mécaniques des fixations en acier inoxydable résistant à la corrosion – Partie 1: Vis, goujons et tiges filetées de grades et classes de qualité spécifiés*

ISO 3506-2, *Fixations – Caractéristiques mécaniques des fixations en acier inoxydable résistant à la corrosion – Partie 2: Ecrous de grades et classes de qualité spécifiés*

ISO 3506-3, *Caractéristiques mécaniques des éléments de fixation en acier inoxydable résistant à la corrosion – Partie 3: Vis sans tête et éléments de fixation similaires non soumis à des contraintes de traction*

ISO 3506-4, *Caractéristiques mécaniques des éléments de fixation en acier inoxydable résistant à la corrosion – Partie 4: Vis à tôle*

## 3 Termes et définitions

L'article de la Partie 1 est applicable, avec les exceptions suivantes.

### 3.1 Définitions relatives aux caractéristiques physiques

**3.1.4** *Addition:*

Note 101 à l'article: La **puissance assignée** est la somme des puissances de tous les éléments individuels de l'appareil qui peuvent être alimentés simultanément; si plusieurs combinaisons d'éléments sont possibles, celle qui donne la puissance la plus élevée sert à déterminer la **puissance assignée**.

**3.1.9** *Addition:*
fonctionnement de l'appareil dans les conditions suivantes:

L'appareil est mis en fonctionnement sans charge. L'appareil est ensuite chargé par étapes, en maintenant la tension d'alimentation à sa valeur d'origine. A chaque étape, les conditions de régime doivent être établies avant d'augmenter la charge. Cette opération est répétée jusqu'à atteindre le point qui précède l'activation du déclencheur de surcharge ou jusqu'à l'établissement des conditions de régime à la température la plus élevée.

Note 101 à l'article: La charge peut être obtenue en utilisant un frein électrique ou mécanique.

Lorsqu'il n'est pas possible d'appliquer effectivement un frein électrique ou mécanique, la charge est égale à 115 % de la puissance mesurée lorsque l'appareil fonctionne à vide à la **tension assignée** et à la température de régime normale, les dispositifs de commande prévus pour être manœuvrés par l'usager étant réglés sur le réglage maximal.

Note 102 à l'article: Des exemples de tels appareils sont:

– les mélangeurs pour produits liquides;
– les trancheurs;
– les éplucheuses;
– les moulins à café;
– les machines utilisées pour le lavage et/ou le séchage des aliments;
– les portionneuses.

## 3.6 Définitions relatives aux parties d'un appareil

**3.6.101**
**plaque de protection**
plaque similaire à une plaque d'épaisseur de tranche, qui est fixée aux machines à alimentation de produit automatique

**3.6.102**
**porte-produit**
support pour le produit à trancher

Note 1 à l'article: Le **porte-produit** peut être équipé d'un **poussoir** ou d'un **chariot d'alimentation** et/ou d'un dispositif de serrage

**3.6.103**
**table d'alimentation coulissante**
dispositif qui soutient le **porte-produit** et lui permet de se déplacer vers l'avant et l'arrière

**3.6.104**
**chariot d'alimentation**
dispositif sur lequel le produit est placé et qui coulisse au-dessus du **porte-produit** afin de faire avancer le produit en direction de la lame

**3.6.105**
**poussoir**
dispositif utilisé pour faire avancer le produit le long du **porte-produit** contre la plaque d'épaisseur

**3.6.106**
**pousse-talon**
plaque avec laquelle la dernière partie du produit est poussée en direction de la lame de coupe

Note 1 à l'article: La plaque peut être installée sur le **poussoir**, le dispositif de serrage ou le **chariot d'alimentation**.

### 3.8 Définitions relatives à des sujets divers

**3.8.101**
**niveau indiqué**
marque sur l'appareil qui indique le niveau maximal de liquide pour assurer un fonctionnement correct

**3.8.102**
**mur d'installation**
construction fixe spéciale qui comporte les dispositifs pour alimenter les appareils qui y sont raccordés

## 4 Exigences générales

L'article de la Partie 1 est applicable.

## 5 Conditions générales d'essais

L'article de la Partie 1 est applicable, avec les exceptions suivantes.

**5.10** *Addition:*

*Les appareils destinés à être installés en batterie avec d'autres appareils et les appareils destinés à être fixés à un **mur d'installation** sont sous une enveloppe de manière à assurer une protection contre les chocs électriques et les effets nuisibles de la pénétration de l'eau équivalente à celle procurée lorsqu'ils sont installés conformément aux instructions fournies avec l'appareil.*

NOTE Des enveloppes adaptées ou des appareils supplémentaires peuvent être nécessaires pour les essais.

**5.101** *Les appareils sont soumis à l'essai comme des **appareils chauffants** lorsque les appareils de chauffage électriques sont sous tension au cours d'un mode de fonctionnement. Si aucun appareil de chauffage électrique n'est sous tension, les appareils sont soumis à l'essai comme des **appareils à moteur**.*

**5.102** *Les appareils, lorsqu'ils sont montés en combinaison avec d'autres appareils ou lorsqu'ils incorporent d'autres appareils, sont soumis à l'essai conformément aux exigences de la présente norme. Les autres appareils sont mis en fonctionnement simultanément conformément aux exigences des normes correspondantes.*

## 6 Classification

L'article de la Partie 1 est applicable, avec les exceptions suivantes.

**6.1** *Remplacement:*

Les **appareils portatifs** doivent être de la **classe II** ou de la **classe III** en ce qui concerne la protection contre les chocs électriques. Les autres appareils doivent être de la **classe I**, de la **classe II** ou de la **classe III** en ce qui concerne la protection contre les chocs électriques.

*La conformité est vérifiée par un examen et par les essais applicables.*

**6.2** *Addition:*

Les appareils doivent être au moins IPX1 en ce qui concerne la protection contre les effets nuisibles de la pénétration d'eau.

## 7 Marquage et instructions

L'article de la Partie 1 est applicable, avec les exceptions suivantes.

**7.1** *Addition:*

Si l'appareil porte un marquage des périodes de "marche" et d'"arrêt" assignées, ce marquage doit correspondre à un usage normal. Le marquage de la période de "marche" doit précéder le marquage de la période d'"arrêt"; les deux marquages sont séparés par une barre oblique.

Si l'inversion d'un moteur peut provoquer un danger, il convient alors d'indiquer clairement et visiblement le sens de rotation sur le moteur lorsque le sens de rotation dépend de la façon dont le moteur est raccordé à l'alimentation.

**7.12** *Addition:*

Les instructions d'emploi doivent inclure les durées de fonctionnement et les réglages de vitesse pour les accessoires, sauf si ces informations sont marquées sur l'appareil.

Les instructions d'emploi doivent comporter une mise en garde contre un mauvais usage; elles doivent indiquer qu'une attention particulière est nécessaire lors de la manipulation des lames de coupe pendant le nettoyage.

Des instructions doivent également être fournies concernant l'**entretien par l'usager**, par exemple pour le nettoyage. Elles doivent inclure une indication qui précise que l'appareil ne doit pas être nettoyé au moyen d'un jet d'eau ou d'un appareil de nettoyage à vapeur. Les instructions d'emploi doivent contenir des instructions relatives au nettoyage de toutes les surfaces qui entrent en contact avec les aliments en usage normal.

Les instructions de fonctionnement incluses dans le manuel de fonctionnement doivent indiquer clairement le mode d'utilisation des moyens de protection particuliers ou spéciaux fournis avec l'appareil; elles doivent attirer l'attention de l'usager sur les dangers résiduels et fournir des informations sur les mesures préventives à prendre par l'usager pour assurer la sécurité d'utilisation de l'appareil.

NOTE 101 Les appareils qui ne sont pas soumis à l'essai avec le calibre d'essai décrit en 20.2 sont des exemples d'appareils qui présentent des dangers résiduels.

Des informations doivent également être données concernant le montage correct et l'utilisation des accessoires en toute sécurité et, le cas échéant, concernant les dangers éventuels que peut impliquer l'utilisation d'accessoires autres que ceux fournis avec l'appareil. Les instructions d'emploi doivent mettre en garde l'usager sur l'emploi d'un bol adapté avec des accessoires amovibles tels que des batteurs à œufs et des machines à tamiser; elles doivent indiquer que l'accessoire ne doit pas dépasser de la partie supérieure du bol.

Les instructions d'emploi pour les mélangeurs et fouets à main doivent comporter une mise en garde contre l'utilisation de ces appareils lorsqu'ils ne sont pas en contact avec le produit.

Les instructions d'emploi pour les préparateurs culinaires doivent indiquer qu'une attention particulière est nécessaire lors de la manipulation des lames de coupe, plus particulièrement lors du retrait des lames du bol, du vidage du bol et durant le nettoyage.

Les instructions d'emploi pour les hachoirs, lorsque la sécurité exigée au niveau des orifices d'évacuation est assurée par l'emploi des disques perforés fournis avec l'appareil, doivent comporter une en garde concernant l'emploi de disques perforés dont les trous sont de forme ovale ou ont un diamètre supérieur.

Les instructions d'emploi pour les trancheurs doivent fournir des informations sur le montage et le retrait des lames et doivent exiger que la plaque d'épaisseur de tranche ou la **plaque de protection** soit réglée sur la position zéro durant le nettoyage de la lame lorsqu'elle est encore en place dans l'appareil.

Les instructions d'emploi doivent identifier les différents dispositifs d'affûtage adaptés à l'appareil et doivent indiquer que seuls ces dispositifs doivent être utilisés. Un code ou tout autre moyen analogue peut être utilisé à des fins d'identification.

Si le symbole IEC 60417-5021 (2002-10) est marqué sur l'appareil, sa signification doit être expliquée.

Les instructions doivent comporter en substance les indications suivantes:

Ces appareils sont destinés à un usage commercial, par exemple dans les cuisines de restaurants, les cantines, les hôpitaux et les entreprises commerciales, telles que les boulangeries et les boucheries, mais pas pour la production continue en masse d'aliments.

Si le fabricant souhaite limiter l'utilisation de l'appareil à un domaine plus restreint que celui décrit ci-dessus, cette restriction doit être clairement indiquée dans les instructions.

*Modification:*

L'instruction concernant les personnes (y compris les enfants) dont les capacités physiques, sensorielles ou mentales sont réduites, les personnes dénuées d'expérience ou de connaissance, et l'utilisation de l'appareil comme jouet par des enfants n'est pas applicable.

**7.12.1** *Addition:*

L'appareil doit être accompagné d'instructions qui précisent les précautions spéciales nécessaires à l'installation. Pour les appareils destinés à être installés dans une batterie d'autres appareils, et pour les appareils destinés à être fixés à un **mur d'installation**, des précisions doivent être fournies sur la façon d'assurer une protection appropriée contre les chocs électriques et les effets nuisibles de la pénétration d'eau. Si les dispositifs de commande de plusieurs appareils sont combinés dans un boîtier séparé, des instructions d'installation détaillées doivent être fournies.

Pour les appareils raccordés de façon permanente à un câblage fixe et dont le courant de fuite peut être supérieur à 10 mA, en particulier s'ils sont déconnectés ou qu'ils ne sont pas utilisés pendant de longues périodes, ou lors de la première installation, les instructions doivent contenir des recommandations concernant les caractéristiques assignées des **dispositifs de protection** à installer, tels que les dispositifs à courant différentiel résiduel (DDR).

Si un **appareil fixe** est destiné à être déplacé pour le nettoyage, cela doit être indiqué.

Pour les **appareils fixes** équipés de roulettes ou galets, ou qui sont destinés à être déplacés pour le nettoyage, les instructions doivent comporter en substance l'indication suivante.

Cet appareil doit être raccordé au moyen de connexions souples pour la liaison équipotentielle et le raccordement aux services tels que l'alimentation en électricité, en eau, en gaz et en vapeur afin de pouvoir déplacer l'appareil dans la direction exigée pour le nettoyage à une distance supérieure ou égale à la dimension de l'appareil dans le sens du déplacement plus 500 mm, sans tendre ni solliciter les connexions souples.

*La conformité est vérifiée par un examen.*

**7.12.9** Non applicable.

**7.101** Les bornes de liaison équipotentielle doivent être marquées du symbole IEC 60417-5021 (2002-10).

Ces marquages ne doivent pas être placés sur des vis, des rondelles amovibles ou d'autres éléments qui peuvent être enlevés lors du raccordement des conducteurs.

*La conformité est vérifiée par un examen.*

**7.102** Les réservoirs destinés à être remplis à la main ou par un robinet actionné manuellement doivent porter un marquage du **niveau indiqué**.

*La conformité est vérifiée par un examen.*

## 8 Protection contre l'accès aux parties actives

L'article de la Partie 1 est applicable.

## 9 Démarrage des appareils à moteur

L'article de la Partie 1 est applicable, avec l'exception suivante.

**9.101** Les moteurs intégrés dans l'appareil doivent démarrer dans un délai de 3 s, si un démarrage différé peut engendrer un danger.

Les moteurs des ventilateurs qui assurent une fonction de refroidissement afin de satisfaire aux exigences de l'Article 11 doivent démarrer dans toutes les conditions de tension qui peuvent être rencontrées en cours d'utilisation.

*La vérification est effectuée par les essais suivants en utilisant une source d'alimentation telle qu'il ne se produit pas de chute de tension supérieure à 1 % au cours des essais. L'appareil revient à la **température de la pièce** après chaque essai.*

*L'appareil est démarré dans les conditions qui se produisent au début du **fonctionnement normal** ou, pour les appareils automatiques, au début du cycle normal de fonctionnement, en appliquant aux bornes d'entrée de l'appareil une tension égale à 0,85 fois la tension assignée. Pour les appareils qui comportent des moteurs équipés d'interrupteurs de démarrage autres que centrifuges, cet essai est répété en appliquant aux bornes d'entrée de l'appareil une tension égale à 1,06 fois la **tension assignée**.*

*Les essais sont effectués trois fois.*

*Dans tous les cas, le moteur doit démarrer et il doit fonctionner sans compromettre la sécurité, et les **dispositifs de protection** du moteur contre les surcharges ne doivent pas s'enclencher.*

## 10 Puissance et courant

L'article de la Partie 1 est applicable, avec l'exception suivante.

**10.1** *Addition:*

*Pour les appareils qui comportent plusieurs unités chauffantes qui peuvent être mises en fonctionnement simultanément, la puissance totale peut être déterminée en mesurant la puissance de chaque unité chauffante séparément (voir aussi 3.1.4).*

## 11 Echauffements

L'article de la Partie 1 est applicable, avec les exceptions suivantes.

**11.2** *Addition:*

*Les appareils destinés à être fixés au sol, et les appareils dont la masse est supérieure à 40 kg et qui ne sont pas équipés de roues, roulettes ou dispositifs analogues, sont installés conformément aux instructions du fabricant. En l'absence d'instructions, ces appareils sont considérés comme étant placés normalement sur le sol.*

**11.7** *Modification:*

*Les appareils sont mis en fonctionnement jusqu'à l'établissement des conditions de régime.*

*La durée de l'essai peut comporter plusieurs cycles de fonctionnement. Si l'appareil porte un marquage des périodes de "marche" et d'"arrêt" assignées, celles-ci sont prises en compte.*

*Pour les appareils qui comportent des **batteries intégrées** ou des **batteries séparables** non déconnectées de l'appareil pour la charge:*

- *la **batterie complètement déchargée** est chargée pendant 1 h, lorsque l'appareil est mis en fonctionnement de la manière spécifiée, si cela est admis par la construction de l'appareil;*
- *la **batterie** qui a été **complètement déchargée** est chargée pendant 24 h ou jusqu'à ce qu'elle soit **complètement chargée**, si cette durée est plus courte, l'**appareil alimenté par batteries** ne remplissant pas sa fonction prévue.*

## 12 Charge des batteries à ions métalliques

L'article de la Partie 1 est applicable.

## 13 Courant de fuite et rigidité diélectrique à la température de régime

L'article de la Partie 1 est applicable, avec l'exception suivante.

**13.2** *Modification:*

*Pour les **appareils fixes de la classe I**, les valeurs suivantes s'appliquent en lieu et place du courant de fuite admissible:*

| | |
|---|---|
| – *pour les appareils raccordés par un câble et une fiche* | *0,75 mA ou 1 mA par kW de **puissance assignée** de l'appareil, avec une limite maximale de 10 mA, si cette valeur est supérieure;* |
| – *pour les autres appareils* | *0,75 mA ou 1 mA par kW de **puissance assignée** de l'appareil, sans limite maximale, si cette valeur est supérieure.* |

*Pour les **appareils mobiles de la classe I**, les valeurs suivantes s'appliquent en lieu et place du courant de fuite admissible:*

| | |
|---|---|
| – *pour les appareils raccordés par un câble et une fiche* | *0,75 mA ou 1 mA par kW de **puissance assignée** de l'appareil, avec une limite maximale de 10 mA, si cette valeur est supérieure.* |