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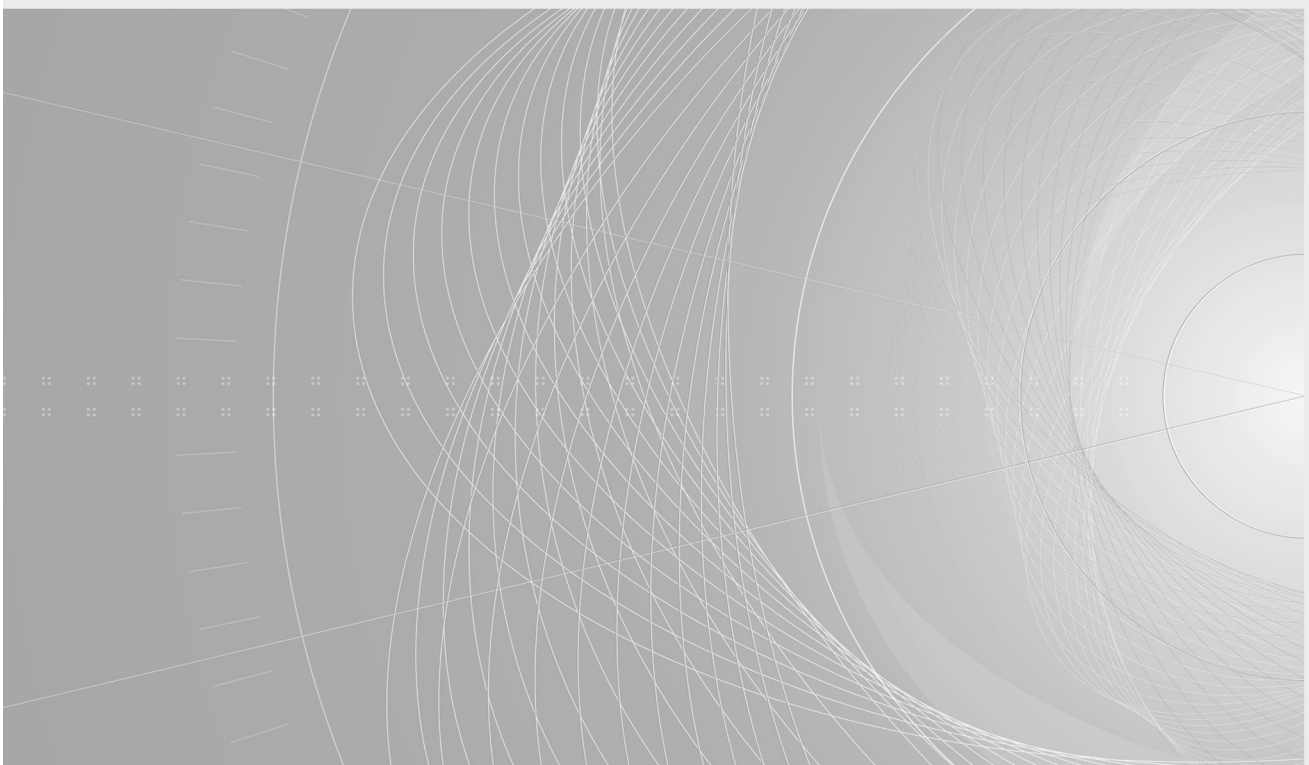
**Household and similar electrical appliances – Safety –
Part 2-14: Particular requirements for kitchen machines**

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**Appareils électrodomestiques et analogues – Sécurité –
Partie 2-14: Exigences particulières pour les machines de cuisine**

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**Household and similar electrical appliances – Safety –
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-14: Particular requirements for kitchen machines

FOREWORD

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IEC 60335-2-14 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

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

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

- a) alignment with IEC 60335-1:2020;
- b) conversion of some notes to normative text (Clause 1, 3.1.9.111, 3.1.9.112, 3.1.9.114, 3.1.9.115, 11.7.3, 20.2, 20.107, 20.108);
- c) modification to replace berry juice extractor with auger juicer and addition of a defined term (Clause 1, 3.1.9.101, 3.5.107, 11.7.102, 19.1, 19.7);

- d) addition of requirements for appliances not intended for use by children (Clause 1, 7.12, 20.2, 20.106, 20.117);
- e) modifications to clarify the testing under normal operating conditions (3.1.9, 3.1.9.111, 5.9, 7.12, 10.1, 11.5, 11.6, 11.7, 11.7.1 to 11.7.3, 11.7.101 to 11.7.118);
- f) addition of surface temperatures for external accessible surfaces (11.3, 11.8);
- g) modification of the spillage test of 15.2 to address leakage from the liquid container;
- h) clarification of requirements for remote operation of kitchen machines (11.7, 19.7, 22.40, 22.49, 22.51);
- i) modification of the operating period for juicers with respect to the 0,5 kg carrot load and the operating time (11.7.105);
- j) clarification of overfill testing with detachable gaskets and addition of gasket leakage test (15.2, 15.102);
- k) clarification of the feed opening dimension limits in 20.2;
- l) addition of requirements when compliance with the standard relies on an electronic circuit for the interlock function (20.2, 20.104, 20.108, 20.113);
- m) addition of test probe 18 where test probe B is applied and clarification of forces applied to test probes (20.2, 20.104, 20.106, 20.108, 20.113, 20.114, 20.117);
- n) update and combine requirements for inadvertent operation of hand-held blenders and knives to cover alternative switch constructions on the market (20.103 and deletion of previous 20.115);
- o) clarification of the test of 20.104;
- p) update of interlock requirements to be applicable for all appliances where the interlock is required for compliance with the standard (20.113, 20.114);
- q) update of the detergent used for centrifugal juicer conditioning (Annex AA).

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

Draft IEC 60335-2-14	Report on voting
61/7347/FDIS	61/7384/RVD

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

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

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

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: Safety requirements for 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, or
- revised.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations can need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

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INTRODUCTION

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

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 supporting documents on the IEC website <https://www.iec.ch/tc61/supportingdocuments>.

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

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

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

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

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

NOTE 1 This means that the technical committees responsible for the part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

NOTE 2 Horizontal publications, basic safety publications and group safety publications covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features that impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

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

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

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-14: Particular requirements for kitchen machines

1 Scope

This clause of Part 1 is replaced with the following.

This part of IEC 60335 deals with the safety of electric kitchen machines for household and similar purposes, their **rated voltage** being not more than 250 V including direct current (DC) supplied appliances and **battery-operated appliances**.

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

- bean slicers;
- **auger juicers**;
- **blenders**;
- can openers;
- centrifugal juicers;
- churns;
- citrus-fruit squeezers;
- coffee mills not exceeding a hopper **rated capacity** of 500 g;
- cream whippers;
- egg beaters;
- **food mixers**;
- **food processors**;
- grain grinders not exceeding a hopper **rated capacity** of 3 l;
- graters;
- ice-cream machines, including those for use in refrigerators and freezers;
- knife sharpeners;
- knives;
- **mincers**;
- **noodle makers**;
- peelers;
- shredders;
- sieving machines;
- slicing machines.

Appliances intended for normal household and similar use and that can also be used by laypersons in shops, in light industry, bed and breakfast and on farms, are within the scope of this standard. However, if the appliance is intended to be used professionally to process food for commercial consumption, the appliance is not considered to be for household and similar use only.

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

- persons (including children) whose
 - physical, sensory or mental capabilities; or
 - lack of experience and knowledgeprevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

It does not take into account the use of the following appliances by children:

- bean slicers;
- **blenders** including **hand-held blenders**;
- juicers other than citrus-fruit squeezers;
- **food mixers**;
- **food processors**;
- knives;
- **mincers**;
- **noodle makers**;
- lathe-type or **hand-held peelers**;
- vegetable graters/shredders;
- slicing machines.

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 and similar authorities.

This standard does not apply to

- slicing machines having a circular knife the blade of which is inclined at an angle exceeding 45° to the vertical;
- breadmakers (IEC 60335-2-9);
- soy milk makers (IEC 60335-2-15);
- food waste disposers (IEC 60335-2-16);
- ice-cream appliances with incorporated motor compressors (IEC 60335-2-24);
- kitchen machines intended for commercial purposes (IEC 60335-2-64);
- kitchen machines intended for industrial purposes;
- kitchen machines intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas).

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

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

IEC 60811-504:2012, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 504: Mechanical tests – Bending tests at low temperature for insulation and sheaths*

IEC 60811-505:2012, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 505: Mechanical tests – Elongation at low temperature for insulations and sheaths*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1 Definitions relating to physical characteristics

3.1.9 *Modification:*

Replace the first paragraph with the following:

operation of the appliance under the conditions specified in 3.1.9.101 to 3.1.9.119 and operation with the most unfavourable load indicated in the instructions

Note 101 to entry: Operation per the instructions is not necessary for appliances operated without load in accordance with 3.1.9.119.

Note 102 to entry: A guidance document (61/6234/INF) concerning the application of 3.1.9, Clause 10 and Clause 11 can be accessed via TC 61 supporting documents on the IEC website.

3.1.9.101 Auger juicers are fed with 1 kg of berries, such as currants, gooseberries or grapes. Pushers are pressed with a force of 5 N against the berries.

3.1.9.102 Food blenders are operated with the bowl filled to the **rated capacity** with a mixture comprising two parts by mass of soaked carrots and three parts water. If the **rated capacity** is not specified, the bowl is filled to two-thirds of its **total capacity**. The carrots are soaked in water for 24 h and cut so that the dimensions of the pieces do not exceed 15 mm. If the bowl is not provided, a cylindrical bowl is used which has a **total capacity** of approximately 1 l and an inner diameter of approximately 110 mm.

Liquid blenders are operated with water instead of the mixture.

3.1.9.103 Can openers are operated with cans of tinned steel having a diameter of approximately 100 mm.

3.1.9.104 Juicers are operated with carrots that have been soaked in water for approximately 24 h. 5 kg of soaked carrots are gradually fed into juicers having separate outlets for the juice and residue. Other juicers are fed with batches of 0,5 kg of carrots, unless otherwise indicated in the instructions. Pushers are pressed with a force of 5 N against the carrots.

3.1.9.105 Cheese graters are operated with a 250 g piece of hard Parmesan cheese selected from a block of cheese about 16 months old and which has at least one plane surface. A force of 10 N is applied to the cheese unless the force is applied automatically.

3.1.9.106 Churns are filled with a mixture of eight parts by mass of heavy cream and one part of buttermilk. The quantity of the mixture is the maximum that allows the churn to operate without spillage.

3.1.9.107 Citrus-fruit squeezers are operated with orange halves pressed against the reamer with a force of 50 N.

3.1.9.108 Coffee mills having a separate container for collecting the ground coffee are operated with the hopper filled with roasted coffee beans.

Other coffee mills are operated with the hopper filled with the maximum quantity of roasted coffee beans stated in the instructions.

Note 1 to entry: If necessary, the coffee beans are conditioned for 24 h at a temperature of $30\text{ °C} \pm 2\text{ °C}$ and a relative humidity of $60\% \pm 2\%$.

Controls are set to the position resulting in the smallest grain size.

3.1.9.109 Cream whippers and egg beaters are operated in water with 80 % of the length of the effective part immersed in a bowl of water.

3.1.9.110 Food mixers with beaters for mixing cake batter are operated with the beater blades as close as possible to the bottom of a bowl containing dry sand having a grain size between 170 μm and 250 μm . The height of the sand in the bowl is approximately 80 % of the length of the effective part of the beater.

Food mixers with kneaders for mixing yeast dough are operated with the kneaders in a bowl filled with a mixture of flour and water.

Note 1 to entry: The flour has a protein content of $10\% \pm 1\%$, based on a negligible water content of the flour and without chemical additives.

Note 2 to entry: In case of doubt, the flour is more than two weeks but less than four months old. It is stored in plastic bags with as little air as possible.

The bowl is filled with a mass of flour in grams equal to 35 % of its **total capacity** in cm^3 , 72 g of water at a temperature of $25\text{ °C} \pm 1\text{ °C}$ being added for each 100 g of flour.

Note 3 to entry: In case of doubt, the quantity of water is 1,2 times that necessary for the consistency of the mixture to be 500 Brabender units at $29\text{ °C} \pm 1\text{ °C}$, measured using a farinograph.

For **hand-held food mixers**, the kneaders are moved in a figure-of-eight movement at a rate of 10 to 15 movements per minute. The **food mixer** is held so that the kneaders touch the wall of the bowl at opposite points and are in contact with the bottom of the bowl. If a bowl is not provided, a bowl is used that has a height of approximately 130 mm and an inner diameter of approximately 170 mm at the top, tapering down to approximately 150 mm at the bottom. Its inner surface is smooth and the wall and bottom blend smoothly.

3.1.9.111 Food processors are operated using the load which results in the most unfavourable conditions as follows:

- If provided with grating, slicing or shredding blades, they are operated as specified for vegetable graters and shredders (3.1.9.118) and cheese graters (3.1.9.105);
- If provided with chopping blades, they are operated with each of the following loads filled to the **rated capacity** or the maximum quantity recommended in the instructions for the specified food load, whichever is less:
 - raw sinewless, boneless and fatless beef;
 - hard Parmesan cheese selected from a block of cheese about 16 months old;

- If provided with mixing blades, they are operated as specified for:
 - **food mixers** for mixing cake batter (3.1.9.110) when the **food processor** is not intended to mix yeast dough. However, the sand is filled to the **rated capacity** or the maximum quantity recommended in the instructions for the mixing blade, whichever is less;
 - **food mixers** with kneaders for mixing yeast dough when the **food processor** is intended to mix yeast dough. However, the setting of the control and quantity of the mixture is the maximum stated in the instructions. If an accessory rotating at high speed is used to prepare the dough, only 60 g of water is used for each 100 g of flour.

Note 1 to entry: In case of doubt when using an accessory rotating at high speed, the quantity of water is that necessary for the consistency of the mixture to be 500 Brabender units at $29\text{ °C} \pm 1\text{ °C}$, measured using a farinograph.

Note 2 to entry: The maximum quantity of the mixture may be specified by the maximum amount of flour.

Food loads are prepared prior to processing as recommended in the instruction manual, including cutting to a specified size, peeling, and chilling in the refrigerator or freezer. If no preparation instructions are provided, the foods are cut into pieces as needed to fit within the bowl or feed opening.

For a multispeed appliance, if the instructions recommend processing of certain food loads at other than the highest speed, they are processed at the recommended speed.

3.1.9.112 Grain grinders are operated with the hopper filled with wheat and controls being set to the position resulting in the smallest grain size. Corn is used instead of wheat when instructions state that it can be ground.

Note 1 to entry: If necessary, the wheat or corn is conditioned for 24 h at a temperature of $30\text{ °C} \pm 2\text{ °C}$ and a relative humidity of $60\% \pm 2\%$.

3.1.9.113 Ice-cream machines are operated with a mixture of 60 % water, 30 % sugar, 5 % lemon juice and 5 % beaten egg white by mass. The quantity of the mixture is the **rated capacity**. If the **rated capacity** is not specified, the container is filled up to the **total capacity**.

Removable elements for cooling ice cream are pre-cooled for 24 h at $-20\text{ °C} \pm 5\text{ °C}$.

For appliances cooled by ice, the cooling container is filled with ice in accordance with the instructions, 200 g of salt being added for each kg of ice.

Ice-cream machines for use in refrigerators and freezers are placed on thermal insulating material approximately 20 mm thick. They are operated without load at an ambient temperature of $-4\text{ °C} \pm 1\text{ °C}$.

3.1.9.114 Knives are operated by slicing a length of hard sausage when measuring the power input. The sausage is approximately 55 mm in diameter and cut into slices approximately 5 mm thick, a force of approximately 10 N being applied to the knife. The sausage is stored for at least 4 h at a temperature of $23\text{ °C} \pm 2\text{ °C}$ before slicing.

Note 1 to entry: An example of a hard sausage is salami.

For the other tests, knives are operated with the cutting edge of the blade pressed against a length of soft wood having a cross-section approximately 50 mm × 100 mm. A force is gradually applied to the knife until the power input measured when cutting the sausage is obtained.

3.1.9.115 Mincers are fed with sinewless, boneless and fatless beef that has been cut into pieces approximately 20 mm × 20 mm × 60 mm. Pushers are pressed with a force of 5 N against the meat.

A brake may be used to apply the mean value of the load that is determined by mincing the meat for 2 min.