IEC 60335-2-6

Edition 7.0 2024-08
EXTENDED VERSION

INTERNATIONAL STANDARD

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This full version of IEC 60335-2-6:2024 includes the content of the references made to IEC 60335-1:2020

Household and similar electrical appliances – Safety – Part 2-6: Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances

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IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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Household and similar electrical appliances – Safety – Part 2-6: Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances

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IEC 60335-1
Edition 6.0 2020-09

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 1: General requirements

INTERPRETATION SHEET 1

This interpretation sheet has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

The text of this Interpretation Sheet is based on the following documents:

Draft	Report on voting
61/5999/DISH	61/6009/RVDISH

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

INTRODUCTION

Edition 6 of IEC 60335-1:2020 defines and introduces requirements for a detachable power supply part of an appliance. In the document, 24.2 prohibits the use of a power supply in a flexible cord.

QUESTION:

Does Subclause 24.2 prohibit the use of a detachable power supply part?

ANSWER

No, a "detachable power supply part" is a defined term and is not captured by the term "power supply" as used in Subclause 24.2.

NOTE A detachable power supply part is captured by the defined term when the output of the power supply part is detachable from the class III construction part of the appliance at:

– the power supply part, or

– the class III construction part of the appliance.

However, the supply cord (if any) does not have to be detachable from the detachable power supply part.

ICS 13.120; 97.030

IEC 60335-1:2020-09/ISH1:2021-11(en)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-6: Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances

FOREWORD

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This extended version (EXV) of the official IEC Standard provides the user with the comprehensive content of the Standard.

IEC 60335-2-6:2024 EXV includes the content of IEC 60335-2-6:2024, and the references made to IEC 60335-1:2020.

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IEC 60335-2-6 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 2014 and Amendment 1:2018. 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) deletion of notes (15.2) and conversion of notes to normative text (Clause 1, 3.1.9.101, 7.103, 11.7, 15.2, 16.2, 22.109, 22.120, 22.132, 22.124, Figure 103);
c) application of test probe 19 (8.1.1, 20.2);
d) alignment of limits on the temperature rise of external accessible surfaces (Clause 11);
e) addition of requirements for automatic regulation systems and remote automatic regulation systems for induction hobs (3.7.103, 3.11.4, 3.11.5, 3.11.101, 7.12, 19.102, 22.40, 22.62, Annex AA);
f) addition of requirements for remote operation of ovens (22.51).

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

Draft	Report on voting
61/7253/FDIS	61/7275/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: Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

– subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
– unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;

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– 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.

The following differences exist in the countries indicated below.

– 11.101: Table 103 is applicable for limits on surface temperatures (Australia, New Zealand).

– 24.101: Socket-outlets have to be provided with residual current devices which may be combined with the overcurrent protective device (Australia).

– 25.3: **Cooking ranges** that are not built-in shall not be permanently connected to the fixed wiring (New Zealand).

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INTRODUCTION to IEC 60335-1:2020

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 –

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 the functions of an appliance are covered by different parts 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.

Throughout this publication, when "part 2" is mentioned, it refers to the relevant part of IEC 60335.

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.

Individual countries may wish to consider the application of this standard, as far as is reasonable, to appliances not mentioned in a part 2, and to appliances designed on new principles. In this case, consideration should be given to defining normal operation, specifying the classification of the appliance according to Clause 6 and specifying whether the appliance is operated attended or unattended. Consideration should also be given to particular categories of likely users and to related specific risks such as access to live parts, hot surfaces or hazardous moving parts.

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

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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 this 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.

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INTRODUCTION to IEC 60335-2-6:2024

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

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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;
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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-6: Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances

1 Scope

This Part of IEC 60335 deals with the safety of **stationary electric cooking appliances**, such as **cooking ranges**, **hobs**, and **ovens**, for household 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**.

This standard also includes some requirements for **ovens** that are intended to be used on board ships.

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

– **griddles**;
– **grills**;
– **induction hobs**;
– **induction wok elements**;
– **pyrolytic self-cleaning ovens**;
– **steam ovens**.

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

– persons (including children) whose
  - physical, sensory or mental capabilities; or
  - lack of experience and knowledge

  prevents them from using the appliance safely without supervision or instruction;
– children playing with the appliance.

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 intended for commercial catering;
– 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);
– grills, toasters and similar **portable cooking appliances** (IEC 60335-2-9);
– microwave ovens (IEC 60335-2-25).

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2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60034-1, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60061-1, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 1: Lamp caps*

IEC 60065:2014, *Audio, video and similar electronic apparatus – Safety requirements*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

IEC 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-27, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*

IEC 60068-2-31, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*

IEC 60068-2-52:2017, *Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC TR 60083, *Plugs and socket-outlets for domestic and similar general use standardized in member countries of IEC*

IEC 60085:2007, *Electrical insulation – Thermal evaluation and designation*

IEC 60112:2003, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*
IEC 60112:2003/AMD1:2009[1]

IEC 60127 (all parts), *Miniature fuses*

IEC 60227 (all parts), *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V*

IEC 60227-5:2011, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V – Part 5: Flexible cables (cords)*

IEC 60238, *Edison screw lampholders*

IEC 60245 (all parts), *Rubber insulated cables – Rated voltages up to and including 450/750 V*

[1] There exists a consolidated edition 4.1:2009 that includes edition 4 and its Amendment 1.

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IEC 60252-1:2010, *AC motor capacitors – Part 1: General – Performance, testing and rating – Safety requirements – Guidance for installation and operation*
IEC 60252-1:2010/AMD1:2013[2]

IEC 60309-2, *Plugs, socket-outlets and couplers for industrial purposes – Part 2: Dimensional interchangeability requirements for pin and contact-tube accessories*

IEC 60320 (all parts), *Appliance couplers for household and similar general purposes*

IEC 60320-1, *Appliance couplers for household and similar general purposes – Part 1: General requirements*

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[2] There exists a consolidated edition 2.1:2013 that includes edition 2 and its Amendment 1.

[3] There exists a consolidated edition 4.1:2016 that includes edition 4 and its Amendment 1.

[4] There exists a consolidated edition 2.2:2013 that includes edition 2 and its Amendment 1 and Amendment 2.

[5] There exists a consolidated edition 8.1:2017 that includes edition 8 and its Amendment 1.

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6 There exists a consolidated edition 5.1:2015 that includes edition 5 and its Amendment 1.

7 There exists a consolidated edition 4.1:2018 that includes edition 4 and its Amendment 1.

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8 There exists a consolidated edition 1.2:2015 that includes edition 1 and its Amendment 1 and Amendment 2.

9 There exists a consolidated edition 1.1:2009 that includes edition 1 and its Amendment 1.

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[10] There exists a consolidated edition 1.1:2013 that includes edition 1 and its Amendment 1.

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Full document details: IEC 60335-2-6 2024 EXV

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ISO 9772, *Cellular plastics – Determination of horizontal burning characteristics of small specimens subjected to a small flame*

ISO 9773, *Plastics – Determination of burning behaviour of thin flexible vertical specimens in contact with a small-flame ignition source*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

When the terms "voltage" and "current" are used, they are RMS values, unless otherwise specified.

When the term "earthing" is used, it means "protective earthing", unless otherwise specified.

3.1 Definitions relating to physical characteristics

3.1.1
rated voltage
voltage assigned to the appliance by the manufacturer

3.1.2
rated voltage range
voltage range assigned to the appliance by the manufacturer, expressed by its lower and upper limits

3.1.3
working voltage
maximum voltage to which the part under consideration is subjected when the appliance is supplied at its **rated voltage** and operating under **normal operation**, with controls and switching devices positioned so as to maximize the value

Note 1 to entry: **Working voltage** takes into account resonant voltages.

Note 2 to entry: When deducing the **working voltage**, the effect of transient voltages is ignored.

3.1.4
rated power input
power input assigned to the appliance by the manufacturer

Note 1 to entry: If no power input is assigned to the appliance, the **rated power input** for **heating appliances** and **combined appliances** is the power input measured when the appliance is supplied at **rated voltage** and operated under **normal operation**.

3.1.5
rated power input range
power input range assigned to the appliance by the manufacturer, expressed by its lower and upper limits

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3.1.6
rated current
current assigned to the appliance by the manufacturer

Note 1 to entry: If no current is assigned to the appliance, the **rated current** is the current measured when the appliance is supplied at **rated voltage** and operated under **normal operation.**

Note 101 to entry: For appliances having more than three **heating units** per phase, other than those that are controlled by programmable **electronic circuits** that limit the number of heating elements and/or motors from being energized at the same time, a diversity factor is applied to the **rated current** or **rated power input** when determining the current used to establish the size of the terminals and the nominal cross-sectional area of the **supply cord**. The diversity factor *F* is calculated from the following formula, where *N* is the number of **heating units** per phase that can be energized together:

$$F = 0{,}35 + \frac{0{,}65}{\sqrt{N}}$$

3.1.7
rated frequency
frequency assigned to the appliance by the manufacturer

3.1.8
rated frequency range
frequency range assigned to the appliance by the manufacturer, expressed by its lower and upper limits

3.1.9
normal operation
operation of the appliance as specified in 3.1.9.101 to 3.1.9.107

Appliances operated with **integral batteries** or **separable batteries** not disconnected from the appliance for charging purposes:

– the **battery** that is **fully discharged** is charged with the **battery-operated appliance** operating as specified, if allowed by the construction of the appliance;
– the **battery** that is **fully discharged** is charged without the **battery-operated appliance** performing its intended function

Note 1 to entry: Operation of a **battery-operated appliance** to perform its intended function is considered to be **normal operation**.

3.1.9.101 Hob elements, other than **induction hob elements** and **induction wok elements**, are operated with vessels containing cold water. The vessel is made of unpolished commercial quality aluminium, has a flat bottom and is covered with a lid that is positioned so that steam does not affect the tests. Thermal controls are adjusted to their highest setting until the water boils and then adjusted so that the water boils gently. Water is added to maintain the level during boiling.

In case of doubt, vessels as specified in Figure 101 are used.

Induction hob elements are operated with vessels as specified in Figure 102 that contain cooking oil at **room temperature**. Thermal controls are adjusted to their highest setting until the oil temperature reaches 180 °C ± 4 °C and then adjusted so that this temperature is maintained. The oil temperature is measured 10 mm above the centre of the bottom of the vessel.

Induction hob elements in a **flexible induction cooking zone** are operated with vessels according to Figure 102 with diameters as specified in Figure 101 as follows:

a) the maximum number of vessels which can be separately controlled at the same time, arranged to cover the **flexible induction cooking zone** as far as possible. Any combination of vessels giving the most unfavourable results shall be used for the test. Several vessels with the same diameter may be used;

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b) the vessel which provides the highest power density (W/cm^2);

c) the smallest vessel that allows an **induction hob element** to operate.

Operation as specified in a), b) or c), that results in the most unfavourable condition for the tests specified in the relevant subclauses is applied.

Induction wok elements are operated with a wok having an equivalent sphere diameter that does not differ from the equivalent sphere diameter of the **induction wok element** cavity by more than $^{0}_{-1}$ %. This wok can be supplied by the manufacturer.

The wok is made of low carbon steel having a maximum carbon content of 0,08 % and a thickness of 2 mm ± 0,5 mm. The height of the wok shall be approximately twice the depth of the **induction wok element** cavity.

The wok is filled to approximately half of its height with cooking oil at **room temperature**. Thermal controls are adjusted to their highest setting until the oil temperature reaches 180 °C ± 4 °C and then adjusted so that this temperature is maintained. The oil temperature is measured 10 mm above the centre of the bottom of the vessel.

For all **hob elements** other than those in a **flexible induction cooking zone** and **induction wok elements**, the diameter of the bottom of the vessel is approximately equal to the diameter of the **cooking zone** and the quantity of liquid is specified in Table 101. The vessel is positioned centrally on the **cooking zone**.

If several **cooking zones** are marked for one **hob element**, the most unfavourable **cooking zone** is used for the test.

For **non-circular cooking zones**, the smallest non-circular vessel is used which will cover the **cooking zone** as far as possible, taking into account the **hob** rim and the other vessels. The quantity of liquid is determined on the basis of the minor diameter of the **cooking zone**.

Table 101 – Quantity of liquid in the vessel

Diameter of cooking zone mm	Quantity of water or oil l
≤ 110	0,6
> 110 and ≤ 145	1,0
> 145 and ≤ 180	1,5
> 180 and ≤ 220	2,0
> 220 and ≤ 300	3,0

3.1.9.102 **Ovens** and **steam convection ovens** are operated empty with the door closed. Thermal controls are adjusted so that the mean temperature in the centre of the **oven** is maintained at

– 220 °C ± 4 °C for **ovens** with forced air circulation;

– 240 °C ± 4 °C for other **ovens**.

If the temperature cannot be attained, the thermal control is adjusted to its highest setting.

Ovens without thermal controls are switched on and off so that the temperature in the centre of the **oven** is maintained at 240 °C ± 15 °C.

Atmospheric steam ovens and **pressure steam ovens** are operated in accordance with the instructions. Lids, doors and covers are in position and closed. Controls are adjusted to their highest setting until the cooking temperature is reached and then adjusted to the lowest setting that maintains this temperature.

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Steam generators intended to be filled by hand are filled according to the instructions, water being added to maintain the steam generation.

Steam generators intended to be filled automatically are connected to a water supply, the pressure of which is set according to the instructions.

The supply water has a temperature of

– 15 °C ± 5 °C for appliances to be connected to a cold water supply;
– 60 °C ± 5 °C or the temperature indicated in the instructions, whichever is the higher, for appliances to be connected to a hot water supply.

Steam convection ovens are also operated while generating steam but with the thermal controls adjusted as for operation without steam.

3.1.9.103 **Grills** are operated empty with the grill pan and food supports in the most unfavourable position for normal use, the door and any other accessories being positioned in accordance with the instructions. In the absence of such instructions, the door and other accessories are placed in the most unfavourable position in which they can be left. Thermal controls are adjusted to their highest setting. However, if the instructions for **grills** incorporated in **ovens** specify a lower setting, this setting is used. Any reflectors intended to be placed above heating elements are in position.

3.1.9.104 Rotating spits in **ovens** or **grills** are operated with the load on the rotating spit as shown in Figure 103. The load is positioned on the rotary spit so that the fixing screw contacts the diameter of the spit. The appliance is operated taking into account the instructions with regard to:

– the heating elements to be operated;
– the setting of the thermal control;
– the position of the door and grill pan.

In the absence of such instructions, the control is adjusted to its highest setting and the door is fully open or is placed in the most unfavourable intermediate position in which it can be left.

Any grill pan is placed in its lowest position.

3.1.9.105 Warming drawers and similar compartments are operated in the closed position with their controls adjusted to the highest setting.

3.1.9.106 **Griddles** are operated so that the temperature at the centre of the heated surface is maintained at 275 °C ± 15 °C by adjusting their thermal controls or by switching the supply on or off.

3.1.9.107 **Cooking ranges** are operated with their individual **heating units** being operated under their stated conditions of **normal operation**.

3.1.10
rated impulse voltage
voltage derived from the **rated voltage** and the overvoltage category of the appliance, characterizing the specified withstand capability of its insulation against transient overvoltages

3.1.11
dangerous malfunction
unintended operation of the appliance that may impair safety

3.1.12
outlet load
load that can be connected to appliance outlets accessible to the user and socket-outlets accessible to the user

Note 1 to entry: Outlets with a voltage not exceeding **SELV** are not considered to be an appliance outlet.

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3.1.101
rated water pressure
water pressure assigned to the appliance by the manufacturer

3.1.102
rated cooking pressure
maximum working pressure of **pressure steam ovens** assigned by the manufacturer to the pressurized parts of the appliance

3.2 Definitions relating to means of connection

3.2.1
supply leads
set of wires intended for connecting the appliance to fixed wiring and accommodated in a compartment within or attached to the appliance

3.2.2
interconnection cord
external flexible cord between two parts of an appliance, provided as part of a complete appliance for purposes other than connection to the supply mains

Note 1 to entry: In **battery-operated appliances**, if the **battery** is placed in a separate box, the flexible lead or flexible cord connecting the box with the appliance is considered to be an **interconnection cord**.

Note 2 to entry: The output cord from a **charging system** or a **detachable power supply part** is an **interconnection cord**.

3.2.3
supply cord
flexible cord, for supply purposes, that is fixed to the appliance

3.2.4
type X attachment
method of attachment of the **supply cord** such that it can easily be replaced

Note 1 to entry: The **supply cord** may be specially prepared and only available from the manufacturer or its service agent. A specially prepared cord may include a part of the appliance.

3.2.5
type Y attachment
method of attachment of the **supply cord** such that any replacement is intended to be made by the manufacturer, its service agent or similar qualified person

3.2.6
type Z attachment
method of attachment of the **supply cord** such that it cannot be replaced without breaking or destroying the appliance

3.3 Definitions relating to protection against electric shock

3.3.1
basic insulation
insulation applied to **live parts** to provide basic protection against electric shock

3.3.2
supplementary insulation
independent insulation applied in addition to **basic insulation**, in order to provide protection against electric shock in the event of a failure of **basic insulation**

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3.3.3
double insulation
insulation system comprising both **basic insulation** and **supplementary insulation**

3.3.4
reinforced insulation
single insulation applied to **live parts**, that provides a degree of protection against electric shock equivalent to **double insulation** under the conditions specified in this standard

Note 1 to entry: It is not implied that the insulation is one homogeneous piece. The insulation may comprise several layers which cannot be tested singly as **supplementary insulation** or **basic insulation**.

3.3.5
functional insulation
insulation between conductive parts of different potential which is necessary only for the proper functioning of the appliance

3.3.6
protective impedance
impedance connected between **live parts** and **accessible conductive parts** of **class II constructions** so that the current, in normal use and under likely fault conditions in the appliance, is limited to a safe value

3.3.7
class 0 appliance
appliance in which protection against electric shock relies upon **basic insulation** only, there being no means for the connection of conductive **accessible parts**, if any, to the protective conductor in the fixed wiring of the installation, reliance in the event of a failure of the **basic insulation** being placed upon the environment

Note 1 to entry: **Class 0 appliances** have either an enclosure of insulating material which may form a part or the whole of the **basic insulation**, or a metal enclosure which is separated from **live parts** by an appropriate insulation. If an appliance with an enclosure of insulating material has provision for earthing internal parts, it is considered to be a **class I appliance** or **class 0I appliance**.

3.3.8
class 0I appliance
appliance having at least **basic insulation** throughout and incorporating an earthing terminal but having a **supply cord** without earthing conductor and a plug without earthing contact

3.3.9
class I appliance
appliance in which protection against electric shock does not rely on **basic insulation** only but which includes an additional safety precaution, in that conductive **accessible parts** are connected to the protective earthing conductor in the fixed wiring of the installation in such a way that conductive **accessible parts** cannot become live in the event of a failure of the **basic insulation**

Note 1 to entry: This provision includes a protective earthing conductor in the **supply cord**.

3.3.10
class II appliance
appliance in which protection against electric shock does not rely on **basic insulation** only but in which additional safety precautions are provided, such as **double insulation** or **reinforced insulation**, there being no provision for protective earthing or reliance upon installation conditions

Note 1 to entry: Such an appliance may be of one of the following types:

– an appliance having a durable and substantially continuous enclosure of insulating material which envelops all metal parts, with the exception of parts, such as nameplates, screws and rivets, which are isolated from **live parts** by insulation at least equivalent to **reinforced insulation**; such an appliance is called an insulation encased **class II appliance**;

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– an appliance having a substantially continuous metal enclosure, in which **double insulation** or **reinforced insulation** is used throughout; such an appliance is called a metal-encased **class II appliance**;

– an appliance which is a combination of an insulation-encased **class II appliance** and a metal-encased **class II appliance**.

Note 2 to entry: The enclosure of an insulation-encased **class II appliance** may form a part or the whole of the **supplementary insulation** or of the **reinforced insulation**.

Note 3 to entry: **Class II appliances** may incorporate an earth for functional purposes.

3.3.11
class II construction
part of an appliance for which protection against electric shock relies upon **double insulation** or **reinforced insulation**

3.3.12
class III appliance
appliance in which protection against electric shock relies on supply at **safety extra-low voltage** and in which voltages higher than those of **safety extra-low voltage** are not generated

Note 1 to entry: **Basic insulation** may be required in addition to supply at **SELV**. Refer to 8.1.4.

Note 2 to entry: **Class III appliances** may incorporate an earth for functional purposes.

3.3.13
class III construction
part of an appliance for which protection against electric shock relies upon **safety extra-low voltage** and in which voltages higher than those of **safety extra-low voltage** are not generated

Note 1 to entry: **Basic insulation** may be required in addition to supply at **SELV**. Refer to 8.1.4.

3.3.14
clearance
shortest distance in air between two conductive parts or between a conductive part and the **accessible surface**

3.3.15
creepage distance
shortest distance along the surface of insulation between two conductive parts or between a conductive part and the **accessible surface**

3.4 Definitions relating to extra-low voltage

3.4.1
extra-low voltage
voltage supplied from a source within the appliance that does not exceed 50 V between conductors and between conductors and earth or functional earth when the appliance is supplied at **rated voltage**

3.4.2
safety extra-low voltage
voltage not exceeding 42 V between conductors and between conductors and earth or functional earth, the no-load voltage not exceeding 50 V

Note 1 to entry: When **safety extra-low voltage** is obtained from the supply mains, it is to be through a **safety isolating transformer** or a convertor with separate windings, the insulation of which complies with **double insulation** or **reinforced insulation** requirements.

Note 2 to entry: The voltage limits specified are based on the assumption that the **safety isolating transformer** is supplied at its **rated voltage**.

Note 3 to entry: **Safety extra-low voltage** is also known as **SELV**.

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3.4.3
safety isolating transformer
transformer, the input winding of which is electrically separated from the output winding by an insulation at least equivalent to **double insulation** or **reinforced insulation**, that is intended to supply an appliance or circuit at **safety extra-low voltage**

3.4.4
protective extra-low voltage circuit
earthed circuit operating at **extra-low voltage** that is separated from other circuits, except circuits operating at **safety extra-low voltage**, by **basic insulation** and protective screening, **double insulation** or **reinforced insulation**

Note 1 to entry: Protective screening is the separation of circuits from **live parts** by means of an earthed screen.

Note 2 to entry: A **protective extra-low voltage circuit** is also known as a **PELV circuit**.

3.5 Definitions relating to types of appliances

3.5.1
portable appliance
appliance that is intended to be moved while in operation or an appliance, other than a **fixed appliance,** having a mass less than 18 kg

3.5.2
hand-held appliance
portable appliance intended to be held in the hand during normal use

3.5.3
stationary appliance
fixed appliance or an appliance which is not a **portable appliance**

3.5.4
fixed appliance
appliance that is intended to be used while fastened to a support or while secured in a specific location

3.5.5
built-in appliance
fixed appliance intended to be installed in a cabinet, in a prepared recess in a wall or in a similar location

3.5.6
heating appliance
appliance incorporating heating elements but without any motor

3.5.7
motor-operated appliance
appliance incorporating motors but without any heating element

Note 1 to entry: Magnetically driven appliances are considered to be **motor-operated appliances**.

3.5.8
combined appliance
appliance incorporating heating elements and motors

3.5.9
battery-operated appliance
appliance deriving its energy from **batteries** enabling the appliance to perform its intended function without a supply connection

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Note 1 to entry: A **battery-operated appliance** can have a supply connection.

3.5.101
oven
appliance having a heated cavity with a door and constructed so that food, which can be in a container, can be placed on a shelf

3.5.102
grill
heating unit constructed so that the food is supported on a grid or spit and is cooked by radiant heat

Note 1 to entry: The cooking operation in a **grill** is known as grilling or broiling.

3.5.103
hob
appliance that incorporates a **hob surface** and one or more **hob elements**, and is built in or part of a **cooking range**

3.5.104
cooking range
appliance incorporating a **hob** and an **oven** and which can incorporate a **grill** or **griddle**

3.5.105
pyrolytic self-cleaning oven
oven in which cooking deposits are removed by heating the **oven** to a temperature exceeding 350 °C

3.5.106
steam oven
oven intended for cooking food by steam in the appliance

3.5.106.1
steam convection oven
steam oven intended for cooking food by conventional heating and steam generated at atmospheric pressure in the appliance

Note 1 to entry: The operation temperature can exceed the boiling point of water.

3.5.106.2
atmospheric steam oven
steam oven in which the pressure within the cooking compartment differs from atmospheric pressure by 50 kPa or less

3.5.106.3
pressure steam oven
steam oven intended for cooking food by direct steam generated at a pressure that is at least 50 kPa higher than atmospheric pressure

3.5.107
griddle
heating unit having a surface on which the food is placed directly for cooking

3.5.108
induction hob
hob containing at least one **induction hob element** or one **induction wok element**

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3.6 Definitions relating to parts of an appliance

3.6.1
non-detachable part
part that can only be removed or opened with the aid of a **tool** or part that fulfils the test of 22.11

3.6.2
detachable part
part that can be removed or opened without the aid of a **tool**, part that is removed or opened in accordance with the instructions for use, even if a **tool** is needed for removal, or part that does not fulfil the test of 22.11

Note 1 to entry: If for installation purposes a part has to be removed, this part is not considered to be a **detachable part** even if the instructions state that it is to be removed.

Note 2 to entry: Components that can be removed without the aid of a **tool** are considered to be **detachable parts**.

Note 3 to entry: If a part has to be removed solely to discard a **battery** before scrapping the appliance, this part is not considered to be a **detachable part** even if the instructions state that it is to be removed.

3.6.3
accessible part
part or surface that can be touched by means of test probe B of IEC 61032, and if the part or surface is metal, any conductive part connected to it

Note 1 to entry: **Accessible non-metallic parts** with conductive coatings are considered to be **accessible metal parts**.

3.6.4
live part
conductor or conductive part intended to be energized in normal use, including a neutral conductor but, by convention, not a PEN conductor

Note 1 to entry: Parts, accessible or not, complying with 8.1.4 are not considered to be **live parts**.

Note 2 to entry: A PEN conductor is a protective earthed neutral conductor combining the functions of both a protective conductor and a neutral conductor.

Note 3 to entry: Parts, whether they are **accessible parts** or not, of **battery-operated appliances** and **batteries** not exceeding the electrical limits of B.22.3 and B.22.4, are not considered to be **live parts**.

3.6.5
tool
screwdriver, coin or any other object that may be used to operate a screw or similar fixing means

3.6.6
small part
part, where each surface lies completely within a circle of 15 mm diameter, or part where some of the surface lies outside a 15 mm diameter circle but in such a way that it is not possible to fit a circle of 8 mm diameter on any of the surfaces

Note 1 to entry: A part that is too small to grip and at the same time to be able to apply the glow-wire tip is shown in example A in Figure 5. A part that is large enough to grip but that is too small to be able to apply the glow-wire tip is shown in example B in Figure 5. A part that is not a **small part** is shown in example C in Figure 5.

3.6.7
detachable power supply part
part of the appliance the output of which is intended to be detachable from the **class III construction** part of the appliance

Note 1 to entry: Means of detachment are a flexible cord and connector or an appliance outlet fitted to the **detachable power supply part**.

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3.6.8
cell
basic functional unit, consisting of an assembly of electrodes, electrolyte, container, terminals, and usually separators that is a source of electric energy obtained by direct conversion of chemical energy

[SOURCE: IEC 60050-482:2004, 482-01-01]

3.6.9
battery
assembly of one or more **cells** ready for use as a source of electrical energy, characterised by its voltage, size, terminal arrangement, capacity and rate capability

Note 1 to entry: A **detachable battery** and **separable battery** have an enclosure that is equivalent in properties to that of the appliance itself, but **integral batteries** may have no enclosure or an enclosure less substantial than that of the appliance, as they are protected by the enclosure of the appliance.

3.6.10
detachable battery
rechargeable **battery** in an enclosure separate from the **battery-operated appliance**, intended for use with specific appliances and intended to be removed from the appliance for charging purposes

Note 1 to entry: A standard automotive **battery** is not considered a **detachable battery**.

Note 2 to entry: A **detachable battery** is not considered a **battery** that is replaceable.

3.6.11
separable battery
battery contained in an enclosure separate from the **battery-operated appliance,** intended for use with specific appliances and connected to the appliance by a cord external to the enclosure of the appliance

Note 1 to entry: A standard automotive **battery** is not considered a **separable battery**.

Note 2 to entry: A **separable battery** is not considered a **battery** that is replaceable.

3.6.12
integral battery
battery contained within the **battery-operated appliance** and not removed from the appliance for charging purposes

Note 1 to entry: A **battery** that is only to be removed from the **battery-operated appliance** for disposal or recycling is still considered to be an **integral battery**.

3.6.101
heating unit
any part of the appliance that fulfils an independent cooking or warming function

Note 1 to entry: Examples are **hob elements**, **ovens**, **grills** and warming drawers.

3.6.102
hob surface
horizontal part of the appliance on which vessels can be placed

3.6.103
hob element
heating unit attached to the **hob surface** or positioned below the **cooking zone**

3.6.104
induction hob element
hob element that heats metallic vessels by means of eddy currents

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Note 1 to entry: The eddy currents are induced in the vessel by the electromagnetic field of a coil.

3.6.105
induction wok element
induction hob element with the **hob surface** of an approximate spherical shape to accept a wok

3.6.106
cooking zone
area marked on a **hob surface** where the vessel is placed for heating food

Note 1 to entry: When a **hob element** protrudes above the **hob surface**, its surface is the **cooking zone**.

3.6.107
pan detector
device incorporated in a **hob element** that prevents its operation unless a vessel is placed on the **cooking zone**

3.6.108
touch control
control actuated by contact or proximity of a finger, with little or no movement of the contact surface

3.6.109
temperature-sensing probe
device that is inserted into the food to measure its temperature and which is a part of an **oven** control

3.6.110
flexible induction cooking zone
area on a **cooking zone** with **induction hob elements** that is not marked to indicate where vessels are to be placed for heating food

3.7 Definitions relating to safety components

3.7.1
thermostat
temperature-sensing device, the operating temperature of which may be either fixed or adjustable and which during **normal operation** keeps the temperature of the controlled part between certain limits by automatically opening and closing a circuit

3.7.2
temperature limiter
temperature-sensing device, the operating temperature of which may be either fixed or adjustable and which during **normal operation** operates by opening or closing a circuit when the temperature of the controlled part reaches a pre-determined value

Note 1 to entry: A **temperature limiter** does not make the reverse operation during the normal duty cycle of the appliance. It may or may not require manual resetting.

3.7.3
thermal cut-out
device which during abnormal operation limits the temperature of the controlled part by automatically opening the circuit, or by reducing the current, and is constructed so that its setting cannot be altered by the user

3.7.4
self-resetting thermal cut-out
thermal cut-out that automatically restores the current after the relevant part of the appliance has cooled down sufficiently

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3.7.5
non-self-resetting thermal cut-out
thermal cut-out that requires a manual operation for resetting, or replacement of a part, in order to restore the current

Note 1 to entry: Manual operation includes disconnection of the appliance from the supply mains.

3.7.6
protective device
device, the operation of which prevents a hazardous situation under abnormal operation conditions

3.7.7
thermal link
thermal cut-out which operates only once and requires partial or complete replacement

3.7.8
intentionally weak part
part intended to rupture under conditions of abnormal operation to prevent the occurrence of a condition which could impair compliance with this standard

Note 1 to entry: Such a part may be a replaceable component, such as a resistor or a capacitor, or a part of a component to be replaced, such as a **thermal link** that is not an **accessible part** incorporated in a motor.

3.7.101
pressure regulator
control that maintains the pressure at a particular value during normal use

3.7.102
pressure-relief device
control that limits the pressure under abnormal operating conditions

3.7.103
automatic regulation system
regulation system for hobs that uses wired or wireless sensors to enable and control an automatic cooking process and maintaining a target value

Note 1 to entry: Wireless sensors can communicate by means of radio communication.

Note 2 to entry: The target value can be e.g. temperature, time, power level.

3.8 Definitions relating to miscellaneous matters

3.8.1
all-pole disconnection
disconnection of both supply conductors by a single initiating action or, for multi-phase appliances, disconnection of all supply conductors by a single initiating action

Note 1 to entry: For multi-phase appliances, the neutral conductor is not considered to be a supply conductor.

3.8.2
off position
stable position of a switching device in which the circuit controlled by the switch is disconnected from its supply or, for electronic disconnection, the circuit is de-energized

Note 1 to entry: The **off position** does not imply an **all-pole disconnection**.

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3.8.3
visibly glowing heating element
heating element that is partly or completely visible from the outside of the appliance and has a temperature of at least 650 °C when the appliance has been operated under **normal operation** at **rated power input** until steady conditions have been established

3.8.4
PTC heating element
element intended for heating consisting mainly of positive temperature coefficient resistors that are thermally sensitive and have a rapid non-linear increase in resistance when the temperature is raised through a particular range

3.8.5
user maintenance
any maintenance operation stated in the instructions for use, or marked on the appliance, that the user is intended to perform

3.8.6
room temperature
ambient temperature specified in the general conditions for the tests

Note 1 to entry: The ambient temperature is specified in 5.7.

3.8.101
open deck
area that is exposed to marine environment

3.8.102
dayroom
area that can be exposed to marine environment from time to time

3.9 Definitions relating to electronic circuits

3.9.1
electronic component
part in which conduction is achieved principally by electrons moving through a vacuum, gas or semiconductor

Note 1 to entry: Neon indicators are not considered to be **electronic components**.

3.9.2
electronic circuit
circuit incorporating at least one **electronic component**

3.9.3
protective electronic circuit
electronic circuit that prevents a hazardous situation under abnormal operating conditions

Note 1 to entry: Parts of the circuit may also be used for functional purposes.

3.10 Definitions relating to battery charging and discharging

3.10.1
battery system
system that includes a **battery**, **charging system** and the **battery-operated appliance**

Note 1 to entry: The **battery system**, including interfaces, may contain more than one **battery** and **charging system.**

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3.10.2
charging system
circuitry that charges and maintains the state of charge of the **battery**

Note 1 to entry: Parts of the **charging system** may perform other functions such as charge balancing and may be separately enclosed.

3.10.3
specified operating region for charging
region during charging in which a **cell** operates within its voltage and current range as specified by the **cell** manufacturer

Note 1 to entry: An example of a specified operating region of a lithium-ion **cell** during charging is shown in Figure 14.

3.10.4
upper limit charging voltage
highest charging voltage in the **specified operating region for charging**

3.10.5
venting
condition intended by design that occurs when a **cell** provides a controlled release of excessive internal pressure without expulsion of major components of the **cell**

3.10.6
fully charged
at the maximum state of charge

Note 1 to entry: For **cells** and **batteries** that are rechargeable, this is the maximum state of charge permitted by the **charging system**.

Note 2 to entry: The maximum state of charge for **non-rechargeable batteries** and **batteries** that are rechargeable is specified in the artificial source characteristics of Table B.1.

3.10.7
fully discharged
discharged at a steady rate of current to attain, at 5 h of steady discharge (C_5 rate), or the fastest discharge rate allowed by the **cell** manufacturer or **battery** manufacturer if it is slower than the C_5 rate, until

– discharge terminates due to operation of discharge termination circuitry; or

– the **battery** (or **cell**) reaches a total voltage with an average voltage per **cell** equal to the end-of-discharge voltage for the **cell** chemistry being used, unless a different end of discharge voltage is specified by the **cell** manufacturer

Note 1 to entry: Examples of the end-of-discharge voltages for **fully discharged** common **cell** chemistries are typically

– 0,9 V/**cell** for nickel cadmium;
– 0,9 V/**cell** for nickel metal-hydride;
– 1,75 V/**cell** for lead-acid;
– 2,5 V/**cell** for lithium iron-phosphate;
– 3,0 V/**cell** for lithium cobalt-oxide.

3.11 Definitions relating to remote functionality

3.11.1
entity
person, device, appliance, product, or service that interacts with an appliance

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3.11.2
message
data which is transmitted from a sender (data source) to one or more receivers (data sink)

3.11.3
public network
network carrying digital data or analogue signals or both where access to the data and signals is not restricted by the physical space within the household or similar use environment of the appliance

Note 1 to entry: Determination of confinement to the physical space includes consideration of the network's range of communication, configuration, or construction.

For the purposes of this standard, examples of **public networks** include but are not limited to:

- PAN (personal area network);
- LAN (local area network) connected devices which may or may not be connected to a gateway,
- PLC (power line communication);
- SRD (short range devices);
- WAN (wide area network);

For the purposes of this standard, examples of networks which are not considered as being **public networks** include but are not limited to:

- NFC (near field communication);
- optical communication with line of sight (infra-red rays or visual rays);
- hardwired configurations constructed of physical media;

without connection to a **public network**.

3.11.4
remote communication
transmission of data between the appliance and an **entity** that can be initiated out of sight of the appliance, using communication means such as radio wave modulation, sound wave modulation or bus systems

Note 1 to entry: Examples of transmission of data includes but are not limited to remote monitoring, software downloading or control parameter modifications.

Note 2 to entry: Transmission of data can be one-way (simplex) or two-way (duplex).

Note 101 to entry: Transmission of data for operating functions that do not control **heating units** (e.g. brightness of displays or buzzer sounds) that can be initiated by the user out of sight of the appliance is considered **remote communication**, but not considered **remote operation**.

Note 102 to entry: In the case where a wireless sensor uses short range communication technology and exclusively communicates with the **hob** through its connectivity module to exchange sensor data, the communication between the wireless sensor and the **hob** is not considered as communication through a **public network**.

3.11.5
remote operation
control of an appliance by **remote communication**

Note 1 to entry: **Remote communication** that results in a change of appliance operation, such as change of rotational speed, temperature, spatial movement, start/stop of the intended function, is considered **remote operation**. It is possible to have **remote communication** that does not lead to **remote operation.**

Note 2 to entry: A line of sight infra-red signal by itself is not considered one used for **remote operation**.

Note 101 to entry: **Remote operation** refers to commands initiated by the user out of sight of the appliance that control intended functions such as the control of **heating units**.

Note 102 to entry: **Remote communication** including change of target values of the system which require manual confirmation at the **hob** is not considered **remote operation**.

Note 103 to entry: General guidance for the application of **remote automatic regulation systems** for **hobs** is given in the informative Annex AA, Figure AA.1.

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3.11.101
remote automatic regulation system
automatic regulation system that can be initiated or modified by means of **remote communication**

4 General requirement

Appliances shall be constructed so that in normal use, they function safely so as to cause no danger to persons or surroundings, even in the event of carelessness that may occur in normal use.

In general, this principle is achieved by fulfilling the relevant requirements specified in this standard and compliance is checked by carrying out all the relevant tests.

5 General conditions for the tests

Unless otherwise specified, the tests are carried out in accordance with this clause.

5.1 *Tests according to this standard are type tests*.

NOTE Routine tests are described in informative Annex A.

5.2 *The tests are carried out on a single appliance that shall withstand all the relevant tests. However, the tests of Clauses 12, 20, 22 (except 22.10, 22.11 and 22.18) to 26, 28, 30 and 31 may be carried out on separate appliances. The test of 22.3 is carried out on a new appliance.*

*If an **intentionally weak part** becomes open circuit during the tests of Clause 19, an additional appliance may be needed.*

The testing of components may require the submission of additional samples of these components.

If the test of normative Annex C has to be carried out, six samples of the motor are needed.

If the test of normative Annex D has to be carried out, an additional appliance may be used.

If the tests of normative Annex G are carried out, four additional transformers are needed.

If the tests of normative Annex H are carried out, three switches or three additional appliances are needed.

NOTE Additional samples can be required if the appliance has to be tested under different conditions, for example if it can be supplied with different voltages.

*The cumulative stress resulting from successive tests on **electronic circuits** shall be avoided. It may be necessary to replace components or to use additional samples. The number of additional samples shall be kept to a minimum by an evaluation of the relevant **electronic circuits**.*

If an appliance has to be dismantled in order to carry out a test, care shall be taken to ensure that it is reassembled as originally supplied. In case of doubt, subsequent tests may be carried out on a separate sample.

5.3 *The tests are carried out in the order of the clauses. However, the test of 22.11 on the appliance at **room temperature** is carried out before the tests of Clause 8. The tests of*

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Clause 14, 21.2 and 22.24 are carried out after the tests of Clause 29. The test of 19.14 is carried out before the tests of 19.11.

*For **pyrolytic self-cleaning ovens**, the tests of 22.108 to 22.111 are carried out before the tests of Clause 19.*

If it is evident from the construction of the appliance that a particular test is not applicable, the test is not carried out.

5.4 *When testing appliances that are also supplied by other energies such as gas, the influence of their consumption has to be taken into account.*

*Appliances that also use gas are supplied with gas at the appropriate rated pressure. Vessels having a diameter of approximately 220 mm are filled with 2 l of water, covered with a lid and placed on the **hob** burners. The controls are adjusted to their highest setting until the water boils. They are then adjusted so that the water simmers, water being added when necessary to maintain the level.*

5.5 *The tests are carried out with the appliance or any movable part of it placed in the most unfavourable position that may occur in normal use.*

5.6 *Appliances provided with controls or switching devices are tested with these controls or devices adjusted to their most unfavourable setting, if the setting can be altered by the user.*

*If the adjusting means of the control is accessible without the aid of a **tool**, this subclause applies whether the setting can be altered by hand or with the aid of a **tool**. If the adjusting means is not accessible without the aid of a **tool** and if the setting is not intended to be altered by the user, this subclause does not apply.*

NOTE Adequate sealing is regarded as preventing alteration of the setting by the user.

*For appliances fitted with a voltage selector switch, the tests are carried out with the switch in the position corresponding to the **rated voltage** value used for the tests.*

5.7 *The tests are carried out in a draught-free location at an ambient temperature of 20 °C ± 5 °C.*

If the temperature attained by any part is limited by a temperature sensitive device or is influenced by the temperature at which a change of state occurs, for example when water boils, the ambient temperature is maintained at 23 °C ± 2 °C in case of doubt.

5.8 Test conditions relating to frequency and voltage

5.8.1 *Appliances for alternating current (AC) only are tested with AC at **rated frequency**, and those for AC and DC are tested at the more unfavourable supply.*

*Appliances for AC that are not marked with **rated frequency** or are marked with a **rated frequency range** of 50 Hz to 60 Hz are tested with either 50 Hz or 60 Hz, whichever is the more unfavourable.*

5.8.2 *Appliances having more than one **rated voltage** are tested on the basis of the most unfavourable voltage.*

*For **motor-operated appliances**, and **combined appliances**, marked with a **rated voltage range**, when it is specified that the supply voltage is equal to the **rated voltage** multiplied by a factor, the appliance is supplied at*

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– *the upper limit of the **rated voltage range** multiplied by this factor, if greater than 1;*

– *the lower limit of the **rated voltage range** multiplied by this factor, if smaller than 1.*

*When a factor is not specified, the supply voltage is the most unfavourable within the **rated voltage range**.*

*If a **heating appliance** has a **rated voltage range**, the upper limit of the voltage range will usually be the most unfavourable voltage within the range. For **motor-operated appliances**, **combined appliances** and appliances having more than one **rated voltage** or **rated voltage range**, it may be necessary to make some of the tests at the minimum, the mean and the maximum values of the **rated voltage** or the **rated voltage range** in order to establish the most unfavourable voltage.*

5.8.3 *For **heating appliances**, and **combined appliances**, marked with a **rated power input range**, when it is specified that the power input is equal to the **rated power input** multiplied by a factor, the appliance is operated at*

– *the upper limit of the **rated power input range** multiplied by this factor, if greater than 1;*

– *the lower limit of the **rated power input range** multiplied by this factor, if smaller than 1.*

*When a factor is not specified, the power input is the most unfavourable within the **rated power input range**.*

5.8.4 *For appliances marked with a **rated voltage range** and **rated power input** corresponding to the mean of the **rated voltage range**, when it is specified that the power input is equal to **rated power input** multiplied by a factor, the appliance is operated at:*

– *the calculated power input corresponding to the upper limit of the **rated voltage range** multiplied by this factor, if greater than 1;*

– *the calculated power input corresponding to the lower limit of the **rated voltage range** multiplied by this factor, if smaller than 1.*

*When a factor is not specified, the power input corresponds to the power input at the most unfavourable voltage within the **rated voltage range**.*

5.9 *When alternative heating elements or accessories are made available by the appliance manufacturer, the appliance is tested with those elements or accessories which give the most unfavourable results.*

5.10 *The tests are carried out on the appliance as supplied. However, an appliance constructed as a single appliance but supplied in a number of units is tested after assembly in accordance with the instructions provided with the appliance.*

*A **class III construction** part of the appliance is tested connected to its **detachable power supply part** taking into account the instructions provided with the appliance.*

***Built-in appliances** and **fixed appliances** are installed in accordance with the instructions provided with the appliance before testing.*

*If **batteries** intended for use with the appliance use metal-ion chemistry, the manufacturer or responsible agent shall provide the following information for each type of **battery***

– *end-of-discharge voltage;*

– ***upper limit charging voltage**, for **batteries** comprising series connected **cells**;*

– *rated capacity of the **battery** (C_5 Ah).*

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*If **cells** intended for use with the appliance use metal-ion chemistry, the manufacturer or responsible agent shall provide the **specified operating region for charging** for each type of **cell**.*

5.11 *Appliances intended to be connected to fixed wiring by means of a flexible cord are tested with the appropriate flexible cord connected to the appliance.*

5.12 *For **heating appliances** and **combined appliances**, when it is specified that the appliance has to operate at a power input multiplied by a factor, this applies only to heating elements without appreciable positive temperature coefficient of resistance.*

*For heating elements with appreciable positive temperature coefficient of resistance, other than **PTC heating elements**, the supply voltage is determined by supplying the appliance at **rated voltage** until the heating element reaches its operating temperature. The supply voltage is then rapidly increased to the value necessary to give the power input required for the relevant test, this value of the supply voltage being maintained throughout the test.*

NOTE In general, the temperature coefficient is considered to be appreciable if, at **rated voltage**, the power input of the appliance in cold condition differs by more than 25 % from the power input at operating temperature.

5.13 *The tests for appliances with **PTC heating elements** and for **heating appliances** and **combined appliances** where the heating elements are supplied via a switch mode power supply are carried out at a voltage corresponding to the specified power input.*

*When a power input greater than the **rated power input** is specified, the factor for multiplying the voltage is equal to the square root of the factor for multiplying the power input.*

5.14 *If **class 0I appliances** or **class I appliances** have **accessible metal parts** that are not earthed and are not separated from **live parts** by an intermediate metal part that is earthed, such parts are checked for compliance with the appropriate requirements specified for **class II construction**.*

*If **class 0I appliances** or **class I appliances** have **accessible non-metallic parts**, such parts are checked for compliance with the appropriate requirements specified for **class II construction** unless these parts are separated from **live parts** by an intermediate metal part that is earthed.*

NOTE Guidance is given in informative Annex P for enhanced requirements that can be used to ensure an acceptable level of protection against electrical and thermal hazards for particular types of appliances used in an installation without a protective earthing conductor in countries that have tropical climates.

5.15 *If appliances have parts operating at **safety extra-low voltage**, such parts are checked for compliance with the appropriate requirements specified for **class III construction**.*

5.16 *When testing **electronic circuits**, the supply is to be free from perturbations from external sources that can influence the results of the tests.*

5.17 ***Battery-operated appliances** and remote controls containing **batteries** are tested in accordance with normative Annex B.*

***Battery-operated appliances** having a functional earth connection or a supply connection are tested in accordance with the relevant clauses of the main part of this standard and normative Annex B.*

NOTE A supply connection can include a mains connection.

***Battery-operated appliances** having a supply connection are considered dual supply appliances. Dual supply appliances are regarded as **battery-operated appliances** when deriving their energy from **batteries**.*

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__Separable batteries__ and __detachable batteries__ for __battery-operated appliances__ are tested in accordance with normative Annex B.

5.18 *To condition __batteries__ that are rechargeable, the __batteries__ shall be __fully discharged__ and then __fully charged__ in accordance with the appliance manufacturer's instructions. The sequence shall be repeated at least 2 h after the __battery__ was charged.*

For __batteries__ where there is a series arrangement of parallel clusters of __cells__, the cluster shall be treated as a single __cell__ for those tests that require altering the amount of charge on a single __cell__ prior to conducting the test.

5.19 *Measurements of __cell__ voltages or __battery__ voltages shall be made using a single pole resistive-capacitive low pass filter with a –3 dB roll off frequency of 5 kHz ± 0,5 kHz. To determine if the __upper limit charging voltage__ has been exceeded, the peak value of the filtered voltage shall be measured with a tolerance of ±1 %.*

When measuring __cell__ voltages or __battery__ voltages, the peak value of any superimposed ripple exceeding 10 % of the average value shall be included. Transient voltages are ignored, such as a temporary increase of voltage, for example, after the __battery__ is removed from the __charging system__.

5.20 *If linear and angular dimensions are specified without a tolerance, ISO 2768-1 is applicable.*

5.21 *Probes are applied with a force not exceeding 1 N.*

5.22 *If a component or part of the appliance has both a __self-resetting feature__ and a __non-self-resetting feature__ and if the __non-self-resetting feature__ is not required in order to comply with this standard, then appliances incorporating such a component or part shall be tested with the __non-self-resetting feature__ rendered inoperative.*

5.101 *__Class III temperature-sensing probes__ are only subjected to the tests of Clause 19.*

5.102 *__Steam convection ovens__ are tested as __ovens__.*

6 Classification

6.1 Appliances shall be **class I**, **class II** or **class III.**

If an appliance consists of a part of **class III construction** and a **detachable power supply part**, the complete appliance is classified as a **class I appliance** or **class II appliance** in accordance with the classification applicable to its **detachable power supply part**.

Cooking ranges incorporating socket-outlets shall be **class I appliances**.

Compliance is checked by inspection and by the relevant tests.

6.2 Appliances shall have the appropriate degree of protection against harmful ingress of water.

Ovens for **open deck** use shall be IPX6.

Compliance is checked by inspection and by the relevant tests.

NOTE The degrees of protection against harmful ingress of water are given in IEC 60529:1989 including IEC 60529:1989/AMD1:1999 and IEC 60529:1989/AMD2:2013.

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7 Marking and instructions

7.1 Appliances shall be marked with the:

– **rated voltage** or **rated voltage range** in volts;
– symbol for nature of supply, unless the **rated frequency** is marked;
– **rated power input** in watts or **rated current** in amperes;
– name, trade mark or identification mark of the manufacturer or responsible vendor;
– model or type reference;
– symbol IEC 60417-5172 (2003-02) for **class II appliances** only;
– IP number according to degree of protection against ingress of water, other than IPX0;
– symbol IEC 60417-5180 (2003-02), for **class III appliances**. This marking is not necessary for appliances operated only by **batteries** (primary **batteries** or secondary **batteries** recharged outside of the appliance) or appliances powered by **rechargeable batteries** recharged in the appliance.

NOTE If the appliance is marked with rated pressure, the units used can be bars but only together with pascals and placed in brackets.

Appliance outlets accessible to the user and socket-outlets accessible to the user:

– that are incorporated in appliances connected to the supply mains; and
– that operate at **rated voltage**

shall be marked with their **outlet load** in watts or amperes.

Appliances intended to be supplied from a **detachable power supply part** for the purposes of recharging the **battery** shall be marked with symbol ISO 7000-0790 (2004-01). They shall also be marked with symbol IEC 60417-6181 (2016-01) and the model or type reference of the **detachable power supply part** or with the substance of the following:

Use only with <model or type reference> supply unit

Class II appliances and **class III appliances** incorporating a functional earth shall be marked with the symbol IEC 60417-5018 (2011-07).

The enclosure of electrically-operated water valves incorporated in external hose-sets for connection of an appliance to the water mains shall be marked with symbol IEC 60417-5036 (2002-10) if their **working voltage** exceeds **extra-low voltage**.

The total **rated power input** or **rated current** of each induction generator unit shall be marked.

The **rated cooking pressure** in kilopascals (kPa) of **pressure steam ovens** shall be marked.

If a **cooking range** incorporates a socket-outlet protected by means of fuses, other than D type fuses, it shall be marked with the current rating of the relevant fuse. When a miniature fuse-link is provided, this marking shall indicate that the fuse-link shall have a high breaking capacity.

Compliance is checked by inspection.

7.2 **Stationary appliances** for multiple supply shall be marked with the substance of the following:

Warning: Before obtaining access to terminals, all supply circuits must be disconnected

This warning shall be placed in the vicinity of the terminal cover.

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Compliance is checked by inspection.

7.3 Appliances having a range of rated values and which can be operated without adjustment throughout the range shall be marked with the lower and upper limits of the range separated by a hyphen.

NOTE 1 Example: 115 V – 230 V: The appliance is suitable for any value within the marked range (a curling iron with a **PTC heating element** or an appliance incorporating an input switch mode power supply).

Appliances having different rated values and which have to be adjusted for use at a particular value by the user or installer shall be marked with the different values separated by an oblique stroke. This requirement is also applicable to appliances with provision for connection to both single-phase and multi-phase supplies.

NOTE 2 Example: 115/230 V: The appliance is only suitable for the marked values (an appliance with a selector switch).

NOTE 3 Example: 230 V ∼/400 V 3N∼: The appliance is only suitable for the voltage values indicated, 230 V∼ being for single-phase, AC operation and 400 V 3N∼ for three-phase, AC with neutral operation (an appliance with terminals for both supplies).

Compliance is checked by inspection.

7.4 If the appliance can be adjusted for different **rated voltages** or **rated frequencies**, the voltage or the frequency to which the appliance is adjusted shall be clearly discernible. If frequent changes in voltage setting or frequency setting are not required, this requirement is considered to be met if the **rated voltage** or **rated frequency** to which the appliance is to be adjusted can be determined from a wiring diagram fixed to the appliance.

The wiring diagram may be on the inside of a cover that has to be removed to connect the supply conductors. It shall not be on a label loosely attached to the appliance.

Compliance is checked by inspection.

7.5 For appliances marked with more than one **rated voltage** or with one or more **rated voltage ranges**, the **rated power input** or **rated current** for each of these voltages or ranges shall be marked. However, if the difference between the limits of a **rated voltage range** does not exceed 10 % of the arithmetic mean value of the range, the marking for **rated power input** or **rated current** may be related to the arithmetic mean value of the range.

The upper and lower limits of the **rated power input** or **rated current** shall be marked on the appliance so that the relation between input and voltage is clear.

Compliance is checked by inspection.

7.6 When symbols are used, they shall be as follows:

⎓	[symbol IEC 60417-5031 (2002-10)]	direct current
∼	[symbol IEC 60417-5032 (2002-10)]	alternating current
3 ∼	[symbol IEC 60417-5032-1 (2002-10)]	three-phase alternating current
3N ∼	[symbol IEC 60417-5032-2 (2002-10)]	three-phase alternating current with neutral

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	[symbol IEC 60417-5016 (2002-10)]	fuse-link

NOTE 1 The current rating of the fuse link can be indicated in association with this symbol.

		time-lag miniature fuse-link where X is the symbol for the time/current characteristic as given in IEC 60127
	[symbol IEC 60417-5019 (2006-08)]	protective earth
	[symbol IEC 60417-5018 (2011-07)]	functional earthing
	[symbol IEC 60417-5172 (2003-02)]	**class II equipment**
	[symbol IEC 60417-5012 (2002-10)]	Lamp

NOTE 2 The rated wattage of the lamp can be indicated in association with this symbol.

	[symbol ISO 7000-0434A (2004-01)]	Caution
	[symbol ISO 7000-0790 (2004-01)]	read operator's manual
	[symbol IEC 60417-5021 (2002-10)]	Equipotentiality
	[symbol IEC 60417-5036 (2002-10)]	dangerous voltage
	[symbol IEC 60417-5180 (2003-02)]	**Class III appliance**
	[symbol IEC 60417-6181 (2016-01)]	**detachable power supply part**
	[symbol IEC 60417-5010 (2002-10)]	ON/OFF (push-push)
	[symbol IEC 60417-6059 (2011-05)]	Caution, possibility of tilting

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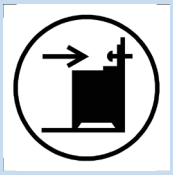

[symbol IEC 60417-6060 (2011-05)] Anti-tip restraints

The symbol for nature of supply shall be placed next to the marking for **rated voltage**.

The symbol for **class II appliances** shall be placed so that it will be obvious that it is a part of the technical information and is unlikely to be confused with any other marking.

Units of physical quantities and their symbols shall be those of the international standardized system.

Additional symbols are allowed provided that they do not give rise to misunderstanding.

Symbols specified in IEC 60417 and ISO 7000 may be used.

Compliance is checked by inspection.

7.7 Appliances to be connected to more than two supply conductors and appliances for multiple supply shall have a connection diagram fixed to them, unless the correct mode of connection is obvious.

The correct mode of connection for multi-phase appliances is considered to be obvious if the terminals for the supply conductors are

– indicated by arrows pointing towards the terminals; or
– marked in words.

The connection diagram may be the wiring diagram referred to in 7.4.

Compliance is checked by inspection.

7.8 Except for **type Z attachment**, terminals used for connection to the supply mains shall be indicated as follows:

– terminals intended exclusively for the neutral conductor shall be indicated by the letter N;
– protective earthing terminals shall be indicated by symbol IEC 60417-5019 (2006-08);
– functional earthing terminals shall be indicated by symbol IEC 60417-5018 (2011-07).

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

Compliance is checked by inspection.

7.9 Unless it is obviously unnecessary, switches which may give rise to a hazard when operated shall be marked or placed so as to indicate clearly which part of the appliance they control. Indications used for this purpose shall, wherever practicable, be comprehensible without a knowledge of languages or national standards.

Flexible induction cooking zone switches, **touch controls**, displays and the like shall be marked or placed so as to indicate clearly as to which vessel is assigned to which switch, **touch control**, display or the like.

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Compliance is checked by inspection.

7.10 The different positions of switches on **stationary appliances** and the different positions of controls on all appliances shall be indicated by figures, letters or other visual means. This requirement also applies to switches which are part of a control.

If figures are used for indicating the different positions, the **off position** shall be indicated by the figure 0 and the position for a higher value, such as output, input, speed or cooling effect, shall be indicated by a higher figure.

The figure 0 shall not be used for any other indication unless it is positioned and associated with other numbers so that it does not give rise to confusion with the indication of the **off position**. The figure 0 may be used on a digital programming keyboard.

The **off position** of **touch controls** for **hobs** shall be marked by the figure O and the on position by the figure I. If there is no **touch control** for the **hob**, this requirement applies to the **touch controls** for each **hob element**.

If the same **touch control** is used for switching on and off, symbol IEC 60417-5010 (2002-10) may be used.

Compliance is checked by inspection.

7.11 Controls intended to be adjusted during installation or in normal use shall be provided with an indication for the direction of adjustment.

NOTE An indication of + and – is considered to be sufficient.

Compliance is checked by inspection.

7.12 Instructions shall be provided in hard copy form with the appliance so that the appliance can be used safely.

Instructions may be marked on the appliance as long as they are visible in normal use.

NOTE If the instructions are marked on the appliance they are considered to be provided in hard copy form.

If it is necessary to take precautions during **user maintenance**, appropriate details shall be given.

The instructions shall state the substance of the following:

> This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
>
> Children should be supervised to ensure that they do not play with the appliance.

The instructions for appliances having a part of **class III construction** supplied from a **detachable power supply part** shall state that the appliance is only to be used with the power supply unit provided with the appliance.

The instructions for **class III appliances** shall state that it must only be supplied at safety extra-low voltage corresponding to the marking on the appliance. This instruction is not necessary for **battery-operated appliances** if the **battery** is a primary **battery** or secondary **battery** charged outside of the appliance.

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For appliances intended for use at altitudes exceeding 2 000 m, the maximum altitude of use shall be stated.

The instructions for appliances incorporating a functional earth shall state the substance of the following:

This appliance incorporates an earth connection for functional purposes.

For appliances intended to be connected to a supply for the purposes of recharging the **battery**, the instructions shall state the substance of the following:

WARNING: Use only an external supply with the following specifications: <voltage and nature of supply> <power / current of supply>

For appliances intended to be supplied from a **detachable power supply part** for the purposes of recharging the **battery**, the type reference of the **detachable power supply part** shall be stated along with the substance of the following:

WARNING: Only use the supply unit provided with this appliance.

For appliances intended for use with **batteries** that use metal-ion chemistries, the instructions shall state the normal temperature range for charging the **battery**.

If the symbol for **detachable power supply part** is used, its meaning shall be explained.

If the **hob surface** is of glass-ceramic or similar material and protects **live parts**, the instructions shall include the substance of the following:

WARNING: If the surface is cracked, switch off the appliance to avoid the possibility of electric shock.

The instructions for **cooking ranges** and **ovens** shall include the substance of the following:

During use the appliance becomes hot. Care should be taken to avoid touching heating elements inside the oven.

The instructions for **ovens** shall state the substance of the following:

WARNING: Accessible parts can become hot during use.
Young children should be kept away.

The instructions for **ovens** having doors with glass panels and the instructions for **hobs** with glass hinged lids shall include the substance of the following:

Do not use harsh abrasive cleaners or sharp metal scrapers to clean the **oven** door glass/ the glass of hinged lids of the hob (as appropriate), since they can scratch the surface, which can result in shattering of the glass.

If during the test of Clause 11, the temperature rise at the centre of the internal bottom surface of a storage drawer exceeds that specified for handles held for short periods in normal use, the instructions shall state that these surfaces can get hot.

The instructions of **pressure steam ovens** shall include the substance of the following:

The ducts in the pressure regulator allow the escape of steam, so these ducts should be regularly checked to ensure that they are not blocked.

The instructions of **pressure steam ovens** shall also give details on how to open the door safely.

The instructions of **pressure steam ovens** shall include the substance of the following warning:

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WARNING: Do not open drain cocks or other emptying devices until the pressure has been reduced to approximately atmospheric pressure.

The instructions for **pyrolytic self-cleaning ovens** shall state that excess spillage shall be removed before cleaning and shall specify which utensils can be left in the **oven** during cleaning.

If, for cleaning, the manufacturer instructs the user to set the controls to a position higher than for normal cooking purposes, the instructions shall state that under such conditions the surfaces can get hotter than usual and children should be kept away.

The instructions for **ovens** incorporating a fan with a guard that can be removed for cleaning shall state that the **oven** must be switched off before removing the guard and that, after cleaning, the guard must be reinstalled in accordance with the instructions.

The instructions for **ovens** provided with a facility to use a **temperature-sensing probe** shall include the substance of the following:

Only use the temperature probe recommended for this oven.

The instructions for **ovens** that have shelves shall include details indicating the correct installation of the shelves.

The instructions for **cooking ranges**, **hobs** and **ovens** shall state that a steam cleaner is not to be used.

The instructions for **induction hobs** shall include the substance of the following:

Metallic objects such as knives, forks, spoons and lids should not be placed on the hob surface since they can get hot.

The instructions for **hobs** incorporating a lid shall state that any spillage should be removed from the lid before opening. They shall also state that the **hob surface** should be allowed to cool before closing the lid.

The instructions for **hobs** incorporating halogen lamps shall warn the user not to stare at the **hob elements**.

The instructions for **hobs** incorporating a **pan detector** shall include the substance of the following:

After use, switch off the hob element by its control and do not rely on the pan detector.

If the appliance incorporates a lamp for illumination, and does not incorporate a switch providing full disconnection under overvoltage category III conditions, the instructions shall include the substance of the following:

WARNING: Ensure that the appliance is switched off before replacing the lamp to avoid the possibility of electric shock.

The instructions for **hobs** shall state that the appliance is not intended to be operated by means of an external timer or separate remote-control system. However, for **hobs** with a **remote automatic regulation system**, the instructions shall include the following:

– information to identify the **remote automatic regulation system**;
– description of the way of connection of the **remote automatic regulation system**;
– precautions and recommendations for the safe operation of the **remote automatic regulation system**;
– an illustration depicting the location of the **remote automatic regulation system**; and

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– description of how to enable and disable the **remote communication** of the **hob** with the **remote automatic regulation system**.

The instructions for **hobs** shall include the substance of the following:

Danger of fire: Do not store items on the cooking surfaces.

CAUTION: The cooking process has to be supervised. A short term cooking process has to be supervised continuously.

WARNING: Unattended cooking on a hob with fat or oil can be dangerous and can result in a fire.

The instructions for **hobs** incorporating an **induction wok element** shall contain a list of vessels that can be used, unless the manufacturer provides a wok with the appliance.

The instructions for **ovens** that are intended for use on board ships shall state whether the appliance can be installed on an **open deck** or whether it can only be installed in a **dayroom**.

Compliance is checked by inspection.

7.12.1 If it is necessary to take precautions during installation of the appliance, appropriate details shall be given.

If an appliance is intended to be permanently connected to the water mains and not connected by a hose-set, this shall be stated.

For appliances marked with different **rated voltages** or different **rated frequencies** (separated by a /), instructions shall be included to indicate to the user or installer what action must be taken to adjust the appliance for operation at the required **rated voltage** or **rated frequency**.

Unless the instructions for **cooking ranges** state that the range must not be placed on a base, the instructions for **cooking ranges** that are placed on the floor shall state that if the range is placed on a base, measures shall be taken to prevent the appliance slipping from the base.

Unless the instructions state to the contrary, the instructions for **cooking ranges** and **ovens** shall state that the appliance must not be installed behind a decorative door in order to avoid overheating.

The instructions for appliances intended to be connected to the water mains shall include the maximum **rated water pressure** in megapascals.

The instructions for **ovens** that are intended for use on board ships shall include details for fixing the appliance.

Compliance is checked by inspection.

7.12.2 If a **stationary appliance** is not fitted with a **supply cord** and a plug, or with other means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III conditions, the instructions shall state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.

Compliance is checked by inspection.

7.12.3 If the insulation of the fixed wiring supplying an appliance for permanent connection to the supply mains can come into contact with parts having temperature rise exceeding 50 K

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