IEC 60335-2-6

Edition 7.0 2024-08
COMMENTED VERSION

INTERNATIONAL STANDARD

colour inside

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

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

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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 commented version (CMV) of the official standard IEC 60335-2-6:2024 edition 7.0 allows the user to identify the changes made to the previous IEC 60335-2-6:2014+AMD1:2018 CSV edition 6.1. Furthermore, comments from IEC TC 61 experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.

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

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

IEC 60335-2-6 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;

– 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).

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

INTRODUCTION

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

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

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

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

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

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules ~~may~~ 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 and generic standards~~ 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. ~~For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or part 2 standards.~~ 1

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

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

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

– IEC standards published by TC 59 concerning methods 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. 2

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

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

1 Scope

This clause of Part 1 is replaced by the following.

This Part of IEC 60335 deals with the safety of **stationary electric cooking appliances**, such as **cooking ranges**, **hobs**, and **ovens** ~~and similar appliances~~, 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**. 3

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

~~NOTE 101~~ 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.

~~NOTE 102~~ Attention is drawn to the fact that:

– for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements ~~may~~ can be necessary;
– in many countries, additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

~~NOTE 103~~ 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).

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

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

IEC 60068-2-6~~:2007~~, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-27~~:2008~~, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*

IEC 60068-2-52:~~1996~~2017, *Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1 Definitions relating to physical characteristics

3.1.6 ~~*Addition:*~~
rated current

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 ~~input~~ 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:

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

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

Replace the first paragraph with the following: **4** **5**

operation of the appliance as specified in 3.1.9.101 to 3.1.9.107

Replace the first dashed item of the second paragraph with the following:

– the **battery** that is **fully discharged** is charged with the **battery-operated appliance** operating as specified, if allowed by the construction of the appliance.

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;

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

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

~~Note 1 to entry: Vessels according to Figure 102 should be used for the tests. The vessel diameters specified in Figure 101 should be considered for the tests.~~

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 ~~may~~ 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.

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 ~~may~~ 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 **6**. 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 ~~may~~ 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**.

3.1.101
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

3.5 Definitions relating to types of appliances

3.5.101
oven
appliance having a heated cavity with a door and constructed so that food, which ~~may~~ 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 ~~may~~ 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 ~~does not differ significantly~~ 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 ~~significantly~~ at least 50 kPa higher than atmospheric pressure

~~Note 1 to entry: Significantly higher is considered to be greater than 50 kPa.~~

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**

3.6 Definitions relating to parts of an appliance

3.~~10~~96.101
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.~~11~~06.102
hob surface
horizontal part of the appliance on which vessels can be placed

3.~~11~~16.103
hob element
heating unit attached to the **hob surface** or positioned below the **cooking zone**

3.~~11~~26.104
induction hob element
hob element that heats metallic vessels by means of eddy currents

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

3.~~11~~36.105
induction wok element
induction hob element with the **hob surface** of an approximate spherical shape to accept a wok

3.~~11~~46.106
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.~~1156~~.107
pan detector
device incorporated in a **hob element** that prevents its operation unless a vessel is placed on the **cooking zone**

3.~~1166~~.108
touch control
control actuated by contact or proximity of a finger, with little or no movement of the contact surface

3.~~1176~~.109
temperature-sensing probe
device that is inserted into the food to measure its temperature and which is a part of an **oven** control

~~**3.118**~~
~~**rated water pressure**~~
~~water pressure assigned to the appliance by the manufacturer~~

~~**3.119**~~
~~**rated cooking pressure**~~
~~maximum working pressure of **pressure steam ovens** assigned by the manufacturer to the pressurized parts of the appliance~~

3.~~1246~~.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.~~1207~~.101
pressure regulator
control that maintains the pressure at a particular value during normal use

3.~~1217~~.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.~~1228~~.101
open deck
area that is exposed to marine environment

3.~~1238~~.102
dayroom
area that ~~may~~ can be exposed to marine environment from time to time

3.11 Definitions relating to remote functionality

3.11.4
remote communication

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

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.

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

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

5.3 *Addition:*

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

5.4 *Addition:*

*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.*

5.101 ***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

This clause of Part 1 is applicable except as follows.

6.1 *Modification:*

Replace the first paragraph with the following:

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

Addition:

Cooking ranges incorporating socket-outlets shall be **class I appliances**. 7

6.2 *Addition:*

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

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 *Addition:*

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 ~~rated~~ current rating of the relevant fuse. When a miniature fuse-link is provided, this marking shall indicate that the fuse-link ~~is to~~ shall have a high breaking capacity.

7.6 *Addition:*

 [symbol IEC 60417-5010 (2002-10)]	ON/OFF (push-push)
 [symbol IEC 60417-6059 (2011-05)]	Caution, possibility of tilting
 [symbol IEC 60417-6060 (2011-05)]	Anti-tip restraints

7.9 *Addition:*

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.

7.10 *Addition:*

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) ~~can~~ may be used.

7.12 *Addition:*

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 ~~may~~ 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 ~~may~~ 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:

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 ~~must~~ 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 ~~may~~ 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 ~~replaced~~ 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
– description of how to enable and disable the **remote communication** of the **hob** with the **remote automatic regulation system**. 8

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 ~~may~~ 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**.

7.12.1 *Addition:*

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 ~~have to~~ 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.

7.12.3 *Addition:*

If a **cooking range** does not have a **supply cord**, the instructions shall state the type of cord to be used, taking into account the temperature of the rear surface of the appliance.

7.12.4 *Addition:*

The instructions for **built-in appliances** having separate control panels shall state that the control panel is only to be connected to the **heating units** specified in order to avoid a possible hazard.

7.15

Modification:

Replace the first sentence of the third paragraph with the following:

For **stationary appliances**, except for **fixed appliances**, at least the name or trademark or identification mark of the manufacturer or responsible vendor and the model or type reference shall be visible when the appliance is installed as in normal use.

Addition:

For **fixed appliances**, the marking of the name or trademark or identification mark of the manufacturer or responsible vendor and the model or type reference shall be marked on the

appliance and, if not visible when the appliance is installed as in normal use, shall be included in the instructions or on an additional label that can be fixed near the appliance after installation.

The marking for the current rating of the fuse protecting a socket-outlet shall be placed on or near the socket-outlet.

7.101 Steam generators intended to be filled manually shall be marked with the maximum water level, which shall be visible during filling.

Compliance is checked by inspection.

7.102 The **cooking zone** of **hob surfaces** shall be identified by appropriate marking unless it is obvious.

Compliance is checked by inspection.

7.103 For **cooking ranges** that are normally placed on the floor and that have horizontally hinged **oven** doors with a hinge height of less than 430 mm from the floor, if a stabilizing means is necessary in order to comply with the test of 20.102, then

– the stabilising means, except for commonly available fixing hardware, such as screws and bolts, shall be marked with symbol IEC 60417-6060 (2011-05) or in lettering at least 3 mm high, with the substance of the following:

  WARNING: In order to prevent tipping of the appliance, this stabilising means must be installed. Refer to the instructions for installation.

~~NOTE Commonly available fixing hardware, such as screws and bolts, need not be marked or delivered with the appliance.~~

– the appliance shall be marked with symbol IEC 60417-6059 (2011-05) or in lettering at least 3 mm high, at the point of supply entry and at least one other point to draw the attention of the user to the need to stabilise the appliance.

If symbol IEC 60417-6059 (2011-05) or IEC 60417-6060 (2011-05) are used, their meaning shall be explained in the instructions and their height shall be at least 30 mm.

Compliance is checked by inspection and measurement.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.1 *Addition:*

For parts of appliances situated not more than 850 mm above the floor after installation or in normal use, in addition to the use of test probe 18, test probe 19 of IEC 61032 is also applied wherever test probe 18 is used and with the same test conditions used for test probe 18. **9**

8.1.2 *Addition:*

Test probe 12 of IEC 61032 is applied ~~without appreciable force~~ **10** *to parts liable to be touched accidentally in normal use by a fork or similar pointed object. It shall not be possible to touch* ***live parts****.*

8.1.3 *Addition:*

Test probe 19 of IEC 61032 is not applied.

*Test probe 41 of IEC 61032 is only applied to **visibly glowing heating elements** situated at the top of an **oven** or grilling compartment.*

9 Starting of motor-operated appliances

This clause of Part 1 is not applicable.

10 Power input and current

This clause of Part 1 is applicable except as follows.

10.1 *Addition:*

~~*Socket-outlets are not loaded during the test, however the power input is considered to be 1 kW per socket-outlet.*~~ **11**

*For **ovens** and **steam ovens**, the heat up time to obtain the centre cavity temperature specified for **normal operation** is a representative period.*

*For **griddles**, the heat up time to obtain the surface temperature specified for **normal operation** is a representative period.*

*For **grills** and warming drawers, the heat up period for **normal operation** is a representative period.*

*For **hobs**, the heat up time until the water boils with the controls adjusted to their highest setting is a representative period.*

*For **induction hob elements** and **induction wok elements**, the heat up time for the oil to reach a temperature of 180 °C ± 4 °C with the controls adjusted to their highest setting is a representative period. If the power input is reduced during the heat up time for the oil to reach a temperature of 180 °C ± 4 °C then the representative period is taken as the time until the first reduction of the power input.*

*The power input of **induction hob elements** and **induction wok elements** is measured for each induction generator unit separately and the tolerances for **motor-operated appliances** apply.*

10.2 *Addition:*

~~*Socket-outlets are not loaded during the test, however the current is considered to be 1 kW divided by the **rated voltage**.*~~ **12**

*For **ovens** and **steam ovens**, the heat up time to obtain the centre cavity temperature specified for **normal operation** is a representative period.*

*For **griddles**, the heat up time to obtain the surface temperature specified for **normal operation** is a representative period.*

*For **grills** and warming drawers, the heat up time for **normal operation** is a representative period.*

*For **hobs**, the heat up time until the water boils with the controls adjusted to their highest setting is a representative period.*

*For **induction hob elements** and **induction wok elements**, the heat up time for the oil to reach a temperature of 180 °C ± 4 °C with the controls adjusted to their highest setting is a representative period. If the current is reduced during the heat up time for the oil to reach a temperature of 180 °C ± 4 °C then the representative period is taken as the time until the first reduction of the current.*

*The current of **induction hob elements** and **induction wok elements** is measured for each induction generator unit separately and the tolerances for **motor-operated appliances** apply.*

11 Heating

This clause of Part 1 is applicable except as follows.

11.1 *Addition:*

*For **cooking ranges** and **ovens**, compliance is also checked by the test of 11.101.*

11.2 *Addition:*

*For appliances intended to stand on the floor, a closed rectangular box is placed as close as possible to the free side of the appliance and against the rear wall of the test corner. The box is made of dull black painted plywood 10 mm thick. It has a width of 150 mm, its top being level with the **hob surface** and its front flush with the front surface of the appliance.*

*Appliances having a lid to cover the **hob surface** are tested with the lid open. Lids that can be removed without the aid of a **tool** are removed, unless the **hob element** cannot operate with the lid removed.*

***Temperature-sensing probes** are placed in the **oven** in any position likely to occur during normal use. They are not connected to control the **oven** temperature. The test for **pyrolytic self-cleaning ovens** is carried out with **temperature-sensing probes** in position, unless otherwise specified in the instructions.*

***Detachable parts** that are intended to be used to reduce the temperature of control panels are removed. A retractable part is not a **detachable part**.*

11.3 *Addition:*

*The temperature of the centre of the **oven** and the temperature rises of the surface of the rectangular box are determined using the thermocouples specified for the walls of the test corner.*

*If the magnetic field of an **induction hob element** unduly influences the results, the temperature rises ~~can~~ may be determined using platinum resistances with twisted connecting wires or any equivalent means.*

~~*During the test of 11.101, if the front and side surfaces are flat, temperature rises are measured using the probe of Figure 104.*~~

~~*The probe is applied with a force of 4 N ± 1 N to the surface in such a way that the best possible contact between the probe and the surface is ensured. The probe is applied for a period of at least 5 min before the final temperature reading is taken.*~~

*During the test of 11.101, where the external **accessible surfaces** are suitably flat and access permits, the test probe of Figure 104 is used to measure the temperature rises of external **accessible surfaces**. The probe is applied with a force of 4 N ± 1 N to the surface in such a*

way that the best possible contact between the probe and the surface is ensured. The measurement is performed after a contact period of 30 s. **13**

The probe ~~can~~ may be held in place using a laboratory stand clamp or similar device.

~~For flat front and side surfaces,~~ Any measuring instrument giving the same results as the probe ~~can~~ may be used.

11.4 *Addition:*

***Induction hob elements** and **induction wok elements** are supplied separately and operated as specified for **motor-operated appliances**.*

***Cooking ranges** are operated at 1,15 **rated power input** under **normal operation**. The supply voltage is measured when the power input has stabilized. This voltage is used to supply the **heating units** of the **cooking range** during the tests.*

***Ovens** are operated at 1,15 times **rated power input** under **normal operation**. The supply voltage is measured during the heat up period. This voltage is used to supply the **heating units** of **ovens** during the tests.*

11.6 *Replacement:*

***Combined appliances** are operated as specified for **heating appliances**.*

*If the temperature rise limits are exceeded in appliances incorporating motors, transformers or **electronic circuits**, and the power input is lower than the **rated power input**, the test is repeated with the appliance supplied at 1,06 times **rated voltage**.*

11.7 *~~Replacement~~ Modification:*

Replace the first paragraph with the following: **14**

Appliances are operated for the duration specified in 11.7.101 to 11.7.106.

Replace the first dashed item of the third paragraph with the following:

– *the **battery** that has been **fully discharged** is charged while the appliance is operated as specified in 11.7.101 to 11.7.106 for 1 h, if allowed by the construction of the appliance.* **15**

Addition:

~~NOTE 101~~ *Steady conditions are considered to be established if the temperature does not rise by more than 1 K in 15 min.*

11.7.101 ***Induction hob elements** and **induction wok elements** are operated for 30 min. Other **hob elements** are operated for 60 min.*

11.7.102 ***Ovens** are operated for 60 min starting from the cold condition.*

*Lamps in **ovens** are not manually switched on.*

*If an appliance incorporates two **ovens** that can be energized simultaneously, they are tested together.*

Pyrolytic self-cleaning ovens *are also operated under the cleaning conditions specified in the instructions for the maximum time allowed by the control or until steady conditions are established, whichever is shorter. During this period, other* ***heating units*** *that can be energized are operated under* ***normal operation****.*

Ovens *provided with a rotating spit are also operated with the spit rotating for 60 min.*

11.7.103 ***Grills*** *are operated for 30 min. However,* ***grills*** *having means to reduce the power input are operated for 15 min with their controls adjusted to the highest setting and then for 15 min at a setting which reduces the average power input by approximately 50 %.*

Grills *provided with a rotating spit are also operated with the spit rotating for 60 min.*

11.7.104 ***Griddles*** *incorporating a thermal control are operated until steady conditions are established. Other* ***griddles*** *are operated for 30 min after the centre of the heating surface attains a temperature of 275 °C.*

11.7.105 *Warming drawers and similar compartments are operated for 30 min.*

11.7.106 *For* ***cooking ranges****, combinations of* ***heating units*** *that can be energized simultaneously are tested together for the durations specified in 11.7.101 to 11.7.105,* ***heating units*** *that have a test duration of 30 min being operated for the last 30 min of the test.*

NOTE For example, the sequence of tests for a **cooking range** incorporating a **grill** in the **oven** and a rotating spit is as follows:

– operation of the **hob** and **oven** and, if possible, with the spit rotating, for 60 min;
– cooling down to approximately **room temperature**;
– operation of the **hob** for 60 min, the grill being operated simultaneously for the last 30 min;
– cooling down to approximately **room temperature**;
– operation of the **hob** and **grill** with the spit rotating, for 60 min.

~~**11.7.107** *If the appliance incorporates a socket-outlet, an appropriate plug identified in IEC/TR 60083 is engaged. The plug is connected to a 1 kW resistive load by means of an ordinary polyvinyl chloride sheathed flexible cord (code designation 60227 IEC 53) having a cross-sectional area of 0,75 mm^2. The temperature rise of the plug is determined during the last 30 min of the test.*~~ **16**

11.8 *Modification:*

Instead of the temperature rises stated in Table 3 for wood, the following applies.

Temperature rises of the floor and walls of the test corner, wooden cabinets and the rectangular box shall not exceed the following values:

– *appliances intended to stand on a table*	*65 K*
– ***grills***	*75 K*
– *other appliances*	*70 K*

Addition:

The temperature rise of parts of the underside of ***built-in hobs****, accessible to a 75 mm diameter probe having a hemispherical end, shall not exceed 70 K unless the instructions specify that a board is to be installed underneath the* ***hob****.*

~~*Addition:*~~

The temperature rise of handles of inner glass doors, grill pans, ***temperature-sensing probes*** *and rotating parts in* ***ovens*** *or* ***grills*** *is not limited.*

During the additional test for ***pyrolytic self-cleaning ovens****, the temperature rise of the surface of knobs, handles and levers shall not exceed the following values:*

– *metal*	*55 K*
– *porcelain or vitreous material*	*65 K*
– *moulded material, rubber or wood*	*80 K*

The temperature rises of knobs, handles and levers associated with functions that cannot be performed during the cleaning operation are not determined.

The temperature rise limits of motors, transformers and components of ***electronic circuits****, including parts directly influenced by them, may be exceeded when the appliance is operated at 1,15 times* ***rated power input****.*

The temperature rise of the plug, measured 2 mm below the surface at the centre of the engagement face, shall not exceed 45 K.

11.101 ***Cooking ranges*** *and* ***ovens*** *are placed as specified in 11.2. However, appliances intended to stand on the floor are positioned with their backs against one of the walls of the test corner and away from the other wall. A rectangular box as specified in 11.2 is placed against one of the sides of the appliance. The appliance is supplied at* ***rated voltage*** *and operated under* ***normal operation*** *except for the temperature setting.*

All ***heating units****, other than* ***grills****, that can be connected to the supply mains at the same time during normal use are switched on.*

Pressure steam ovens *and* ***atmospheric steam ovens*** *are operated in each steam mode with controls adjusted to their highest setting. Other* ***ovens*** *are operated without accessories other than a grid shelf that is positioned on the shelf supports closest to the vertical centre of the* ***oven****. The mean temperature in the centre of the* ***oven*** *is maintained at 200 °C ± 4 °C.*

However, if the ***oven*** *is a* ***pyrolytic self-cleaning oven****, it is operated under the cleaning conditions in accordance with 11.7.102.*

Hob elements *and* ***griddles*** *are operated in accordance with 11.7.*

Warming drawers and similar compartments are operated with the controls adjusted to the highest setting.

Pressure steam ovens *and* ***atmospheric steam ovens*** *are operated 30 min. Other appliances are operated for 60 min or until steady conditions are established, whichever is shorter.*

Temperature rises are not measured on:

– *surfaces that are inaccessible to a 75 mm diameter probe having a hemispherical end, unless they are protected by a* ***detachable guard****;*

– *surfaces of* ***cooking ranges*** *that are within 25 mm below the level of the* ***hob surface*** *or are above the* ***hob surface****;*

– *small parts such as* ***oven*** *vents, hinges and trim where the width of the* ***accessible surface*** *is less than 10 mm;*

– *surfaces within 10 mm of the edge of the* ***oven*** *door.*

During the test, the temperature rise of surfaces shall not exceed the values specified in Table 102~~, Table 103 or Table 104 as appropriate~~. **17**

~~Table 102 – Temperature rise limits for accessible surfaces option 1~~

~~Surface~~	~~Temperature rise[c] K~~			
	~~Parts situated not more than 850 mm above the floor after installation.~~		~~Parts situated more than 850 mm above the floor after installation~~	
	~~Front surfaces of oven doors~~	~~Other surfaces~~	~~Front surfaces of oven doors~~	~~Other surfaces~~
~~Bare metal~~	~~33~~	~~42~~	~~45~~	~~45~~
~~Coated metal[b]~~	~~37~~	~~49~~	~~55~~	~~55~~
~~Glass and ceramic~~	~~46~~	~~56~~	~~60~~	~~60~~
~~Plastic having a thickness exceeding 0,1 mm[a]~~	~~51~~	~~62~~	~~65~~	~~65~~

~~[a] The temperature rise limit specified for plastic having a thickness exceeding 0,1 mm also applies for plastic material having a metal finish of thickness less than 0,1 mm.~~

~~[b] Metal is considered coated when a coating having a minimum thickness of 90 µm made by enamel or non-substantially plastic coating is used.~~

~~[c] The temperature rise of parts of **pyrolytic self-cleaning ovens**, operating under cleaning conditions regardless of height above the floor, are 20 K in excess of the temperature rise specified for parts situated more than 850 mm above the floor after installation.~~

~~Table 103 – Temperature rise limits for accessible surfaces option 2~~

~~Surface[b]~~	~~Temperature rise[d] K~~			
	~~Parts situated not more than 850 mm above the floor after installation.~~		~~Parts situated more than 850 mm above the floor after installation~~	
	~~Front surfaces of oven doors~~	~~Other surfaces~~	~~Front surfaces of oven doors~~	~~Other surfaces~~
~~Bare metal~~	~~40~~	~~45~~	~~45~~	~~45~~
~~Coated metal[c]~~	~~45~~	~~55~~	~~55~~	~~55~~
~~Glass and ceramic~~	~~55~~	~~60~~	~~60~~	~~60~~
~~Plastic having a thickness exceeding 0,1 mm[a]~~	~~60~~	~~65~~	~~65~~	~~65~~

~~[a] The temperature rise limit applies also for plastic material having a metal finish of thickness less than 0,1 mm.~~

~~[b] When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of the coated metal or of glass and ceramic material apply.~~

~~[c] Metal is considered coated when a coating having a minimum thickness of 90 µm made by enamel or non-substantially plastic coating is used.~~

~~[d] The temperature rise of parts of **pyrolytic self-cleaning ovens** operating under cleaning conditions, regardless of height above the floor, shall not be higher than the values specified for parts situated more than 850 mm above the floor after installation. If these values cannot be met, the temperature rise shall not be higher than twice these values. In this case symbol IEC 60417-5041 (2002-10) shall be marked with a height of at least 12mm. It shall be visible from the front of the appliance, when the appliance is in pyrolytic self-cleaning mode~~

~~**Table 104 – Temperature rise limits for accessible surfaces option 3**~~

~~Surface~~	~~Temperature rise K~~	
	~~Front surfaces of oven doors~~	~~Other surfaces~~
~~Metal and painted metal~~	~~45~~	~~60~~
~~Vitreous enamelled metal~~	~~50~~	~~65~~
~~Glass and ceramic~~	~~60~~	~~80~~
~~Plastic having a thickness exceeding 0,4 mm[b]~~	~~80~~	~~100[a]~~
~~[a] The temperature rise limit of 100 K also applies for plastic material having a metal finish of thickness less than 0,1 mm.~~ ~~[b] When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of the supporting material apply.~~		

~~NOTE Table 102 is applicable in Australia, Belgium, Denmark and New Zealand.~~

~~Table 103 is applicable in Czech Republic, Finland Germany, Netherlands, Norway, Sweden, Switzerland, Turkey and United Kingdom.~~

~~Table 104 is applicable for other countries.~~

Table 102 – Maximum temperature rises for specified external accessible surfaces under normal operating conditions

Surface	Temperature rises of accessible external surfaces [a] K	
	Parts situated not more than 850 mm above the floor after installation	Parts situated more than 850 mm above the floor after installation
Bare metal	38	42
Coated metal [b]	42	49
Glass and ceramic	51	56
Plastic having a thickness exceeding 0,4 mm [c, d]	58	62
NOTE The temperature rise limits of handles, knobs, grips, keyboards, keypads and similar parts are specified in Table 3.		
[a] The temperature rise of parts of **pyrolytic self-cleaning ovens**, operating under cleaning conditions regardless of height above the floor, are 20 K in excess of the temperature rise specified for parts situated more than 850 mm above the floor after installation. [b] Metal is considered coated when a coating having a minimum thickness of 90 µm made of enamel, powder or non-substantially plastic coating is used. [c] The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm. [d] When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of the coated metal or of glass and ceramic material apply.		

*If the **oven** door is protected by a guard, the temperature rise limits in Table 102~~, Table 103 or Table 104, as appropriate, specified for the front surface of **oven** doors~~ apply to the guard. However, if the guard is a **detachable guard**, the temperature rise limits in Table 102~~, Table 103 or Table 104, as appropriate, specified for other surfaces~~ specified for parts situated more than 850 mm above the floor after installation apply to parts of the **oven** door protected by the guard.*

*For **ovens** intended to be used on a working surface, the temperature rise limits Table 102 specified for parts situated more than 850 mm above the floor apply.*

*If the **oven** can be used for grilling and the instructions state that for grilling the door should be closed, the test is repeated but with the **oven** operating in the grilling mode with the controls set according to the instructions. The **grill** is operated for 30 min in accordance with 11.7.103. However, if the **oven** has a rotating spit, the duration of the test is 60 min, with the controls set to give the most unfavourable conditions specified in the instructions. The measurements are only carried out on ~~surfaces for which temperature rises for~~ the front surface of **oven** doors ~~apply~~.*

NOTE In Australia and New Zealand Table 102 is replaced by Table 103.

Table 103 (Australia and New Zealand) 18 – Maximum temperature rises for specified external accessible surfaces under normal operating conditions

Surface	Temperature rises of accessible external surfaces [a] K		
	Parts situated not more than 850 mm above the floor after installation		Parts situated more than 850 mm above the floor after installation
	Front surfaces of oven doors	Other surfaces	
Bare metal	33	42	45
Coated metal [b]	37	49	55
Glass and ceramic	46	56	60
Plastic having a thickness exceeding 0,4 mm [c, d]	51	62	65
NOTE The temperature rise limits of handles, knobs, grips, keyboards, keypads and similar parts are specified in Table 3.			

[a] The temperature rise of parts of **pyrolytic self-cleaning ovens**, operating under cleaning conditions regardless of height above the floor, are 20 K in excess of the temperature rise specified for parts situated more than 850 mm above the floor after installation.

[b] Metal is considered coated when a coating having a minimum thickness of 90 µm made of enamel, powder or non-substantially plastic coating is used.

[c] The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm.

[d] When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of the coated metal or of glass and ceramic material apply.

12 ~~Void~~ Charging of metal-ion batteries

This clause of Part 1 is applicable. 19

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable except as follows.

13.1 *Addition:*

*If a **grill** is incorporated in the **oven**, either the **oven** or the **grill** is operated, whichever is more unfavourable.*

*For **hobs**, the tests are carried out with a vessel filled as specified in 3.1.9.101 placed on each **cooking zone**.*

Induction hob elements *and* ***induction wok elements*** *are tested as specified for* ***motor-operated appliances****.*

13.2 *Modification:*

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

– *for* ***stationary class I appliances*** *with heating elements that are* ***detachable parts*** *or can be switched off separately*	*1 mA, or 1 mA per kW power input for each element with a limit of 10 mA, whichever is higher. If the appliance has more than three* ***heating units****, only 75 % of the measured leakage current is taken into account;*
– *for other* ***stationary class I appliances***	*1 mA, or 1 mA per kW* ***rated power input*** *with a limit of 10 mA, whichever is higher.*

Addition:

After the appliance has been operated for the duration specified in 11.7, the controls are adjusted to their highest setting and the leakage current is measured within 10 s of ~~it~~ attaining its highest value.

~~*For* ***stationary class I appliances****, the leakage current shall not exceed the following values:*~~

~~– *for appliances with heating elements that are detachable or can be switched off separately*~~	~~*1 mA, or 1 mA per kW power input for each element with a limit of 10 mA, whichever is higher. If the appliance has more than three* ***heating units****, only 75 % of the measured leakage current is taken into account;*~~
~~– *for other appliances*~~	~~*1 mA, or 1 mA per kW* ***rated power input*** *with a limit of 10 mA, whichever is higher.*~~

If there is earthed metal between ***live parts*** *and the surface of glass-ceramic or similar material of* ***hobs****, the leakage current is measured between* ***live parts*** *and each vessel in turn connected to the earthed metal. If there is no earthed metal, the peak value of the leakage current, measured, using the circuit described in IEC 60990:2016, Figure 4, between* ***live parts*** *and each of the vessels in turn, shall not exceed 0,35 mA.*

13.3 *Addition:*

If there is earthed metal between ***live parts*** *and the surface of glass-ceramic or similar material of* ***hobs****, a test voltage of 1 000 V is applied between* ***live parts*** *and all the vessels connected to the earthed metal. If there is no earthed metal, a test voltage of 3 000 V is applied between* ***live parts*** *and the vessels.*

14 Transient overvoltages

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable except as follows.

15.2 *Addition:*

Cooking ranges *and* ***hobs*** *are positioned so that the* ***hob surface*** *is horizontal. A vessel having the largest diameter shown in Figure 101 that does not exceed the diameter of the* ***cooking zone****, is completely filled with the spillage solution and positioned centrally over the* ***cooking zone****. A further quantity of 0,5 l of the spillage solution is poured steadily into the vessel over a period of 15 s. The test is carried out on each* ***cooking zone*** *in turn, after removing any residual spillage solution from the appliance.*

For ***hob elements*** *incorporating a switch or a thermal control, 0,02 l of the spillage solution is poured over the* ***hob element*** *so that it flows over the switch or control. A vessel is then placed on the* ***hob element*** *to depress any movable part. If controls are mounted in the* ***hob surface****, 0,5 l of the spillage solution is poured over them in a period of 15 s.*

For ***hobs*** *having ventilating openings in the* ***hob surface****, 0,2 l of the spillage solution is poured steadily through a funnel onto the ventilating openings. The funnel has an outlet diameter of 8 mm and is positioned vertically with the outlet 200 mm above the* ***hob surface****. The funnel is positioned above the ventilating openings so that the spillage solution enters the appliance in the most unfavourable way.*

If the opening is protected, the funnel is positioned so that the spillage solution falls onto the ***hob surface*** *as close as possible to the opening.*

Care is to be taken to ensure that the spillage solution is not poured over controls located close to ventilating openings.

For ***ovens*** *and* ***grills****, 0,5 l of the spillage solution is poured over the floor of the* ***oven*** *or grilling compartment.*

For appliances having a drip tray or similar receptacle, the receptacle is filled with the spillage solution. A further quantity of the spillage solution, equal to 0,01 l per 100 cm^2 of the area of the top surface of the receptacle, is poured onto the receptacle through openings in the ***hob surface****. However, the total quantity of spillage solution shall not exceed 3 l.*

For ***hobs*** *having a lid, 0,5 l of the spillage solution is poured uniformly over the closed lid. When the spillage solution has run off, the surface is dried and a further 0,125 l of the spillage solution is poured steadily from a height of approximately 50 mm onto the centre of the lid over a period of 15 s. The lid is then opened as in normal use.*

Hobs *with controls mounted below the* ***hob surface*** *and* ***built-in ovens*** *that are intended for use installed under work surfaces shall be subjected to a spillage test with 0,5 l of the spillage solution. They shall be installed according to the manufacturer's instructions except that the front surface of the* ***oven*** *(excluding control knobs, handles) shall align with front edge of a 30 mm thick wooden work surface with a square front edge, see Figure 105. The spillage solution shall be poured on the work surface at the area which gives the most unfavourable conditions representing the pouring likely to occur, so that the spillage solution flows down the front surface of the* ***oven*** *over controls, joints, vents and similar openings. If necessary, the test is repeated until all different controls or gaps are covered by the spillage test. The appliance is dried between each test.*

The test is performed as follows:

A bottle with a shape similar to the one in Figure 107 and a cap is filled with 0,5 l of the spillage solution.

The cap of the bottle shall have a hole of 8 mm diameter, placed off-centre according to Figure 106. The bottle shall also have a hole of 8 mm diameter near the bottle base (see Figure 107) to equalize the liquid pressure.

Other suitable containers may be used provided the spillage solution amount is poured over the appliance under test in the same manner.

The hole in the cap of the bottle is put on the horizontal work surface at approximately 80 mm horizontal distance with respect to the front of the ***oven****. The inclination of the bottle shall be higher than 30° and lower than 45°. The lower part of the bottle hole in the cap shall be in contact with the work surface, with the hole in the cap placed down closest to the surface. See Figure 108.*

~~NOTE 101 The intention of the inclination and distance is avoiding the spillage "jumping" over the front of the **oven**.~~

~~NOTE 102 When using holes of 8 mm diameter, the specified solution amount is spilled in about 15 s.~~

When the 0,5 l of spillage solution has been poured, the remaining solution on the work surface is pushed towards the front so that the remaining solution spills homogeneously over the front with a suitably flat means.

Steam generators intended to be connected to the water mains are supplied at ***rated water pressure****. Control devices for the supply of water are held open. If more than one device is used, they are tested in turn. Water is allowed to flow for 1 min after the first evidence of overflow, unless the inflow stops automatically.*

15.101 Temperature-sensing probes shall be constructed so that their insulation is not affected by water.

Compliance is checked by the following test.

The probe is completely immersed in water containing approximately 1 % NaCl and having a temperature of 20 °C ± 5 °C. The water is heated to the boiling point in approximately 15 min. The probe is then removed from the boiling water and immersed in water having a temperature of 20 °C ± 5 °C for 30 min.

Detachable temperature-sensing probes *are not connected to the appliance for this test.* ***Non-detachable temperature-sensing probes*** *are tested in the* ***oven****, the probe being immersed as much as possible.*

This procedure is carried out five times after which the probe is removed from the water. All traces of liquid are then removed from the surface.

The probe shall then withstand the leakage current test of 16.2.

16 Leakage current and electric strength

This clause of Part 1 is applicable except as follows.

16.1 *Addition:*

*For **hobs**, the tests are carried out with a vessel filled as specified in 3.1.9.101 placed on each **cooking zone**.*

***Induction hob elements** and **induction wok elements** are tested as specified for **motor-operated appliances**.*

16.2 *Modification:*

~~*For **stationary class I appliances**, the leakage current shall not exceed the following values:*~~

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

– *for **stationary class I appliances** with heating elements that are **detachable parts** or can be switched off separately*	*1 mA, or 1 mA per kW power input for each element with a limit of 10 mA, whichever is higher. If the appliance has more than three **heating units**, only 75 % of the measured leakage current is taken into account;*
– *for other **stationary class I appliances***	*1 mA, or 1 mA per kW **rated power input** with a maximum of 10 mA, whichever is higher.*

Addition:

~~NOTE 101~~ *If the **oven** incorporates a **grill**, or if the appliance incorporates a means to limit the total power input, only the leakage current of those elements that can be switched on at the same time is taken into consideration.*

*If there is earthed metal between **live parts** and the surface of glass-ceramic or similar material of **hobs**, the leakage current is measured between **live parts** and each vessel in turn connected to the earthed metal. If there is no earthed metal, the leakage current, measured between **live parts** and each of the vessels in turn, shall not exceed 0,25 mA.*

16.3 *Addition:*

*If there is earthed metal between **live parts** and the surface of glass-ceramic or similar material of **hobs**, a test voltage of 1 250 V is applied between **live parts** and all the vessels connected to the earthed metal. If there is no earthed metal, a test voltage of 3 000 V is applied between **live parts** and the vessels.*

17 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable.

18 Endurance

This clause of Part 1 is not applicable.

19 Abnormal operation

This clause of Part 1 is applicable except as follows.

19.1 *Addition:*

*For **induction hobs,** compliance is also checked by the tests of 19.101, 19.102 and 19.103, but 19.2, 19.3 and 19.4 are not applicable. In addition, 19.101 is not applicable to **induction wok elements**.*

***Temperature-sensing probes** are placed in the **oven** in any position likely to occur during normal use except that they are not connected to control the **oven** temperature.*

19.2 *Addition:*

***Hob elements** are operated without a vessel, **pan detectors** being rendered inoperative. **Oven** doors are open or closed, whichever is more unfavourable. **Hob** lids are closed unless the **hob elements** are interlocked with the lid or an indicator lamp, other than a lamp that is switched on and off by a **thermostat** or energy regulator, shows that a **hob element** is switched on.*

~~NOTE 101 A lamp that is switched on and off by a **thermostat** or energy regulator does not show that the **hob element** is switched on.~~

*For appliances incorporating more than one **heating unit**, the test is only carried out with the **heating unit** resulting in the most unfavourable conditions, its control being adjusted to the highest setting. If the appliance incorporates an **oven** without an indicator lamp to show that the **oven** is switched on, the **oven** is also operated, its control being adjusted to the highest setting.*

~~NOTE 102~~ *A lamp used for illuminating the **oven**, visible through the door and which is automatically switched on and off together with the **oven**, is considered to be an indicator lamp.*

***Pyrolytic self-cleaning ovens** are also operated under cleaning conditions, motors that operate during cleaning, such as fan or timer motors, being switched off or disconnected in turn.*

~~NOTE 103 Examples are motors of fans and filters.~~

***Steam ovens** are operated without water.*

*Doors of separate grill compartments incorporated in a **cooking range** are open or closed, whichever is more unfavourable.*

19.4 *Addition:*

***Pressure regulators** of **pressure steam ovens** are rendered inoperative together with each **protective device** in turn.*

19.9 Not applicable.

19.11.4 *Addition:*

*During the test of the stand-by-mode, a suitable vessel is placed on the **cooking zone** if a **pan detector** is incorporated.*

19.13 *Addition:*

The temperature rise limit of 150 K also applies to wooden cabinets and rectangular boxes.

*The temperature in the centre of **ovens** during the test of 19.4 shall not exceed 425 °C whenever the **oven** door can be opened.*

The temperature rise of the oil during the tests of 19.102 shall not exceed 270 K.

*The temperature rise of the windings of **induction hob elements** and **induction wok elements** shall not exceed the values specified in 19.7.*

*The electric strength test of **induction hob elements** and **induction wok elements** is carried out immediately after switching off the appliance.*

*Glass in **oven** doors shall not be damaged.*

*It shall be possible to switch off any energized **hob element** during the test of 19.14.*

19.101 ***Induction hob elements** are supplied at **rated voltage** and operated with a steel disc placed on the centre of the **cooking zone**. The disc has a thickness of 6 mm and the smallest diameter, rounded up to the nearest centimetre, that allows the **hob element** to operate.*

19.102 ***Induction hob elements** and **induction wok elements** are supplied at **rated voltage** and operated under **normal operation** but with thermal controls short-circuited.*

*If the thermal control is an **electronic circuit** using an NTC sensor, an additional test is carried out with the NTC replaced by a resistor with a value equal to the middle of the range of operation of the NTC in this circuit.* **20**

NOTE This additional test satisfies the requirement "When it is stated that a control is short-circuited, it may be rendered inoperative instead." of 19.1 of Part 1.

19.103 ***Induction hob elements** and **induction wok elements** are operated under the conditions of Clause 11 with empty vessels, the controls being adjusted to the highest setting.*

*If an **induction hob element** or an **induction wok element** has a metallic lid, it is then tested by being operated under the conditions of Clause 11 without vessels, the controls being adjusted to the highest setting. A force of 30 N is applied to the closed lid in the most unfavourable place by means of test probe B of IEC 61032.*

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.2 *Addition:*

For parts of appliances situated not more than 850 mm above the floor after installation or in normal use, in addition to the use of test probe 18, test probe 19 of IEC 61032 is also applied wherever test probe 18 is used and with the same test conditions used for test probe 18. During the tests with test probe 19, the appliance shall be fully assembled as in normal use with any door closed. **21**

20.101 **Cooking ranges** and **ovens** shall have adequate stability when the open door is subjected to a load.

Compliance is checked by the following test and by the test of 20.102 if relevant.

Appliances with horizontally hinged doors are placed on a horizontal surface and a mass is placed on the centre of the open door. For non-rectangular doors, the mass is placed on the part farthest from the hinge where it could be placed in normal use.

For appliances normally placed on the floor, the mass is

– *22,5 kg, for **oven** doors;*
– *7 kg, for other doors.*

For appliances normally placed on a table, the mass is 7 kg.

For appliances normally placed on the floor and having vertically hinged doors, a mass of 15 kg is placed in the most unfavourable position on the open door.

For an appliance having more than one door, the test is carried out on each door separately.

*The **oven** shelves are placed in the most unfavourable position.*

***Cooking ranges** are tested without fitting any stabilizing means that are specified in the instructions for installation.*

*For **cooking ranges** incorporating a storage compartment adjacent to the **oven** and in which the shelves are pulled out simultaneously, the shelves are also loaded. The shelves are placed in the most unfavourable position and loaded with a uniformly distributed mass. The mass in grams is equal to the area of the shelf in square centimetres multiplied by*

– *7,5, if the free height above the shelf does not exceed 20 cm;*
– *15, if the free height above the shelf exceeds 20 cm.*

The appliance shall not tilt.

Damage and deformation of doors and hinges are ignored.

20.102 *For **cooking ranges** that are normally placed on the floor and that have horizontally hinged **oven** doors with a hinge height of less than 430 mm from the floor, the test of 20.101 is repeated, except that:*

– *the **cooking range** is fitted with the stabilizing means, if any, specified in the instructions for installation;*
– *the mass of the load on the **oven** doors is increased to 50 kg, or the mass of 22,5 kg is placed at the centre of the outer edge of the **oven** door, whichever gives the most unfavourable results.*

*The **cooking range** shall not tilt.*

Damage and deformation of doors and hinges are ignored.

21 Mechanical strength

This clause of Part 1 is applicable except as follows.

21.1 *Addition:*

If the appliance has glass doors, three blows are applied to the centre of the glass, the door being in the closed position. If the door has horizontal hinges, the blows are also applied to the inside of the door when it is in the open position. However, additional support is not provided for the door in the open position.

The glass shall not fracture.

*If the appliance incorporates **visibly glowing heating elements** enclosed in glass tubes, the blows are applied to the tubes as mounted in the appliance if they are*

– *located at the top of the **oven** and accessible to test probe 41 of IEC 61032;*
– *located elsewhere in the **oven** and accessible to test probe B of IEC 61032.*

This test is carried out without removing any guard of the heating elements.

*For **hob surfaces** of glass-ceramic or similar material, three blows are applied to parts of the surfaces that are not exposed to impacts during the test of 21.102, the impact energy being increased to 0,70 J ± 0,05 J. The blows are not applied to surfaces within 20 mm of knobs.*

*If the **hob surface** comprises a single piece of material except for the outer frame, this test is not carried out.*

*After the test, **temperature-sensing probes** are subjected to one cycle of the procedure described in 15.101 and shall then withstand the leakage current test of 16.2.*

21.101 **Oven** shelves and their supports shall have adequate mechanical strength.

Compliance is checked by the following test.

*A vessel filled with sand or shot is placed on the **oven** shelf. The total mass in kilograms is equal to 220 times the volume of the useful **oven** space in cubic metres, or 24 kg, whichever is less.*

*The shelf, with the vessel placed centrally on it, is inserted into the **oven** and moved as close as possible to one of the side walls. It is left in this position for 1 min and then withdrawn. It is then reinserted, moved as close as possible to the other sidewall and left for 1 min.*

The test is repeated for each supporting position of the shelf. The shelf and supports shall show no distortion impairing their further use and the shelf shall not fall from the supports.

*The above tests are repeated with the mean temperature in the centre of the **oven** at 200 °C ± 4 °C before starting the test at each supporting position of the shelf.*

***Ovens** with withdrawable shelves fitted with stops or a rest position are then tested as follows.*

The shelves are fully extended to the maximum distance allowed by the stops or a rest position. An evenly distributed force as specified in ~~Table 105~~ Table 104 is applied to each shelf, at locations along the front edge of the shelf, using a vessel having side dimensions of ~~Table 105~~ Table 104, one side of the vessel being aligned along the front edge of the shelf.

Table ~~105~~ 104 – Test loads

Oven volume *l*	***Force*** *N*	***Side dimensions of vessels*** *mm*
20 ≤ volume ≤ 40	*50*	*160 × 160*
> 40	*80*	*200 × 200*

During this test, the shelf shall not tilt downwards by more than 6°.

21.102 **Hob surfaces** of glass-ceramic or similar material shall withstand the stresses liable to occur in normal use.

Compliance is checked by the following test.

*Each **hob element** is operated at **rated power input** with its control adjusted to the maximum setting. **Induction hob elements** and **induction wok elements** are operated as specified in Clause 11. When steady conditions are established, the **hob element** is switched off and a loaded vessel is dropped flat 10 times from a height of 150 mm onto the **cooking zone**.*

*For **hob elements** other than **induction wok elements**, the vessel has a flat copper or aluminium base over a diameter of 120 mm ± 10 mm, its edges being rounded with a radius of at least 10 mm. It is uniformly filled with at least 1,3 kg of sand or shot so that the total mass is 1,80 kg ± 0,01 kg. For **induction wok elements**, the vessel is the wok specified in 3.1.9.101. It is uniformly filled with sand or shot so that the total mass is 1,80 kg ± 0,01 kg.*

*After subjecting each **cooking zone** in turn to this impact, the vessel is removed and all **hob elements** are operated simultaneously until steady conditions are established.*

*A quantity of $1\ ^{+0,1}_{0}$ l of water having a temperature of 15 °C ± 5 °C and containing approximately 1 % NaCl is poured steadily over the **hob surface**. The appliance is then disconnected from the supply. After 15 min, all excess water is removed and the appliance allowed to cool to approximately **room temperature**. The same quantity of the saline solution is poured over the **hob surface** after which excess water is removed again.*

*The **hob surface** shall not crack and the appliance shall withstand the electric strength test of 16.3.*

21.103 Temperature-sensing probes shall be constructed so that they are not damaged when trapped in the **oven** door.

Compliance is checked by the following test.

*The probe is connected as in normal use and the sensing part or cord allowed to rest in any position likely to occur. The **oven** door is closed against the sensing part or cord and a force of 90 N is applied to the door in the most unfavourable place for 5 s.*

*The **oven** is not operated during this test.*

The probe shall then comply with 8.1, 15.101 and Clause 29.

21.104 Glass panels of horizontally hinged **oven** doors shall withstand the thermal shock liable to occur in normal use.

Compliance is checked by the following test.

The appliance is operated as specified in Clause 11. The door is then opened and 0,2 l of water having a temperature of 15 °C ± 5 °C is poured within 5 s onto the centre of the glass panel.

*The test is not carried out after the cleaning cycle of **pyrolytic self-cleaning ovens**.*

The glass shall not fracture.

22 Construction

This clause of Part 1 is applicable except as follows.

22.7 *Addition:*

*All **pressure regulators** and **pressure-relief devices** of **pressure steam ovens** are rendered inoperative and the door is closed. The pressure is gradually increased hydraulically to two times the **rated cooking pressure**. The container shall not rupture.*

22.40 *Addition:*

Hobs shall not be controlled by a **remote operation**. However, **remote automatic regulation systems** are allowed for **induction hobs**, if all of the following requirements are fulfilled:

1) the start of operation of **heating units** shall be manually confirmed at the appliance each time;
2) the delayed start is not allowed;
3) the **hob elements** may be switched off via **remote communication**. After switching off, the appliance shall confirm to the user through the remote **entity** that the **hob element** has been switched off;
4) controls and displays on the appliance shall indicate clearly to which **hob element** the **remote automatic regulation system** is assigned;
5) in case of loss of communication with sensors exceeding 20 s, the **hob elements** operating with a **remote automatic regulation system** shall be switched off;
6) if sensors are battery-operated, they shall be evaluated according to normative Annex B requirements;
7) sensors in the **remote automatic regulation system** shall be non-detachable from the vessel during operation unless specific sensor positioning does not impair compliance.

Compliance is checked by inspection, by the tests of normative Annex B for item 6) and by the tests in a), b) and c) in turn for item 7). Vessels shall not attain excessive temperatures during any of the tests.

***Induction hob elements** working with **remote automatic regulation systems** are tested with the following set up and supplied at **rated voltage**. The controls of these **cooking zones** are adjusted to their highest setting or the setting which gives the highest temperature. The **cooking zone** under test is set for remote automatic regulation.*

***Remote automatic regulation systems** are tested by using vessels according 3.1.9.101 but empty. In case of special accessories supplied with the appliance or recommended by the manufacturer, like vessels with integral sensors, these vessels are used for testing instead, and they are operated empty.*

The temperature rises measured in the centre of the inner bottom of the vessels are determined by means of thermocouples attached to disks of copper or brass, 15 mm in diameter and 1 mm thick as indicated in Figure 109.

a) ***Induction hob elements** working with **remote automatic regulation system** are operated with the empty vessel as specified above. A second vessel without **remote automatic regulation system** is filled with oil according to 3.1.9.101 and is placed on another cooking zone with the highest power adjusted to the highest setting or the setting which gives the highest temperature. The vessels are interchanged after the setting of the control function of the **remote automatic regulation system**;*

b) ***Induction hob elements** working with **remote automatic regulation system** are operated with the empty vessel as specified above. The empty vessel is placed 30 mm partly out of the **cooking zone** in the most unfavourable position. For **flexible induction cooking zones** the vessel is placed as described in Figure 110;*

NOTE 101 Maximum displacement of the vessel is limited by the outer contour of the **hob surface**.

*c) **Induction hob elements** working with **remote automatic regulation system** are operated with the empty vessel as specified above and with thermal controls including thermal controls of accessories like vessels with integral sensors short-circuited or rendered inoperative one at a time.*

All the above tests are continued until steady conditions are established and the temperature rise in all vessels shall not exceed 270 K.

*If compliance with the tests a) through c) relies upon the operation of an **electronic circuit**, the test is repeated under the following conditions applied separately:*

- *the fault conditions in a) to g) of 19.11.2 are applied one at a time to the **electronic circuit**;*
- *the electromagnetic phenomena tests of 19.11.4.1 to 19.11.4.7 are applied to the appliance. The tests are carried out after the circuit limiting the temperature has operated and with surge protective devices disconnected, unless they incorporate spark gaps.*

*If the **electronic circuit** is programmable, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of normative Annex R.* **22**

22.51 *Addition:*

~~It is not necessary to manually adjust to the setting for **remote operation** in order to switch the appliance off.~~

The start of a cleaning cycle of a **pyrolytic self-cleaning oven** shall be manually confirmed at the appliance. There shall be a visual indication on the appliance showing that the appliance is adjusted for **remote operation**. **23**

22.61 *Addition:*

If the **cooking range** is intended to be permanently connected to fixed wiring or is fitted with a polarised plug, the neutral pole of a polarised socket-outlet need not be protected, otherwise both poles shall be protected. A **non-detachable cover** is not required if fuses become accessible after opening a drawer or other compartment.

Socket-outlets incorporated in **cooking ranges** shall incorporate an earthing contact. **24**

22.62 *Addition:*

For **remote automatic regulation systems** in **induction hobs** using **remote communication** through **public networks**, normative Annex U always applies. **25**

22.101 **Hobs** shall be constructed so that **hob elements** are prevented from rotating about a vertical axis and are ~~adequately~~ supported in all positions of adjustment of their supports.

If a **hob element** is clamped by a nut on a central stud, an additional means is required to prevent its rotation.

Hobs with **detachable hob elements** shall be constructed so that damage is unlikely to occur while the **hob elements** are being removed or replaced.

Compliance is checked by inspection.

22.102 **Remote operation** and timers intended to delay the operation of a heating element shall not control a **grill**, unless the **grill** is thermally controlled, incorporated in an **oven** or

compartment and it is only possible to operate the **grill** with the door of the **oven** or compartment being closed. Delayed start timers shall not control a **hob element**.

*Compliance is checked by inspection. However, if monitoring of the door is by a programmable **electronic circuit**, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements in normative Annex R.*

22.103 **Oven** vents shall be constructed so that any moisture or grease discharged through them cannot affect **clearances** and **creepage distances** between **live parts** and other parts of the appliance.

Compliance is checked by inspection.

22.104 **Steam ovens** shall be constructed so that steam vents and ducts are unlikely to become blocked during normal use.

Pressure relief devices that operate during the tests of 19.4 and 22.7 shall have an inlet aperture at least 5 mm in diameter or 20 mm^2 in area with a width of at least 3 mm. The area of the aperture at the outlet shall not be less than that of the aperture at the inlet.

Compliance is checked by inspection and measurement.

22.105 **Built-in ovens** shall only be vented through the front, unless provision is made for venting through a duct.

Compliance is checked by inspection.

22.106 **Grills** shall be constructed so that grill pans can be easily positioned without jamming.

The grill pans shall not fall from the support when moved sideways.

Compliance is checked by inspection and by manual test.

22.107 **Pyrolytic self-cleaning ovens** shall switch off automatically at the end of the cleaning process and require a manual operation to start another cleaning cycle.

Compliance is checked by inspection.

22.108 **Pyrolytic self-cleaning ovens** shall be constructed so that opening and closing of the door does not impair the interlock system or damage the door seal.

Compliance is checked by the following test.

The door is opened at least 10 cm and is then closed by applying a force of 90 N to the handle. This operation is carried out 5 000 times. Every 1 000 cycles, the interlock system for the self-cleaning function is operated.

After the test, the interlock system shall be fit for further use and the door seal shall not be damaged.

22.109 **Pyrolytic self-cleaning ovens** shall incorporate an interlock so that access to the **oven** cannot be gained when the temperature in the centre of the **oven** exceeds 350 °C, even if the interlock is defective.

Compliance is checked by inspection and by the following test.

*The **oven** is supplied at **rated voltage** and operated under cleaning conditions, after which it is allowed to cool. While the temperature in the centre of the **oven** exceeds 350 °C, a force of 90 N is applied to levers and handles, and a torque of 2 Nm is applied to rotary knobs. It shall not be possible to open the door.*

The test is repeated with any defect that ~~may~~ can be expected in normal use applied to the interlock system, including breakage of a spring, a gravity-operated part failing to drop into position or interruption of the supply, only one defect being simulated at a time. Fault conditions applied during the tests of Clause 19 are not repeated.

~~NOTE Examples of defects are the breakage of a spring, or a gravity-operated part failing to drop into position.~~

22.110 Pyrolytic self-cleaning ovens shall be constructed so that ignitable gases cannot be discharged through vents during the cleaning process.

Compliance is checked by the following test.

*A mixture of 30 g of gravy that consists of two-thirds by mass of beef extract and one-third water, and 15 g of hydrogenated oil shortening is spread evenly over the interior of the **oven**, including the door. The **oven** is operated for 3 h at the maximum setting of the **thermostat**.*

*The **oven** is then operated under cleaning conditions and attempts are made to ignite gases that ~~may~~ can be discharged through vents by bursts of sparks. The sparks are approximately 3 mm long, each spark having an energy of at least 0,5 J.*

*The sparks are applied when the temperature in the centre of the **oven** reaches 300 °C and at each subsequent temperature rise of 50 K. The electrodes used to produce the sparks are moved in and around the vents through which gases ~~may~~ can be discharged.*

There shall be no continuous burning of gases.

*If the **oven** incorporates a heating element intended to eliminate smoke, the test is repeated with this heating element disconnected if the temperature in the centre of the **oven** exceeds 450 °C under cleaning conditions.*

22.111 Pyrolytic self-cleaning ovens shall be constructed so that there is no risk of emission of flames during the cleaning process.

Compliance is checked by the following test.

*A suitable vessel containing 100 g of salt-free butter is placed on the centre of the **oven** floor.*

The electrodes of a spark generator are positioned approximately 7,5 cm above the surface of the butter.

*The **oven** is then operated under cleaning conditions and bursts of sparks are produced. The sparks are approximately 3 mm long, each spark having an energy of at least 0,5 J. The sparks are generated when the temperature in the centre of the **oven** reaches 300 °C and at each subsequent temperature rise of 50 K.*

There shall be no emission of flames through door seals, vents or other openings.

22.112 Hobs shall be constructed so that hinged lids cannot close accidentally.

Compliance is checked by inspection and by manual test.

This requirement is not applicable if the hinge incorporates a click stop or similar means, or if the lid can be opened through an angle of at least 100°, when the appliance is placed against a wall.

22.113 **Hobs** shall be constructed so that inadvertent operation of **touch controls** is unlikely if this could give rise to a hazardous situation due to

– spillage of liquids, including that caused by a vessel boiling over;

– a damp cloth placed on the **touch control** panel.

*Compliance is checked by the following test, the appliance being supplied at **rated voltage**. The test is carried out with each **hob element** energized in turn and then without energizing any **hob elements**.*

*~~Sufficient~~ A quantity water to completely cover the **touch control** panel to a depth not exceeding 2 mm, with a minimum of 140 ml, is poured steadily over the **touch control** panel so that bridging occurs between combinations of touch pads.*

*A white cloth having a mass between 140 g/m^2 and 170 g/m^2, and dimensions approximately 400 mm × 400 mm, is folded four times into a square pad, saturated with water and placed over the **touch control** panel in any position without touching any vessel or **cooking zone**.* **26**

In case of doubt, different coloured cloths can be used.

*There shall be no operation of any **hob element** for longer than 10 s.*

*During the test, it shall be possible to switch off the energized **hob element** by operating the **touch controls**, unless it switches off automatically.*

22.114 **Hobs** having **touch controls** shall require at least two manual operations to switch on a **hob element** but only one operation to switch it off. However, additional **hob elements** may be switched on by a single manual operation. In this case, 1 min after all the **hob elements** have been switched off, two manual operations are required to re-energize one **hob element**. Touching the contact surface at the same point twice is not considered to be two manual operations.

Hobs having **touch controls** shall incorporate visual means to indicate when each **hob element** is energized.

Compliance is checked by inspection and by manual test.

22.115 **Induction hob elements** and **induction wok elements**, and other **hob elements** incorporating a **pan detector**, shall be constructed so that the **hob element** can only be operated when a vessel is placed on the **cooking zone**.

*Compliance is checked by the following test, the appliance being supplied at **rated voltage**.*

*An iron bar 2 mm thick having dimensions approximately 100 mm × 20 mm is placed in the most unfavourable position on each **cooking zone** in turn. The controls are adjusted to their highest setting.*

*For **induction hob elements** and **induction wok elements**, the temperature rise of the bar shall not exceed 35 K. Other **hob elements** shall not operate.*

22.116 **Hob elements** incorporating a **pan detector** shall be constructed so that the **hob element** is not switched on by the vessel if it has been removed for more than 10 min.

Compliance is checked by manual test.

22.117 In appliances incorporating a **pan detector**, a visual means shall indicate when the control for the **hob element** is not switched to the **off position**.

Compliance is checked by inspection.

22.118 It shall not be possible to operate a **grill** while the plug of a **supply cord** is engaged in a socket-outlet located directly above the door.

Compliance is checked by inspection and by manual test.

22.119 Cooking ranges incorporating a retractable deflector to prevent excessive temperatures on control knobs shall be constructed so that the user is unlikely to touch hot surfaces of the deflector when operating the controls.

Compliance is checked by measuring the distance between the deflector in its extended position and that part of the control knob touched in normal use. It shall be at least 25 mm, or the temperature rise of those parts within 25 mm of the knob shall not exceed the limits for handles, knobs, grips and similar parts held for short periods only, as specified in Table 3.

22.120 Outer glass panels of **oven** doors and glass in hinged lids of **hobs** shall be made from

– glass that breaks into small pieces when it fractures; or
– glass that is not released or dropped from its normal position when broken.

For glass that breaks into small pieces when it fractures, compliance is checked by the following test which is performed on two samples.

Frames or other parts attached to the glass panel to be tested are removed and the glass is placed on a rigid horizontal flat surface.

~~NOTE~~ *The edges of the sample to be tested are contained within a frame of adhesive tape in such a manner that the broken pieces remain in place after breakage but without hindering expansion of the sample.*

The sample under test is broken by means of a test punch having a head with a mass of 75 g ± 5 g and a conical tungsten carbide tip with an angle of 60° ± 2°. The punch shall be positioned approximately 13 mm from the longest edge of the glass at the midpoint of that edge. The punch is then hit by a hammer so that the glass breaks.

A transparent mask of 50 mm × 50 mm is placed on the fractured glass except within a peripheral margin of 25 mm from the edge of the sample and a semi-circular area having a radius of 100 mm from the point of impact.

The assessment shall be undertaken on at least two areas of the sample, and the areas chosen shall contain the largest particles.

Within 5 min, the number of crack-free particles within the mask are counted and for each assessment shall not be less than 60.

In the case of curved glass, plane pieces of the same material can be used for the test.

For glass that is not released or dropped from its normal position when broken, compliance is checked by breaking the glass when mounted in its normal position in the appliance by means of a test punch having a head with a mass of 75 g ± 5 g and a conical tungsten carbide tip with an angle of 60° ± 2°. The punch shall be positioned approximately 13 mm in from the longest

edge of the glass at the midpoint of that edge. The punch is then hit by a hammer so that the glass breaks.

At the conclusion of this test, the glass shall not be broken or cracked such that pieces are released or dropped from their normal position.

22.121 Glass panels of **oven** doors that are intended to be removed by the user for cleaning shall be constructed so that they cannot be fixed in an incorrect orientation.

Compliance is checked by inspection and by manual test.

22.122 **Ovens** with a capacity exceeding 20 l and having withdrawable shelves shall be fitted with stops or a rest position to prevent the inadvertent withdrawal of the shelves This requirement does not apply to shelves that are designed to contain liquids, such as roasting trays and the like. This requirement also does not apply to shelves that are designed to be used in **steam ovens**, having a depth lower than 320 mm and perforated to contain vegetables.

NOTE A stop is a feature of the shelf that prevents its withdrawal by a simple action. Two separate actions, such as pulling and then lifting, are not considered to be a simple action.

The shelves shall be capable of being withdrawn so that when fully extended to the rest position or the maximum distance allowed by the stops, the front edge of the shelves extends beyond the plane of the inside front surface of the **oven** door in the closed position by a distance of not less than 160 mm or 50 % of the depth of the shelf whichever is less.

The shelves shall also be constructed to prevent cooking dishes, or the like, from sliding over the rear edge.

Compliance is checked by inspection and by manual test.

22.123 Appliances incorporating at least one **hob element** shall be designed so that it is possible to switch off any energized **hob element** in the case of failure of any **electronic component**.

Compliance is checked by the following test:

*The appliance is operated under the conditions specified in Clause 11 but supplied at **rated voltage**.*

*The fault conditions in a) to g) of 19.11.2 are then considered and, if necessary, applied one at a time to the **electronic circuit**.*

*It shall be possible to switch off any energized **hob element** during the test.*

~~NOTE~~ *If a **pan detector** is incorporated, a suitable vessel is placed on the **cooking zone**.*

*If the **electronic circuit** is programmable, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of normative Annex R.*

22.124 Appliances incorporating at least one **hob element** shall be designed so that the **hob element** does not become energized unintentionally in case of any **electronic component** being rendered inoperative.

Compliance is checked by the following test:

*The appliance is operated under the conditions specified in Clause 11 with all individual **hob elements** switched off, the appliance being supplied at **rated voltage**.*

*The fault conditions in a) to g) of 19.11.2 are then considered and, if necessary, applied one at a time to the **electronic circuit**.*

*There shall be no operation of any **hob element** for longer than 10 s.*

~~NOTE~~ *If a **pan detector** is incorporated; a suitable vessel is placed on the **cooking zone**.*

*If the **electronic circuit** is programmable, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of normative Annex R.*

22.125 **Pressure steam ovens** shall incorporate a **non-self-resetting pressure relief device** that prevents excessive pressure.

*Compliance is checked by operating the appliance under **normal operation** with **pressure regulators** and temperature controls rendered inoperative.*

*The **pressure relief device** shall operate during this test so as to prevent the internal pressure exceeding the **rated cooking pressure** by more than 20 %.*

22.126 The **pressure relief device** in **steam ovens** shall be positioned or constructed so that its operation does not cause injury to persons or damage to surroundings. Its construction shall be such that it cannot be made inoperative or set to a higher relief pressure.

Compliance is checked by inspection and the tests of Clause 19.

22.127 The operating pressure of **pressure steam ovens** shall not exceed the rated cooking pressure during normal operation.

*Compliance is checked by measuring the operating pressure during the test of Clause 11. The measured pressure shall not exceed the **rated cooking pressure**.*

22.128 Means provided to allow drainage of water from cooking compartments of **steam ovens** shall discharge the water in such a manner that electrical insulation is not affected.

Compliance is checked by inspection and by manual test.

22.129 **Pressure steam ovens** shall incorporate vacuum release means to prevent a partial vacuum forming.

Compliance is checked by inspection.

22.130 Emptying devices such as drain plugs for emptying hot liquids from a **steam oven** shall be constructed so that they cannot be opened inadvertently. This requirement is considered to be met when the emptying device handle is such that, when released, it returns the emptying device automatically to the closed position; or it is of the wheel type; or it is placed in a recess such that it cannot be placed in the open position by means of test probe B of IEC 61032 using a single action with a force of 10 N. **27**

Compliance is checked by inspection and by manual test.

22.131 **Steam ovens** shall be constructed such that there is no spillage of water or sudden jets of steam or hot water likely to expose the user to a hazard when the appliance is used in accordance with the instructions.

If jets of steam or liquids are emitted through **protective devices**, the electrical insulation shall not be affected or the user exposed to a hazard.

Compliance is checked by inspection during the tests of Clause 11.

22.132 **Pressure steam ovens** shall be constructed so that the door cannot be opened while the pressure within the pressurised cooking compartment is excessive. They shall incorporate a means to release the pressure to a value such that the door can be opened without risk.

Compliance is checked by the following test.

*The **pressure steam oven** is operated as specified in Clause 11 until the **pressure regulator** operates for the first time.*

*The **pressure steam oven** is then disconnected from the supply and the pressure allowed to decrease until the pressure is 4 kPa. A force of 100 N is applied to the most unfavourable point where the door or its handle can be gripped. It shall not be possible to open the door.*

The internal pressure is then gradually reduced, the force of 100 N being maintained. There shall be no hazardous displacement of the door when it is released.

*This test is not carried out on **pressure steam ovens** when the door is secured by screw clamps or other devices that ensure that the pressure is automatically reduced in a controlled manner before the door can be opened.*

22.133 The hazard created by **hobs elements** having **off positions** that are not visible during a mains voltage interruption shall be obviated as far as is practicable.

Compliance is checked by inspection and by the following test.

*The appliance is operated under the conditions of Clause 11. The main voltage is interrupted for 10 min and then restored. On restoration of the power supply, none of the **hob elements** shall be re-energized.*

*A manual operation shall be required to re-energise the **hob elements**.*

22.134 For appliances incorporating at least one **hob element**, other than an **induction hob element** or an **induction wok element**, controlled by an **electronic circuit**, safety shall not be impaired in the event of a fault in the **electronic circuit.**

Compliance is checked by the following test:

*The appliance is operated under the conditions specified in Clause 11 but supplied at **rated voltage**.*

*The fault conditions in a) to g) of 19.11.2 are applied one at a time to the **electronic circuit** controlling the duty cycle for each **hob element** in turn.*

The control setting shall not change to a higher setting for longer than 2 min.

The software used to comply with the requirement shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of normative Annex R.

22.135 **Ovens** intended for use on board ships shall withstand the pulses to which they ~~may~~ can be subjected.

Compliance is checked by carrying out the half-sine pulse tests specified in IEC 60068-2-27 under the following conditions.

The appliance is fastened in its normal position of use to a shock-testing machine by means of straps around the enclosure.

The type of pulse is a half-sine pulse and the severity is as follows.

- *application of the half-sine pulse is in all 3 axes;*
- *peak acceleration: 250 m/s^2,*
- *duration of each half-sine pulse: 6 ms;*
- *number of half-sine pulses in each direction: 1 000 ± 10.*

The appliance shall ~~show no damage~~ not be damaged to the extent that ~~could impair~~ compliance with 8.1, 16.3, Clause 29 is impaired and connections shall not have worked loose.

22.136 **Ovens** intended for use on board ships shall withstand the vibrations to which they ~~may~~ can be subjected.

Compliance is checked by carrying out the vibration tests specified in IEC 60068-2-6 under the following conditions.

The appliance is fastened in its normal position of use upon a vibration table by means of straps around the enclosure. The type of vibration is sinusoidal and the severity is as follows:

- *direction of vibration is vertical and horizontal;*
- *amplitude of vibration: 0,35 mm;*
- *sweep frequency range: 10 Hz to 150 Hz;*
- *duration of the test: 30 min.*

The appliance shall ~~show no damage~~ not be damaged to the extent that ~~could impair~~ compliance with 8.1, 16.3, Clause 29 is impaired and connections shall not have worked loose.

22.137 **Ovens** intended for use on board ships shall have means to reliably close each door, drawer, or other sliding or hinged part with a latch.

Compliance is checked by inspection and by the following test.

A force of 50 N is applied in an attempt to open the latched door, drawer, or other sliding or hinged part. The force is applied in the most onerous position and direction.

The door, drawer, or other sliding or hinged part shall not open.

22.138 For appliances that are controlled by programmable **electronic circuits** that limit the number of heating elements and motors from being energised at the same time, simultaneous activation of any combination of heating elements and motors shall not render the appliance unsafe.

Compliance is checked as follows:

– *the fault/error conditions specified in Table R.1 are applied and evaluated in accordance with the relevant requirements of normative Annex R; or*

– *the appliance is operated under the conditions of Clause 11 while being supplied at **rated voltage**, the programmable **electronic circuits** being modified to allow simultaneous activation of all heaters and motors under their control. Under these conditions, compliance with 19.13 shall be fulfilled.*

23 Internal wiring

This clause of Part 1 is applicable except as follows.

23.3 *Addition:*

The requirement also applies if parts of a **cooking range** are folded onto the **hob surface**, or separated from their normal position, for transportation purposes.

24 Components

This clause of Part 1 is applicable except as follows.

24.1.3 *Addition:*

*Switches controlling **hob elements** are subjected to 30 000 cycles of operation.*

24.1.4 *Addition:*

– *energy regulators*
  - *for automatic action* *100 000*
  - *for manual action* *10 000*

– ***self-resetting thermal cut-outs***
  - *for heating elements of glass-ceramic **hobs*** *100 000*
  - *for heating elements of other **hobs*** *10 000*

– ***thermostats** controlling the cleaning process in **pyrolytic self-cleaning ovens*** *3 000*

24.101 **Thermostats** and energy regulators incorporating an **off position** shall not switch on as a result of variations in ambient temperatures.

Compliance is checked by the following test that is carried out on three samples of the control.

*The control, adjusted to the **off position**, is placed for 2 h in an ambient temperature of* $-20\ ^{0}_{-5}$ *°C, and then at*

– *t °C, where t is the temperature according to the T-marking;*

– *55 °C, for controls without a T-marking.*

*During the test, the **off position** shall be maintained.*

A test voltage of 500 V is applied across the contacts for 1 min. No breakdown shall occur.

~~**24.102** Socket-outlets incorporated in **cooking ranges** shall be single-phase, incorporate an earthing contact and have a rated current not exceeding 16 A. Both poles shall be protected by~~

~~fuses or miniature circuit-breakers having a rated current not exceeding the rated current of the socket-outlet. They shall be placed behind a **non-detachable cover**, however the actuating member of miniature circuit-breakers may be accessible. If the **cooking range** is intended to be permanently connected to fixed wiring or is fitted with a polarized plug, the neutral pole need not be protected. A **non-detachable cover** is not required if fuses become accessible after opening a drawer or other compartment.~~

~~*Compliance is checked by inspection.*~~ **28**

25 Supply connection and external flexible cords

This clause of Part 1 is applicable except as follows.

25.3 *Addition:*

Hobs, built-in ranges and **built-in ovens** may be connected to the supply mains before the appliance is installed.

25.14 *Addition:*

*For **temperature-sensing probes**, the total number of flexings is 5 000. Probes with circular-section cords are turned through 90° after 2 500 flexings.*

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable.

28 Screws and connections

This clause of Part 1 is applicable.

29 Clearances, creepage distances and solid insulation

This clause of Part 1 is applicable except as follows.

29.2 *Addition:*

The microenvironment is pollution degree 3 unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance.

29.3 *Addition:*

This requirement does not apply to the sheath of a **visibly glowing heating element** inaccessible to test probe 41 of IEC 61032.

30 Resistance to heat and fire

This clause of Part 1 is applicable except as follows.

30.2 ~~*Addition*~~ *Modification:*

Replace the two dashed items in the compliance criteria with the following:

– for **induction wok elements, grills** and **griddles** that do not incorporate a timer, 30.2.2 is applicable;
– for other appliances, 30.2.3 is applicable.

31 Resistance to rusting

This clause of Part 1 is applicable except as follows.

Addition:

*For **ovens** intended for use on board ships compliance is checked by the salt mist test Kb of IEC 60068-2-52:2017,*

– *for **open deck** use ~~severity~~, test method 1 is applicable;*
– *for **dayrooms** use ~~severity~~, test method 2 is applicable.*

The coatings of metal parts are prepared for the test as follows:

Five scratches are made at least 5 mm apart and at least 5 mm from the edges of the relevant parts to be tested.

The test pin of 21.2 is used for the test. The pin is held at an angle of 80° to 85° to the horizontal and loaded so that the force exerted to its axes is 10 N ± 0,5 N. The scratches are made by drawing the pin along the surface at a speed of approximately 20 mm/s.

After the test, the appliance shall not have deteriorated to such an extent that compliance with this standard, in particular with Clause 8 and Clause 27, is impaired. The coating shall not be broken and shall not have detached from the metal surface.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable except as follows.

32.101 **Pyrolytic self-cleaning ovens** shall be constructed so that carbon monoxide is not discharged in hazardous quantities during cleaning.

Compliance is checked by the following test.

*Twice the quantity of the mixture specified in 22.110 is spread evenly over the interior of the **oven**, including the door. The **oven** is supplied at **rated voltage** and operated for 3 h in the conventional heating mode at the maximum setting of the **thermostat**. If a conventional heating mode is not available, then the forced air heating mode is used.*

*The **oven** is then allowed to cool to **room temperature** and placed in a closed test room having a volume of 20 m^3 to 25 m^3, in which the air is circulated by a low-speed fan. The **oven** is operated under cleaning conditions and the concentration of carbon monoxide is measured 1 m above the centre of the floor.*

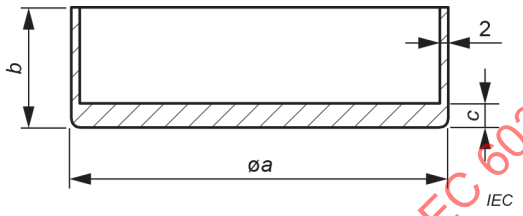
The concentration of carbon monoxide shall not exceed 0,015 %.

*If the **oven** incorporates a heating element intended to eliminate smoke, the test is repeated with this heating element disconnected, unless the cleaning process can only be performed when the heating element is in circuit.*

*If compliance relies on the operation of an **electronic circuit** to calculate the concentration of the carbon monoxide, the test is repeated with the fault conditions in a) to g) of 19.11.2 applied one at a time to the **electronic circuit**.*

*If the **electric circuit** is programmable, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of normative Annex R.*

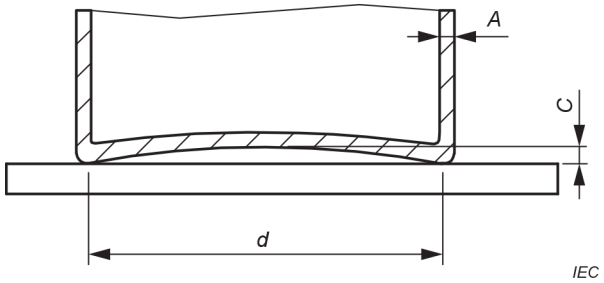
Dimensions in millimetres



Diameter of cooking zone	Approximate dimension		
	a	b	c
mm	mm	mm	mm
≤ 110	110	140	8
> 110 ≤ 145	145	140	8
> 145 ≤ 180	180	140	9
> 180 ≤ 220	220	120	10
> 220 ≤ 300	300	100	10

The maximum concavity of the base of the vessel is to be not more than 0,05 mm. The base of the vessel is not to be convex.

Figure 101 – Vessel for testing hob elements



Key

A wall thickness, 2 mm ± 0,5 mm

C maximum concavity

d diameter of the flat area of the base

thickness of base:

d <145 mm, 2 mm ± 0,5 mm

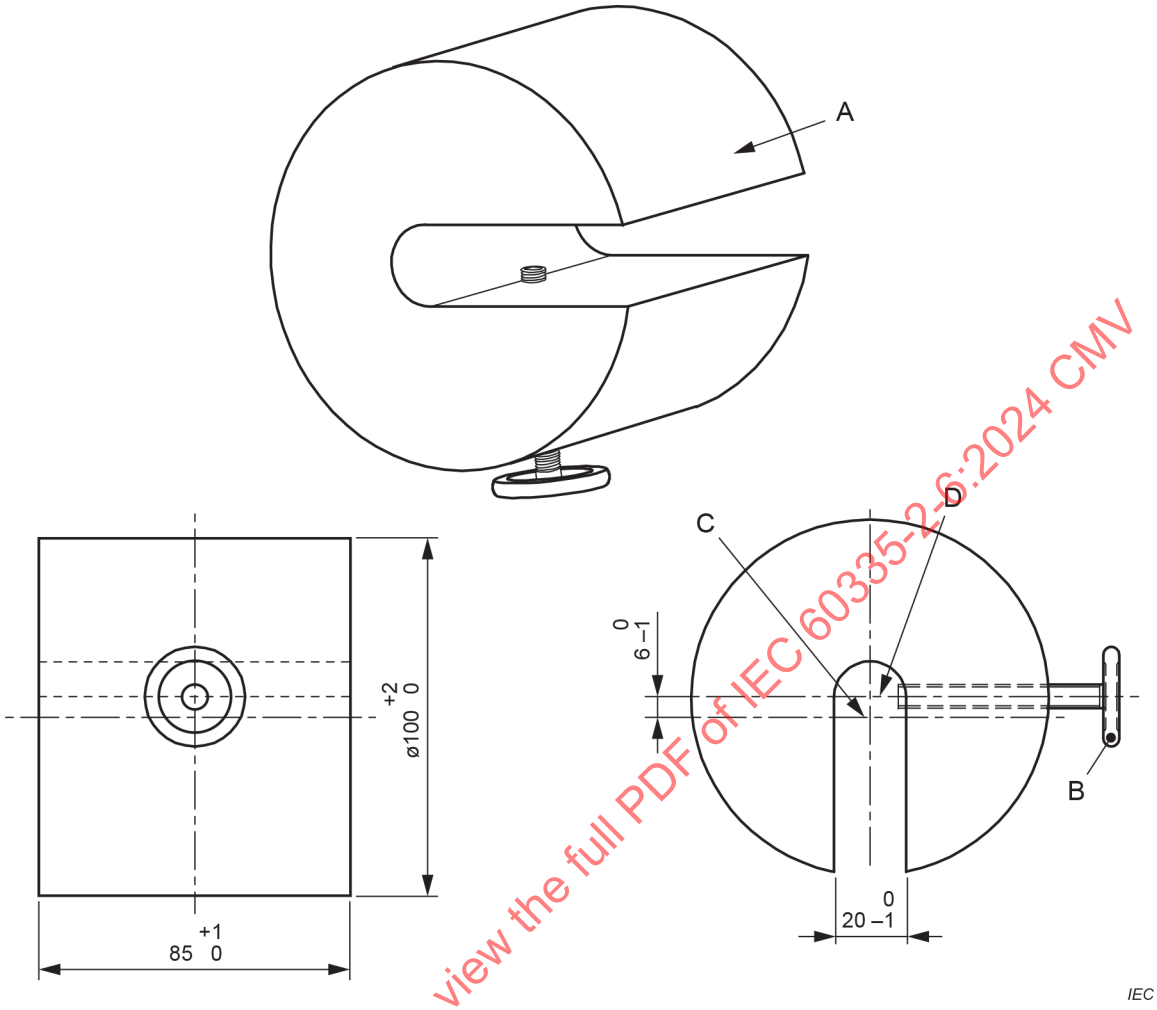
d = 145 mm to 240 mm, 3 mm ± 0,5 mm

d >240 mm, 5 mm ± 0,5 mm

The vessel is made of low carbon steel having a maximum carbon content of 0,08 %. It is cylindrical without metallic handles or protrusions. The diameter of the flat area of the base of the vessel is to be at least the diameter of the **cooking zone**. The maximum concavity of the base of the vessel is 0,006 *d*. The base of the vessel is not to be convex.

Figure 102 – Vessel for testing induction hob elements

Dimensions in millimetres



Key

A load, mass approximately 4,5 kg

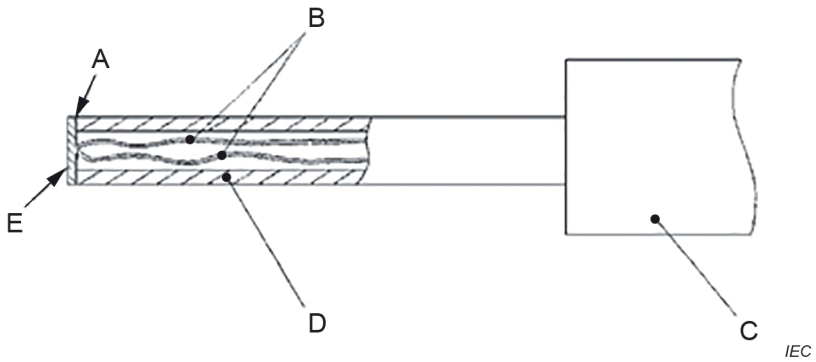
B fixing screw

C axis of load

D axis of fixing screw

~~NOTE The load is positioned on the rotary spit so that the fixing screw contacts the diameter of the spit.~~

Figure 103 – Load for testing rotating spits



Key

A adhesive

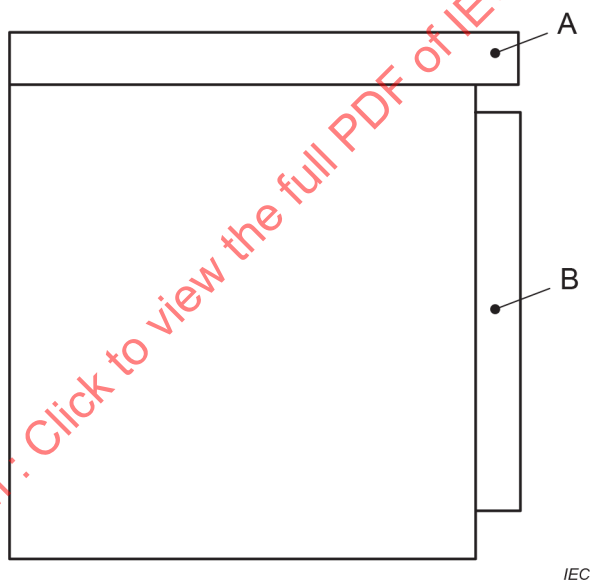
B thermocouple wires 0,3 mm diameter to IEC 60584-1 Type K ~~(chrome alumel)~~

C handle arrangement permitting a contact force of 4 N ± 1 N

D polycarbonate tube: inside diameter 3 mm, outside diameter 5 mm

E flat tinned copper disc: 5 mm diameter, 0,5 mm thick with flat contact face

Figure 104 – Probe for measuring surface temperatures

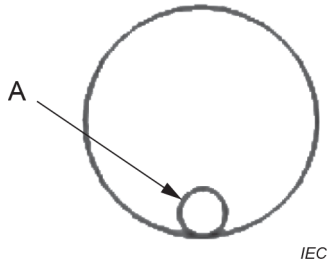


Key

A work surface

B **oven**

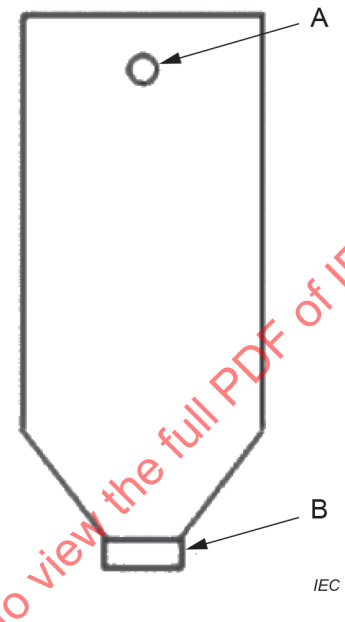
Figure 105 – Arrangement of work surface for spillage test on built-in ovens



Key

A bottle cap hole – diameter 8 mm

Figure 106 – Detail of bottle cap and position of hole



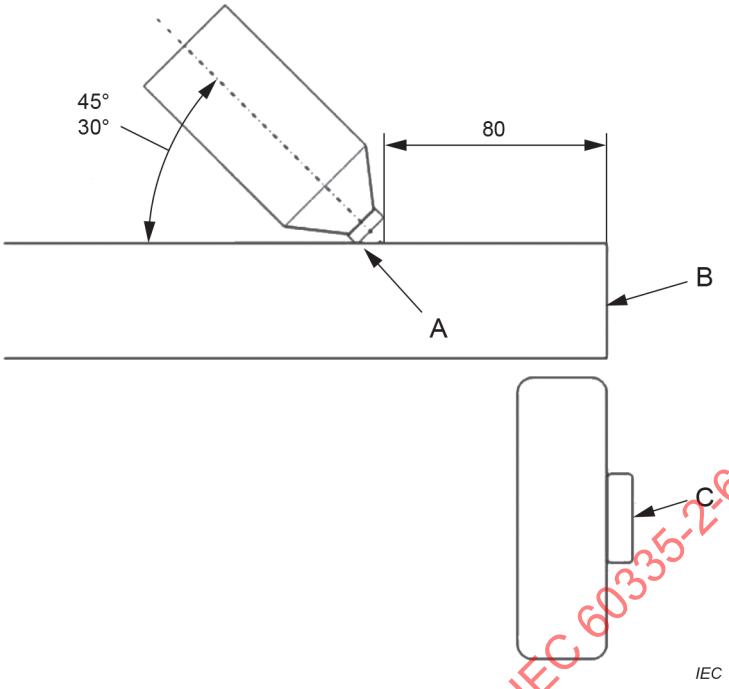
Key

A bottle hole with diameter 8 mm

B bottle cap

Figure 107 – Spillage solution bottle

Dimensions in millimetres



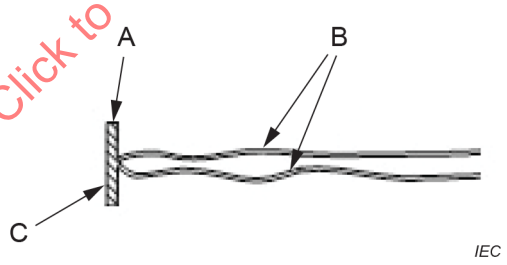
Key

A bottle cap hole position

B edge of work surface

C front of **oven**

Figure 108 – Bottle position for the spillage test



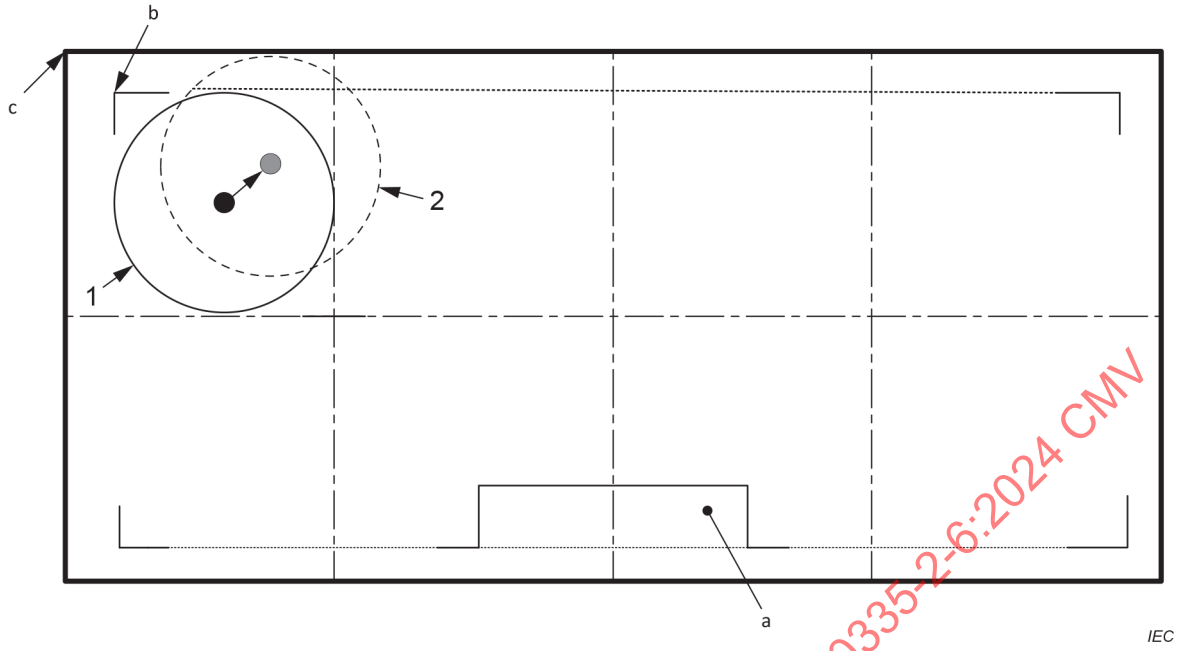
Key

A copper or brass disc: 15 mm diameter, 1 mm thick

B thermocouple wires 0,3 mm diameter to IEC 60584-1 Type K

C thermal conductive grease / heat conductive paste

Figure 109 – Probe for measuring temperatures inside empty vessels



Key

a area of the control

b limitative marking of the cooking area

c outer contour of **hob surface**

1 centered position

2 decentered position

Figure 110 – Indication for decentring vessels

Annexes

The annexes of Part 1 are applicable except as follows:

Annex B
(normative)

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

This annex of Part 1 is applicable except as follows:

B.11.1 *Modification:*

Replace the second, third and fourth paragraphs with the following:

*For appliances operated with **detachable batteries** or **separable batteries** that are disconnected from the appliance for charging purposes, the appliance is operated as specified in 11.7 and 11.101, respectively, until it completes the duration of the test as specified or it no longer operates due to depletion of the **battery**. If the battery is depleted before the appliance completes the duration of the test, the depleted **battery** is immediately replaced with another **battery** that is **fully charged**, the **battery** being the model or type reference of the **battery** provided or indicated in the instructions. The test is continued until the appliance completes the duration of the test as specified or it no longer operates due to depletion of the **battery**.*

*For appliances incorporating **integral batteries** or **separable batteries** not disconnected from the appliance for charging purposes, and that cannot perform their intended function while the **batteries** are being charged, the appliance is operated as specified in 11.7 and 11.101 respectively until it cannot perform its intended function due to the depletion of the **batteries**.*

*For appliances operated with **batteries** that are replaceable, including **integral batteries** that are replaceable, or **non-rechargeable batteries**, the appliance is operated until the minimum capacity of the **battery** as specified in Table B.1 has been delivered or the appliance completes the duration of the test as specified in 11.7 and 11.101 respectively whichever occurs first.* **29**

Annex R
(normative)

Software evaluation

This annex of Part 1 is applicable except as follows:

R.2.2.5 *Modification:*

Replace the first paragraph with the following:

For programmable **electronic circuits** with functions requiring software incorporating measures to control the fault/error conditions specified in Table R.1 or Table R.2, detection of a fault/error shall occur before compliance with Clause 19 ~~and subclauses~~, 22.40, 22.102, 22.123, 22.124, 22.134, 22.138 ~~and~~ or 32.101 is impaired.

R.2.2.9 *Modification:*

Replace the first sentence of the first paragraph with the following:

The software and safety-related hardware under its control shall be initialized and shall terminate before compliance with Clause 19 ~~and subclauses~~, 22.40, 22.102, 22.123, 22.124, 22.134, 22.138 ~~and~~ or 32.101 is impaired.

Annex AA
(informative)

Guidance for the application of remote operation for induction hobs

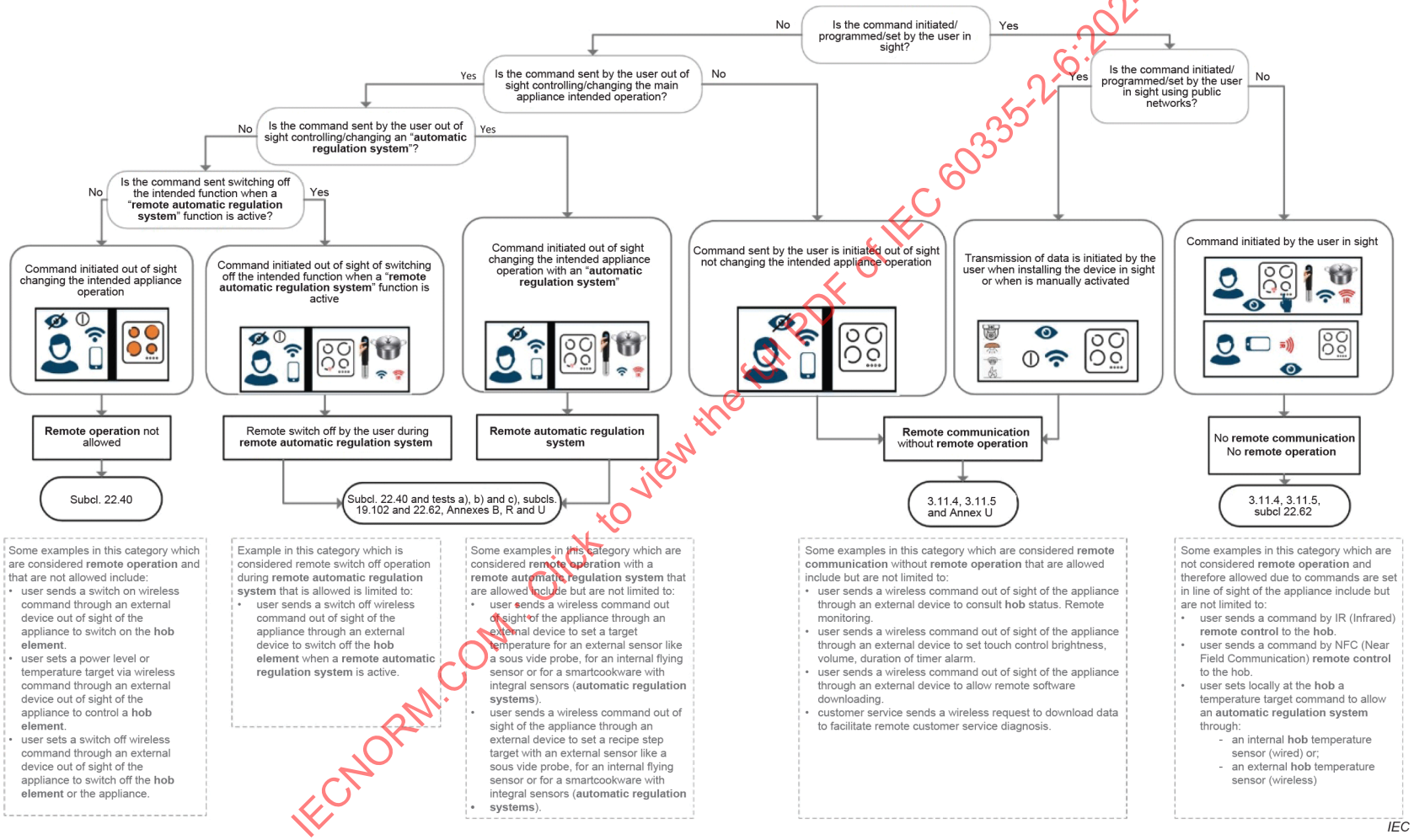


Figure AA.1 – Guidance for the application of remote operation for induction hobs

Bibliography

The bibliography of Part 1 is applicable except as follows.

Addition:

IEC 60335-2-9, *Household and similar electrical appliances – Safety – Part 2-9: Particular requirements for grills, toasters and similar portable cooking appliances*

IEC 60335-2-25, *Household and similar electrical appliances – Safety – Part 2-25: Particular requirements for microwave ovens, including combination microwave ovens*

IEC 60335-2-36, *Household and similar electrical appliances – Safety – Part 2-36: Particular requirements for commercial electric cooking ranges, ovens, hobs and hob elements*

IEC 60335-2-38, *Household and similar electrical appliances – Safety – Part 2-38: Particular requirements for commercial electric griddles and griddle grills*

IEC 60335-2-42, *Household and similar electrical appliances – Safety – Part 2-42: Particular requirements for commercial electric forced convection ovens, steam cookers and steam-convection ovens*

Index of defined terms

The Index of defined terms of Part 1 is applicable except as follows:

List of comments

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

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

3 This revision is for alignment with IEC 60335-1:2020. It was noted that there are induction ranges on the market with battery back-up.

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

5 This change aligns the operation of battery-operated appliances with that of mains operated appliances.

6 The loading of the rotary spit is relocated from Figure 103.

7 This addition is based on Subclause 22.61 requiring socket-outlets to have an earthing connection.

8 Requirements are introduced for automatic regulation systems (3.7.103) for hobs and remote automatic regulation systems (3.11.101) for induction hobs.

9 These appliance are located on the floor where they would be accessible to children up to 3 years in age, so test probe 19 is applicable. However, appliances and parts of appliances located above 850 mm are not considered to be within reach of these children, so test probe 19 is not applied.

10 The force applied to test probe 12 is covered by Subclause 5.21 of IEC 60335-1:2020.

11 This is deleted due to the addition of requirements to IEC 60335-1:2020 for appliances with socket-outlets.

12 This is deleted due to the addition of requirements to IEC 60335-1:2020 for appliances with socket-outlets.

13 Surface temperature requirements are updated to remove the regional temperature limits and align with requirements in other recently published Part 2 standards.

14 This revision maintains the requirements for appliance outlets and socket-outlets and the test duration for charging of battery-operated appliances as specified in IEC 60335-1:2020.

15 This modification is for alignment with IEC 60335-1:2020 and aligns the test duration for operation of battery-operated appliances with that of mains operated appliances.

16 This is deleted due to the addition of requirements to IEC 60335-1:2020 for appliances with socket-outlets.

17 Surface temperature requirements are updated to remove the regional temperature limits and align with requirements in other recently published Part 2 standards.

18 Table 103 is added as specified in the Note above to convey the surface temperature limits for Australia and New Zealand.

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

20 This is a clarification to describe how to defeat the thermal control for appliances where an electronic circuit with an NTC is serving as the thermal control.

21 These appliance are located on the floor where they would be accessible to children up to 3 years in age, so test probe 19 is applicable. However, appliances and parts of appliances located above 850 mm are not considered to be within reach of these children, so test probe 19 is not applied.

22 Requirements were introduced for remote automatic regulation systems (3.11.101) for induction hobs. These requirements specify what is needed for a remote automatic regulation system to operate an induction hob remotely.

23 Because of the higher operating temperatures during a pyrolytic self-cleaning cycle, the user must verify that the appliance is ready for the self-cleaning function to start by manually confirmation on the appliance.

24 This is relocated from Subclause 24.102 of the previous edition.

25 Requirements are introduced for remote automatic regulation systems (3.11.101) for induction hobs. See also Note 102 to entry of 3.11.4 regarding the use of short range communication technology.

26 This is a test for inadvertent operation of a touch control, so the cloth is to be applied to the touch control panel only.

27 Due to the addition of Subclause 5.21 in the Part 1, the force applied to test probes must be specified if they are to be applied with a force above 1 N. In this case, the force applied to test probe B is aligned with the force specified for application of test probe B in IEC 61032, Table 1.

28 This is relocated to Subclause 22.61. However, some content is deleted due to the addition of requirements to IEC 60335-1:2020 for appliances with socket-outlets.

29 The test duration of operation for battery-operated appliances is modified to align with that of mains operated appliances.

IEC 60335-2-6

Edition 7.0 2024-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

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

Appareils électrodomestiques et analogues – Sécurité –
Partie 2-6: Exigences particulières pour les cuisinières, les tables de cuisson, les fours et les appareils fixes analogues

IEC 60335-2-6:2024-08(en-fr)

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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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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;

– 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).

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

INTRODUCTION

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

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

1 Scope

This clause of Part 1 is replaced by the following.

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).

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

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

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

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1 Definitions relating to physical characteristics

3.1.6
rated current

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:

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

3.1.9 *Modification:*
normal operation

Replace the first paragraph with the following:

operation of the appliance as specified in 3.1.9.101 to 3.1.9.107

Replace the first dashed item of the second paragraph with the following:

– the **battery** that is **fully discharged** is charged with the **battery-operated appliance** operating as specified, if allowed by the construction of the appliance.

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;

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.

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**.

3.1.101
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

3.5 Definitions relating to types of appliances

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**

3.6 Definitions relating to parts of an appliance

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

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

3.7.101
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

3.8.101
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

3.11 Definitions relating to remote functionality

3.11.4
remote communication

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

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.

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

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

5.3 *Addition:*

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

5.4 *Addition:*

*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.*

5.101 ***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

This clause of Part 1 is applicable except as follows.

6.1 *Modification:*

Replace the first paragraph with the following:

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

Addition:

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

6.2 *Addition:*

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

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

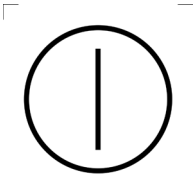
7.1 *Addition:*

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.

7.6 *Addition:*

 [symbol IEC 60417-5010 (2002-10)]	ON/OFF (push-push)
 [symbol IEC 60417-6059 (2011-05)]	Caution, possibility of tilting
 [symbol IEC 60417-6060 (2011-05)]	Anti-tip restraints

7.9 *Addition:*

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.

7.10 *Addition:*

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.

7.12 *Addition:*

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:

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
– 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**.

7.12.1 *Addition:*

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.

7.12.3 *Addition:*

If a **cooking range** does not have a **supply cord**, the instructions shall state the type of cord to be used, taking into account the temperature of the rear surface of the appliance.

7.12.4 *Addition:*

The instructions for **built-in appliances** having separate control panels shall state that the control panel is only to be connected to the **heating units** specified in order to avoid a possible hazard.

7.15 *Modification:*

Replace the first sentence of the third paragraph with the following:

For **stationary appliances**, except for **fixed appliances**, at least the name or trademark or identification mark of the manufacturer or responsible vendor and the model or type reference shall be visible when the appliance is installed as in normal use.

Addition:

For **fixed appliances**, the marking of the name or trademark or identification mark of the manufacturer or responsible vendor and the model or type reference shall be marked on the appliance and, if not visible when the appliance is installed as in normal use, shall be included in the instructions or on an additional label that can be fixed near the appliance after installation.

The marking for the current rating of the fuse protecting a socket-outlet shall be placed on or near the socket-outlet.

7.101 Steam generators intended to be filled manually shall be marked with the maximum water level, which shall be visible during filling.

Compliance is checked by inspection.

7.102 The **cooking zone** of **hob surfaces** shall be identified by appropriate marking unless it is obvious.

Compliance is checked by inspection.

7.103 For **cooking ranges** that are normally placed on the floor and that have horizontally hinged **oven** doors with a hinge height of less than 430 mm from the floor, if a stabilizing means is necessary in order to comply with the test of 20.102, then

– the stabilising means, except for commonly available fixing hardware, such as screws and bolts, shall be marked with symbol IEC 60417-6060 (2011-05) or in lettering at least 3 mm high, with the substance of the following:

WARNING: In order to prevent tipping of the appliance, this stabilising means must be installed. Refer to the instructions for installation.

– the appliance shall be marked with symbol IEC 60417-6059 (2011-05) or in lettering at least 3 mm high, at the point of supply entry and at least one other point to draw the attention of the user to the need to stabilise the appliance.

If symbol IEC 60417-6059 (2011-05) or IEC 60417-6060 (2011-05) are used, their meaning shall be explained in the instructions and their height shall be at least 30 mm.

Compliance is checked by inspection and measurement.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.1 *Addition:*

For parts of appliances situated not more than 850 mm above the floor after installation or in normal use, in addition to the use of test probe 18, test probe 19 of IEC 61032 is also applied wherever test probe 18 is used and with the same test conditions used for test probe 18.

8.1.2 *Addition:*

*Test probe 12 of IEC 61032 is applied to parts liable to be touched accidentally in normal use by a fork or similar pointed object. It shall not be possible to touch **live parts**.*

8.1.3 *Addition:*

Test probe 19 of IEC 61032 is not applied.

*Test probe 41 of IEC 61032 is only applied to **visibly glowing heating elements** situated at the top of an **oven** or grilling compartment.*

9 Starting of motor-operated appliances

This clause of Part 1 is not applicable.

10 Power input and current

This clause of Part 1 is applicable except as follows.

10.1 *Addition:*

*For **ovens** and **steam ovens**, the heat up time to obtain the centre cavity temperature specified for **normal operation** is a representative period.*

*For **griddles**, the heat up time to obtain the surface temperature specified for **normal operation** is a representative period.*

*For **grills** and warming drawers, the heat up period for **normal operation** is a representative period.*

*For **hobs**, the heat up time until the water boils with the controls adjusted to their highest setting is a representative period.*

*For **induction hob elements** and **induction wok elements**, the heat up time for the oil to reach a temperature of 180 °C ± 4 °C with the controls adjusted to their highest setting is a representative period. If the power input is reduced during the heat up time for the oil to reach a temperature of 180 °C ± 4 °C then the representative period is taken as the time until the first reduction of the power input.*

*The power input of **induction hob elements** and **induction wok elements** is measured for each induction generator unit separately and the tolerances for **motor-operated appliances** apply.*

10.2 *Addition:*

*For **ovens** and **steam ovens**, the heat up time to obtain the centre cavity temperature specified for **normal operation** is a representative period.*

*For **griddles**, the heat up time to obtain the surface temperature specified for **normal operation** is a representative period.*

*For **grills** and warming drawers, the heat up time for **normal operation** is a representative period.*

*For **hobs**, the heat up time until the water boils with the controls adjusted to their highest setting is a representative period.*

*For **induction hob elements** and **induction wok elements**, the heat up time for the oil to reach a temperature of 180 °C ± 4 °C with the controls adjusted to their highest setting is a representative period. If the current is reduced during the heat up time for the oil to reach a temperature of 180 °C ± 4 °C then the representative period is taken as the time until the first reduction of the current.*

*The current of **induction hob elements** and **induction wok elements** is measured for each induction generator unit separately and the tolerances for **motor-operated appliances** apply.*

11 Heating

This clause of Part 1 is applicable except as follows.

11.1 *Addition:*

*For **cooking ranges** and **ovens**, compliance is also checked by the test of 11.101.*

11.2 *Addition:*

*For appliances intended to stand on the floor, a closed rectangular box is placed as close as possible to the free side of the appliance and against the rear wall of the test corner. The box is made of dull black painted plywood 10 mm thick. It has a width of 150 mm, its top being level with the **hob surface** and its front flush with the front surface of the appliance.*

*Appliances having a lid to cover the **hob surface** are tested with the lid open. Lids that can be removed without the aid of a **tool** are removed, unless the **hob element** cannot operate with the lid removed.*

***Temperature-sensing probes** are placed in the **oven** in any position likely to occur during normal use. They are not connected to control the **oven** temperature. The test for **pyrolytic self-cleaning ovens** is carried out with **temperature-sensing probes** in position, unless otherwise specified in the instructions.*

Detachable parts *that are intended to be used to reduce the temperature of control panels are removed. A retractable part is not a* ***detachable part****.*

11.3 *Addition:*

The temperature of the centre of the ***oven*** *and the temperature rises of the surface of the rectangular box are determined using the thermocouples specified for the walls of the test corner.*

If the magnetic field of an ***induction hob element*** *unduly influences the results, the temperature rises may be determined using platinum resistances with twisted connecting wires or any equivalent means.*

During the test of 11.101, where the external ***accessible surfaces*** *are suitably flat and access permits, the test probe of Figure 104 is used to measure the temperature rises of external* ***accessible surfaces****. The probe is applied with a force of 4 N ± 1 N to the surface in such a way that the best possible contact between the probe and the surface is ensured. The measurement is performed after a contact period of 30 s.*

The probe may be held in place using a laboratory stand clamp or similar device. Any measuring instrument giving the same results as the probe may be used.

11.4 *Addition:*

Induction hob elements *and* ***induction wok elements*** *are supplied separately and operated as specified for* ***motor-operated appliances****.*

Cooking ranges *are operated at 1,15* ***rated power input*** *under* ***normal operation****. The supply voltage is measured when the power input has stabilized. This voltage is used to supply the* ***heating units*** *of the* ***cooking range*** *during the tests.*

Ovens *are operated at 1,15 times* ***rated power input*** *under* ***normal operation****. The supply voltage is measured during the heat up period. This voltage is used to supply the* ***heating units*** *of* ***ovens*** *during the tests.*

11.6 *Replacement:*

Combined appliances *are operated as specified for* ***heating appliances****.*

If the temperature rise limits are exceeded in appliances incorporating motors, transformers or ***electronic circuits****, and the power input is lower than the* ***rated power input****, the test is repeated with the appliance supplied at 1,06 times* ***rated voltage****.*

11.7 *Modification:*

Replace the first paragraph with the following:

Appliances are operated for the duration specified in 11.7.101 to 11.7.106.

Replace the first dashed item of the third paragraph with the following:

– *the* ***battery*** *that has been* ***fully discharged*** *is charged while the appliance is operated as specified in 11.7.101 to 11.7.106 for 1 h, if allowed by the construction of the appliance.*

Addition:

Steady conditions are considered to be established if the temperature does not rise by more than 1 K in 15 min.

11.7.101 ***Induction hob elements*** *and* ***induction wok elements*** *are operated for 30 min. Other* ***hob elements*** *are operated for 60 min.*

11.7.102 ***Ovens*** *are operated for 60 min starting from the cold condition.*

Lamps in ***ovens*** *are not manually switched on.*

If an appliance incorporates two ***ovens*** *that can be energized simultaneously, they are tested together.*

Pyrolytic self-cleaning ovens *are also operated under the cleaning conditions specified in the instructions for the maximum time allowed by the control or until steady conditions are established, whichever is shorter. During this period, other* ***heating units*** *that can be energized are operated under* ***normal operation****.*

Ovens *provided with a rotating spit are also operated with the spit rotating for 60 min.*

11.7.103 ***Grills*** *are operated for 30 min. However,* ***grills*** *having means to reduce the power input are operated for 15 min with their controls adjusted to the highest setting and then for 15 min at a setting which reduces the average power input by approximately 50 %.*

Grills *provided with a rotating spit are also operated with the spit rotating for 60 min.*

11.7.104 ***Griddles*** *incorporating a thermal control are operated until steady conditions are established. Other* ***griddles*** *are operated for 30 min after the centre of the heating surface attains a temperature of 275 °C.*

11.7.105 *Warming drawers and similar compartments are operated for 30 min.*

11.7.106 *For* ***cooking ranges****, combinations of* ***heating units*** *that can be energized simultaneously are tested together for the durations specified in 11.7.101 to 11.7.105,* ***heating units*** *that have a test duration of 30 min being operated for the last 30 min of the test.*

NOTE For example, the sequence of tests for a **cooking range** incorporating a **grill** in the **oven** and a rotating spit is as follows:

– operation of the **hob** and **oven** and, if possible, with the spit rotating, for 60 min;
– cooling down to approximately **room temperature**;
– operation of the **hob** for 60 min, the grill being operated simultaneously for the last 30 min;
– cooling down to approximately **room temperature**;
– operation of the **hob** and **grill** with the spit rotating, for 60 min.

11.8 *Modification:*

Instead of the temperature rises stated in Table 3 for wood, the following applies.

Temperature rises of the floor and walls of the test corner, wooden cabinets and the rectangular box shall not exceed the following values:

– *appliances intended to stand on a table*	*65 K*
– ***grills***	*75 K*
– *other appliances*	*70 K*

Addition:

*The temperature rise of parts of the underside of **built-in hobs**, accessible to a 75 mm diameter probe having a hemispherical end, shall not exceed 70 K unless the instructions specify that a board is to be installed underneath the **hob**.*

*The temperature rise of handles of inner glass doors, grill pans, **temperature-sensing probes** and rotating parts in **ovens** or **grills** is not limited.*

*During the additional test for **pyrolytic self-cleaning ovens**, the temperature rise of the surface of knobs, handles and levers shall not exceed the following values:*

– *metal*	*55 K*
– *porcelain or vitreous material*	*65 K*
– *moulded material, rubber or wood*	*80 K*

The temperature rises of knobs, handles and levers associated with functions that cannot be performed during the cleaning operation are not determined.

*The temperature rise limits of motors, transformers and components of **electronic circuits**, including parts directly influenced by them, may be exceeded when the appliance is operated at 1,15 times **rated power input**.*

The temperature rise of the plug, measured 2 mm below the surface at the centre of the engagement face, shall not exceed 45 K.

11.101 ***Cooking ranges** and **ovens** are placed as specified in 11.2. However, appliances intended to stand on the floor are positioned with their backs against one of the walls of the test corner and away from the other wall. A rectangular box as specified in 11.2 is placed against one of the sides of the appliance. The appliance is supplied at **rated voltage** and operated under **normal operation** except for the temperature setting.*

*All **heating units**, other than **grills**, that can be connected to the supply mains at the same time during normal use are switched on.*

***Pressure steam ovens** and **atmospheric steam ovens** are operated in each steam mode with controls adjusted to their highest setting. Other **ovens** are operated without accessories other than a grid shelf that is positioned on the shelf supports closest to the vertical centre of the **oven**. The mean temperature in the centre of the **oven** is maintained at 200 °C ± 4 °C.*

*However, if the **oven** is a **pyrolytic self-cleaning oven**, it is operated under the cleaning conditions in accordance with 11.7.102.*

***Hob elements** and **griddles** are operated in accordance with 11.7.*

Warming drawers and similar compartments are operated with the controls adjusted to the highest setting.

***Pressure steam ovens** and **atmospheric steam ovens** are operated 30 min. Other appliances are operated for 60 min or until steady conditions are established, whichever is shorter.*

Temperature rises are not measured on:

– *surfaces that are inaccessible to a 75 mm diameter probe having a hemispherical end, unless they are protected by a **detachable guard**;*

– *surfaces of **cooking ranges** that are within 25 mm below the level of the **hob surface** or are above the **hob surface**;*

– *small parts such as **oven** vents, hinges and trim where the width of the **accessible surface** is less than 10 mm;*

– *surfaces within 10 mm of the edge of the **oven** door.*

During the test, the temperature rise of surfaces shall not exceed the values specified in Table 102.

Table 102 – Maximum temperature rises for specified external accessible surfaces under normal operating conditions

Surface	***Temperature rises of accessible external surfaces*** [a] *K*	
	Parts situated not more than 850 mm above the floor after installation	***Parts situated more than 850 mm above the floor after installation***
Bare metal	*38*	*42*
Coated metal [b]	*42*	*49*
Glass and ceramic	*51*	*56*
Plastic having a thickness exceeding 0,4 mm [c, d]	*58*	*62*

NOTE The temperature rise limits of handles, knobs, grips, keyboards, keypads and similar parts are specified in Table 3.

[a] *The temperature rise of parts of **pyrolytic self-cleaning ovens**, operating under cleaning conditions regardless of height above the floor, are 20 K in excess of the temperature rise specified for parts situated more than 850 mm above the floor after installation.*

[b] *Metal is considered coated when a coating having a minimum thickness of 90 µm made of enamel, powder or non-substantially plastic coating is used.*

[c] *The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm.*

[d] *When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of the coated metal or of glass and ceramic material apply.*

*If the **oven** door is protected by a guard, the temperature rise limits in Table 102 apply to the guard. However, if the guard is a **detachable guard**, the temperature rise limits in Table 102 specified for parts situated more than 850 mm above the floor after installation apply to parts of the **oven** door protected by the guard.*

*For **ovens** intended to be used on a working surface, the temperature rise limits Table 102 specified for parts situated more than 850 mm above the floor apply.*

*If the **oven** can be used for grilling and the instructions state that for grilling the door should be closed, the test is repeated but with the **oven** operating in the grilling mode with the controls set according to the instructions. The **grill** is operated for 30 min in accordance with 11.7.103. However, if the **oven** has a rotating spit, the duration of the test is 60 min, with the controls set to give the most unfavourable conditions specified in the instructions. The measurements are only carried out on the front surface of **oven** doors.*

NOTE In Australia and New Zealand Table 102 is replaced by Table 103.

Table 103 (Australia and New Zealand) – Maximum temperature rises for specified external accessible surfaces under normal operating conditions

Surface	***Temperature rises of accessible external surfaces*** [a] *K*		
	Parts situated not more than 850 mm above the floor after installation		***Parts situated more than 850 mm above the floor after installation***
	Front surfaces of oven doors	*Other surfaces*	
Bare metal	*33*	*42*	*45*
Coated metal [b]	*37*	*49*	*55*
Glass and ceramic	*46*	*56*	*60*
Plastic having a thickness exceeding 0,4 mm [c, d]	*51*	*62*	*65*
NOTE The temperature rise limits of handles, knobs, grips, keyboards, keypads and similar parts are specified in Table 3.			

[a] *The temperature rise of parts of **pyrolytic self-cleaning ovens**, operating under cleaning conditions regardless of height above the floor, are 20 K in excess of the temperature rise specified for parts situated more than 850 mm above the floor after installation.*

[b] *Metal is considered coated when a coating having a minimum thickness of 90 µm made of enamel, powder or non-substantially plastic coating is used.*

[c] *The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm.*

[d] *When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of the coated metal or of glass and ceramic material apply.*

12 Charging of metal-ion batteries

This clause of Part 1 is applicable.

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable except as follows.

13.1 *Addition:*

*If a **grill** is incorporated in the **oven**, either the **oven** or the **grill** is operated, whichever is more unfavourable.*

*For **hobs**, the tests are carried out with a vessel filled as specified in 3.1.9.101 placed on each **cooking zone**.*

***Induction hob elements** and **induction wok elements** are tested as specified for **motor-operated appliances**.*

13.2 *Modification:*

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

– *for **stationary class I appliances** with heating elements that are **detachable parts** or can be switched off separately*	*1 mA, or 1 mA per kW power input for each element with a limit of 10 mA, whichever is higher. If the appliance has more than three **heating units**, only 75 % of the measured leakage current is taken into account;*
– *for other **stationary class I appliances***	*1 mA, or 1 mA per kW **rated power input** with a limit of 10 mA, whichever is higher.*

Addition:

After the appliance has been operated for the duration specified in 11.7, the controls are adjusted to their highest setting and the leakage current is measured within 10 s of attaining its highest value.

*If there is earthed metal between **live parts** and the surface of glass-ceramic or similar material of **hobs**, the leakage current is measured between **live parts** and each vessel in turn connected to the earthed metal. If there is no earthed metal, the peak value of the leakage current, measured, using the circuit described in IEC 60990:2016, Figure 4, between **live parts** and each of the vessels in turn, shall not exceed 0,35 mA.*

13.3 *Addition:*

*If there is earthed metal between **live parts** and the surface of glass-ceramic or similar material of **hobs**, a test voltage of 1 000 V is applied between **live parts** and all the vessels connected to the earthed metal. If there is no earthed metal, a test voltage of 3 000 V is applied between **live parts** and the vessels.*

14 Transient overvoltages

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable except as follows.

15.2 *Addition:*

***Cooking ranges** and **hobs** are positioned so that the **hob surface** is horizontal. A vessel having the largest diameter shown in Figure 101 that does not exceed the diameter of the **cooking zone**, is completely filled with the spillage solution and positioned centrally over the **cooking zone**. A further quantity of 0,5 l of the spillage solution is poured steadily into the vessel over a period of 15 s. The test is carried out on each **cooking zone** in turn, after removing any residual spillage solution from the appliance.*

*For **hob elements** incorporating a switch or a thermal control, 0,02 l of the spillage solution is poured over the **hob element** so that it flows over the switch or control. A vessel is then placed on the **hob element** to depress any movable part. If controls are mounted in the **hob surface**, 0,5 l of the spillage solution is poured over them in a period of 15 s.*

*For **hobs** having ventilating openings in the **hob surface**, 0,2 l of the spillage solution is poured steadily through a funnel onto the ventilating openings. The funnel has an outlet diameter of 8 mm and is positioned vertically with the outlet 200 mm above the **hob surface**. The funnel is positioned above the ventilating openings so that the spillage solution enters the appliance in the most unfavourable way.*

*If the opening is protected, the funnel is positioned so that the spillage solution falls onto the **hob surface** as close as possible to the opening.*

Care is to be taken to ensure that the spillage solution is not poured over controls located close to ventilating openings.

*For **ovens** and **grills**, 0,5 l of the spillage solution is poured over the floor of the **oven** or grilling compartment.*

*For appliances having a drip tray or similar receptacle, the receptacle is filled with the spillage solution. A further quantity of the spillage solution, equal to 0,01 l per 100 cm^2 of the area of the top surface of the receptacle, is poured onto the receptacle through openings in the **hob surface**. However, the total quantity of spillage solution shall not exceed 3 l.*

*For **hobs** having a lid, 0,5 l of the spillage solution is poured uniformly over the closed lid. When the spillage solution has run off, the surface is dried and a further 0,125 l of the spillage solution is poured steadily from a height of approximately 50 mm onto the centre of the lid over a period of 15 s. The lid is then opened as in normal use.*

***Hobs** with controls mounted below the **hob surface** and **built-in ovens** that are intended for use installed under work surfaces shall be subjected to a spillage test with 0,5 l of the spillage solution. They shall be installed according to the manufacturer's instructions except that the front surface of the **oven** (excluding control knobs, handles) shall align with front edge of a 30 mm thick wooden work surface with a square front edge, see Figure 105. The spillage solution shall be poured on the work surface at the area which gives the most unfavourable conditions representing the pouring likely to occur, so that the spillage solution flows down the front surface of the **oven** over controls, joints, vents and similar openings. If necessary, the test is repeated until all different controls or gaps are covered by the spillage test. The appliance is dried between each test.*

The test is performed as follows:

A bottle with a shape similar to the one in Figure 107 and a cap is filled with 0,5 l of the spillage solution.

The cap of the bottle shall have a hole of 8 mm diameter, placed off-centre according to Figure 106. The bottle shall also have a hole of 8 mm diameter near the bottle base (see Figure 107) to equalize the liquid pressure.

Other suitable containers may be used provided the spillage solution amount is poured over the appliance under test in the same manner.

*The hole in the cap of the bottle is put on the horizontal work surface at approximately 80 mm horizontal distance with respect to the front of the **oven**. The inclination of the bottle shall be higher than 30° and lower than 45°. The lower part of the bottle hole in the cap shall be in contact with the work surface, with the hole in the cap placed down closest to the surface. See Figure 108.*

When the 0,5 l of spillage solution has been poured, the remaining solution on the work surface is pushed towards the front so that the remaining solution spills homogeneously over the front with a suitably flat means.

*Steam generators intended to be connected to the water mains are supplied at **rated water pressure**. Control devices for the supply of water are held open. If more than one device is used, they are tested in turn. Water is allowed to flow for 1 min after the first evidence of overflow, unless the inflow stops automatically.*

15.101 Temperature-sensing probes shall be constructed so that their insulation is not affected by water.

Compliance is checked by the following test.

The probe is completely immersed in water containing approximately 1 % NaCl and having a temperature of 20 °C ± 5 °C. The water is heated to the boiling point in approximately 15 min. The probe is then removed from the boiling water and immersed in water having a temperature of 20 °C ± 5 °C for 30 min.

***Detachable temperature-sensing probes** are not connected to the appliance for this test. **Non-detachable temperature-sensing probes** are tested in the **oven**, the probe being immersed as much as possible.*

This procedure is carried out five times after which the probe is removed from the water. All traces of liquid are then removed from the surface.

The probe shall then withstand the leakage current test of 16.2.

16 Leakage current and electric strength

This clause of Part 1 is applicable except as follows.

16.1 *Addition:*

*For **hobs**, the tests are carried out with a vessel filled as specified in 3.1.9.101 placed on each **cooking zone**.*

***Induction hob elements** and **induction wok elements** are tested as specified for **motor-operated appliances**.*

16.2 *Modification:*

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

– *for **stationary class I appliances** with heating elements that are **detachable parts** or can be switched off separately*	*1 mA, or 1 mA per kW power input for each element with a limit of 10 mA, whichever is higher. If the appliance has more than three **heating units**, only 75 % of the measured leakage current is taken into account;*
– *for other **stationary class I appliances***	*1 mA, or 1 mA per kW **rated power input** with a maximum of 10 mA, whichever is higher.*

Addition:

*If the **oven** incorporates a **grill**, or if the appliance incorporates a means to limit the total power input, only the leakage current of those elements that can be switched on at the same time is taken into consideration.*

*If there is earthed metal between **live parts** and the surface of glass-ceramic or similar material of **hobs**, the leakage current is measured between **live parts** and each vessel in turn connected to the earthed metal. If there is no earthed metal, the leakage current, measured between **live parts** and each of the vessels in turn, shall not exceed 0,25 mA.*

16.3 *Addition:*

*If there is earthed metal between **live parts** and the surface of glass-ceramic or similar material of **hobs**, a test voltage of 1 250 V is applied between **live parts** and all the vessels connected to the earthed metal. If there is no earthed metal, a test voltage of 3 000 V is applied between **live parts** and the vessels.*

17 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable.

18 Endurance

This clause of Part 1 is not applicable.

19 Abnormal operation

This clause of Part 1 is applicable except as follows.

19.1 *Addition:*

*For **induction hobs,** compliance is also checked by the tests of 19.101, 19.102 and 19.103, but 19.2, 19.3 and 19.4 are not applicable. In addition, 19.101 is not applicable to **induction wok elements**.*

***Temperature-sensing probes** are placed in the **oven** in any position likely to occur during normal use except that they are not connected to control the **oven** temperature.*

19.2 *Addition:*

***Hob elements** are operated without a vessel, **pan detectors** being rendered inoperative. **Oven** doors are open or closed, whichever is more unfavourable. **Hob** lids are closed unless the **hob elements** are interlocked with the lid or an indicator lamp, other than a lamp that is switched on and off by a **thermostat** or energy regulator, shows that a **hob element** is switched on.*

*For appliances incorporating more than one **heating unit**, the test is only carried out with the **heating unit** resulting in the most unfavourable conditions, its control being adjusted to the highest setting. If the appliance incorporates an **oven** without an indicator lamp to show that the **oven** is switched on, the **oven** is also operated, its control being adjusted to the highest setting. A lamp used for illuminating the **oven**, visible through the door and which is automatically switched on and off together with the **oven**, is considered to be an indicator lamp.*

***Pyrolytic self-cleaning ovens** are also operated under cleaning conditions, motors that operate during cleaning, such as fan or timer motors, being switched off or disconnected in turn.*

***Steam ovens** are operated without water.*

*Doors of separate grill compartments incorporated in a **cooking range** are open or closed, whichever is more unfavourable.*

19.4 *Addition:*

Pressure regulators *of* ***pressure steam ovens*** *are rendered inoperative together with each* ***protective device*** *in turn.*

19.9 Not applicable.

19.11.4 *Addition:*

During the test of the stand-by-mode, a suitable vessel is placed on the ***cooking zone*** *if a* ***pan detector*** *is incorporated.*

19.13 *Addition:*

The temperature rise limit of 150 K also applies to wooden cabinets and rectangular boxes.

The temperature in the centre of ***ovens*** *during the test of 19.4 shall not exceed 425 °C whenever the* ***oven*** *door can be opened.*

The temperature rise of the oil during the tests of 19.102 shall not exceed 270 K.

The temperature rise of the windings of ***induction hob elements*** *and* ***induction wok elements*** *shall not exceed the values specified in 19.7.*

The electric strength test of ***induction hob elements*** *and* ***induction wok elements*** *is carried out immediately after switching off the appliance.*

Glass in ***oven*** *doors shall not be damaged.*

It shall be possible to switch off any energized ***hob element*** *during the test of 19.14.*

19.101 ***Induction hob elements*** *are supplied at* ***rated voltage*** *and operated with a steel disc placed on the centre of the* ***cooking zone****. The disc has a thickness of 6 mm and the smallest diameter, rounded up to the nearest centimetre, that allows the* ***hob element*** *to operate.*

19.102 ***Induction hob elements*** *and* ***induction wok elements*** *are supplied at* ***rated voltage*** *and operated under* ***normal operation*** *but with thermal controls short-circuited.*

If the thermal control is an ***electronic circuit*** *using an NTC sensor, an additional test is carried out with the NTC replaced by a resistor with a value equal to the middle of the range of operation of the NTC in this circuit.*

NOTE This additional test satisfies the requirement "When it is stated that a control is short-circuited, it may be rendered inoperative instead." of 19.1 of Part 1.

19.103 ***Induction hob elements*** *and* ***induction wok elements*** *are operated under the conditions of Clause 11 with empty vessels, the controls being adjusted to the highest setting.*

If an ***induction hob element*** *or an* ***induction wok element*** *has a metallic lid, it is then tested by being operated under the conditions of Clause 11 without vessels, the controls being adjusted to the highest setting. A force of 30 N is applied to the closed lid in the most unfavourable place by means of test probe B of IEC 61032.*

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.2 *Addition:*

For parts of appliances situated not more than 850 mm above the floor after installation or in normal use, in addition to the use of test probe 18, test probe 19 of IEC 61032 is also applied wherever test probe 18 is used and with the same test conditions used for test probe 18. During the tests with test probe 19, the appliance shall be fully assembled as in normal use with any door closed.

20.101 **Cooking ranges** and **ovens** shall have adequate stability when the open door is subjected to a load.

Compliance is checked by the following test and by the test of 20.102 if relevant.

Appliances with horizontally hinged doors are placed on a horizontal surface and a mass is placed on the centre of the open door. For non-rectangular doors, the mass is placed on the part farthest from the hinge where it could be placed in normal use.

For appliances normally placed on the floor, the mass is

– *22,5 kg, for **oven** doors;*
– *7 kg, for other doors.*

For appliances normally placed on a table, the mass is 7 kg.

For appliances normally placed on the floor and having vertically hinged doors, a mass of 15 kg is placed in the most unfavourable position on the open door.

For an appliance having more than one door, the test is carried out on each door separately.

*The **oven** shelves are placed in the most unfavourable position.*

***Cooking ranges** are tested without fitting any stabilizing means that are specified in the instructions for installation.*

*For **cooking ranges** incorporating a storage compartment adjacent to the **oven** and in which the shelves are pulled out simultaneously, the shelves are also loaded. The shelves are placed in the most unfavourable position and loaded with a uniformly distributed mass. The mass in grams is equal to the area of the shelf in square centimetres multiplied by*

– *7,5, if the free height above the shelf does not exceed 20 cm;*
– *15, if the free height above the shelf exceeds 20 cm.*

The appliance shall not tilt.

Damage and deformation of doors and hinges are ignored.

20.102 *For **cooking ranges** that are normally placed on the floor and that have horizontally hinged **oven** doors with a hinge height of less than 430 mm from the floor, the test of 20.101 is repeated, except that:*

– *the **cooking range** is fitted with the stabilizing means, if any, specified in the instructions for installation;*

– *the mass of the load on the **oven** doors is increased to 50 kg, or the mass of 22,5 kg is placed at the centre of the outer edge of the **oven** door, whichever gives the most unfavourable results.*

*The **cooking range** shall not tilt.*

Damage and deformation of doors and hinges are ignored.

21 Mechanical strength

This clause of Part 1 is applicable except as follows.

21.1 *Addition:*

If the appliance has glass doors, three blows are applied to the centre of the glass, the door being in the closed position. If the door has horizontal hinges, the blows are also applied to the inside of the door when it is in the open position. However, additional support is not provided for the door in the open position.

The glass shall not fracture.

*If the appliance incorporates **visibly glowing heating elements** enclosed in glass tubes, the blows are applied to the tubes as mounted in the appliance if they are*

– *located at the top of the **oven** and accessible to test probe 41 of IEC 61032;*
– *located elsewhere in the **oven** and accessible to test probe B of IEC 61032.*

This test is carried out without removing any guard of the heating elements.

*For **hob surfaces** of glass-ceramic or similar material, three blows are applied to parts of the surfaces that are not exposed to impacts during the test of 21.102, the impact energy being increased to 0,70 J ± 0,05 J. The blows are not applied to surfaces within 20 mm of knobs.*

*If the **hob surface** comprises a single piece of material except for the outer frame, this test is not carried out.*

*After the test, **temperature-sensing probes** are subjected to one cycle of the procedure described in 15.101 and shall then withstand the leakage current test of 16.2.*

21.101 **Oven** shelves and their supports shall have adequate mechanical strength.

Compliance is checked by the following test.

*A vessel filled with sand or shot is placed on the **oven** shelf. The total mass in kilograms is equal to 220 times the volume of the useful **oven** space in cubic metres, or 24 kg, whichever is less.*

*The shelf, with the vessel placed centrally on it, is inserted into the **oven** and moved as close as possible to one of the side walls. It is left in this position for 1 min and then withdrawn. It is then reinserted, moved as close as possible to the other sidewall and left for 1 min.*

The test is repeated for each supporting position of the shelf. The shelf and supports shall show no distortion impairing their further use and the shelf shall not fall from the supports.

*The above tests are repeated with the mean temperature in the centre of the **oven** at 200 °C ± 4 °C before starting the test at each supporting position of the shelf.*

***Ovens** with withdrawable shelves fitted with stops or a rest position are then tested as follows.*

The shelves are fully extended to the maximum distance allowed by the stops or a rest position. An evenly distributed force as specified in Table 104 is applied to each shelf, at locations along the front edge of the shelf, using a vessel having side dimensions of Table 104, one side of the vessel being aligned along the front edge of the shelf.

Table 104 – Test loads

Oven volume	*Force*	*Side dimensions of vessels*
l	*N*	*mm*
20 ≤ volume ≤ 40	*50*	*160 × 160*
> 40	*80*	*200 × 200*

During this test, the shelf shall not tilt downwards by more than 6°.

21.102 Hob surfaces of glass-ceramic or similar material shall withstand the stresses liable to occur in normal use.

Compliance is checked by the following test.

*Each **hob element** is operated at **rated power input** with its control adjusted to the maximum setting. **Induction hob elements** and **induction wok elements** are operated as specified in Clause 11. When steady conditions are established, the **hob element** is switched off and a loaded vessel is dropped flat 10 times from a height of 150 mm onto the **cooking zone**.*

*For **hob elements** other than **induction wok elements**, the vessel has a flat copper or aluminium base over a diameter of 120 mm ± 10 mm, its edges being rounded with a radius of at least 10 mm. It is uniformly filled with at least 1,3 kg of sand or shot so that the total mass is 1,80 kg ± 0,01 kg. For **induction wok elements**, the vessel is the wok specified in 3.1.9.101. It is uniformly filled with sand or shot so that the total mass is 1,80 kg ± 0,01 kg.*

*After subjecting each **cooking zone** in turn to this impact, the vessel is removed and all **hob elements** are operated simultaneously until steady conditions are established.*

*A quantity of 1 $^{+0,1}_{0}$ l of water having a temperature of 15 °C ± 5 °C and containing approximately 1 % NaCl is poured steadily over the **hob surface**. The appliance is then disconnected from the supply. After 15 min, all excess water is removed and the appliance allowed to cool to approximately **room temperature**. The same quantity of the saline solution is poured over the **hob surface** after which excess water is removed again.*

*The **hob surface** shall not crack and the appliance shall withstand the electric strength test of 16.3.*

21.103 Temperature-sensing probes shall be constructed so that they are not damaged when trapped in the **oven** door.

Compliance is checked by the following test.

*The probe is connected as in normal use and the sensing part or cord allowed to rest in any position likely to occur. The **oven** door is closed against the sensing part or cord and a force of 90 N is applied to the door in the most unfavourable place for 5 s.*

*The **oven** is not operated during this test.*

The probe shall then comply with 8.1, 15.101 and Clause 29.

21.104 Glass panels of horizontally hinged **oven** doors shall withstand the thermal shock liable to occur in normal use.

Compliance is checked by the following test.

The appliance is operated as specified in Clause 11. The door is then opened and 0,2 l of water having a temperature of 15 °C ± 5 °C is poured within 5 s onto the centre of the glass panel.

*The test is not carried out after the cleaning cycle of **pyrolytic self-cleaning ovens**.*

The glass shall not fracture.

22 Construction

This clause of Part 1 is applicable except as follows.

22.7 *Addition:*

*All **pressure regulators** and **pressure-relief devices** of **pressure steam ovens** are rendered inoperative and the door is closed. The pressure is gradually increased hydraulically to two times the **rated cooking pressure**. The container shall not rupture.*

22.40 *Addition:*

Hobs shall not be controlled by a **remote operation**. However, **remote automatic regulation systems** are allowed for **induction hobs**, if all of the following requirements are fulfilled:

1) the start of operation of **heating units** shall be manually confirmed at the appliance each time;
2) the delayed start is not allowed;
3) the **hob elements** may be switched off via **remote communication**. After switching off, the appliance shall confirm to the user through the remote **entity** that the **hob element** has been switched off;
4) controls and displays on the appliance shall indicate clearly to which **hob element** the **remote automatic regulation system** is assigned;
5) in case of loss of communication with sensors exceeding 20 s, the **hob elements** operating with a **remote automatic regulation system** shall be switched off;
6) if sensors are battery-operated, they shall be evaluated according to normative Annex B requirements;
7) sensors in the **remote automatic regulation system** shall be non-detachable from the vessel during operation unless specific sensor positioning does not impair compliance.

Compliance is checked by inspection, by the tests of normative Annex B for item 6) and by the tests in a), b) and c) in turn for item 7). Vessels shall not attain excessive temperatures during any of the tests.

***Induction hob elements** working with **remote automatic regulation systems** are tested with the following set up and supplied at **rated voltage**. The controls of these **cooking zones** are adjusted to their highest setting or the setting which gives the highest temperature. The **cooking zone** under test is set for remote automatic regulation.*

Remote automatic regulation systems *are tested by using vessels according 3.1.9.101 but empty. In case of special accessories supplied with the appliance or recommended by the manufacturer, like vessels with integral sensors, these vessels are used for testing instead, and they are operated empty.*

The temperature rises measured in the centre of the inner bottom of the vessels are determined by means of thermocouples attached to disks of copper or brass, 15 mm in diameter and 1 mm thick as indicated in Figure 109.

a) ***Induction hob elements*** *working with* ***remote automatic regulation system*** *are operated with the empty vessel as specified above. A second vessel without* ***remote automatic regulation system*** *is filled with oil according to 3.1.9.101 and is placed on another cooking zone with the highest power adjusted to the highest setting or the setting which gives the highest temperature. The vessels are interchanged after the setting of the control function of the* ***remote automatic regulation system****;*

b) ***Induction hob elements*** *working with* ***remote automatic regulation system*** *are operated with the empty vessel as specified above. The empty vessel is placed 30 mm partly out of the* ***cooking zone*** *in the most unfavourable position. For* ***flexible induction cooking zones*** *the vessel is placed as described in Figure 110;*

NOTE 101 Maximum displacement of the vessel is limited by the outer contour of the **hob surface**.

c) ***Induction hob elements*** *working with* ***remote automatic regulation system*** *are operated with the empty vessel as specified above and with thermal controls including thermal controls of accessories like vessels with integral sensors short-circuited or rendered inoperative one at a time.*

All the above tests are continued until steady conditions are established and the temperature rise in all vessels shall not exceed 270 K.

If compliance with the tests a) through c) relies upon the operation of an ***electronic circuit****, the test is repeated under the following conditions applied separately:*

– *the fault conditions in a) to g) of 19.11.2 are applied one at a time to the* ***electronic circuit****;*

– *the electromagnetic phenomena tests of 19.11.4.1 to 19.11.4.7 are applied to the appliance. The tests are carried out after the circuit limiting the temperature has operated and with surge protective devices disconnected, unless they incorporate spark gaps.*

If the ***electronic circuit*** *is programmable, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of normative Annex R.*

22.51 *Addition:*

The start of a cleaning cycle of a **pyrolytic self-cleaning oven** shall be manually confirmed at the appliance. There shall be a visual indication on the appliance showing that the appliance is adjusted for **remote operation**.

22.61 *Addition:*

If the **cooking range** is intended to be permanently connected to fixed wiring or is fitted with a polarised plug, the neutral pole of a polarised socket-outlet need not be protected, otherwise both poles shall be protected. A **non-detachable cover** is not required if fuses become accessible after opening a drawer or other compartment.

Socket-outlets incorporated in **cooking ranges** shall incorporate an earthing contact.

22.62 *Addition:*

For **remote automatic regulation systems** in **induction hobs** using **remote communication** through **public networks**, normative Annex U always applies.

22.101 **Hobs** shall be constructed so that **hob elements** are prevented from rotating about a vertical axis and are supported in all positions of adjustment of their supports.

If a **hob element** is clamped by a nut on a central stud, an additional means is required to prevent its rotation.

Hobs with **detachable hob elements** shall be constructed so that damage is unlikely to occur while the **hob elements** are being removed or replaced.

Compliance is checked by inspection.

22.102 **Remote operation** and timers intended to delay the operation of a heating element shall not control a **grill**, unless the **grill** is thermally controlled, incorporated in an **oven** or compartment and it is only possible to operate the **grill** with the door of the **oven** or compartment being closed. Delayed start timers shall not control a **hob element**.

*Compliance is checked by inspection. However, if monitoring of the door is by a programmable **electronic circuit**, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements in normative Annex R.*

22.103 **Oven** vents shall be constructed so that any moisture or grease discharged through them cannot affect **clearances** and **creepage distances** between **live parts** and other parts of the appliance.

Compliance is checked by inspection.

22.104 **Steam ovens** shall be constructed so that steam vents and ducts are unlikely to become blocked during normal use.

Pressure relief devices that operate during the tests of 19.4 and 22.7 shall have an inlet aperture at least 5 mm in diameter or 20 mm^2 in area with a width of at least 3 mm. The area of the aperture at the outlet shall not be less than that of the aperture at the inlet.

Compliance is checked by inspection and measurement.

22.105 **Built-in ovens** shall only be vented through the front, unless provision is made for venting through a duct.

Compliance is checked by inspection.

22.106 **Grills** shall be constructed so that grill pans can be easily positioned without jamming.

The grill pans shall not fall from the support when moved sideways.

Compliance is checked by inspection and by manual test.

22.107 **Pyrolytic self-cleaning ovens** shall switch off automatically at the end of the cleaning process and require a manual operation to start another cleaning cycle.

Compliance is checked by inspection.

22.108 Pyrolytic self-cleaning ovens shall be constructed so that opening and closing of the door does not impair the interlock system or damage the door seal.

Compliance is checked by the following test.

The door is opened at least 10 cm and is then closed by applying a force of 90 N to the handle. This operation is carried out 5 000 times. Every 1 000 cycles, the interlock system for the self-cleaning function is operated.

After the test, the interlock system shall be fit for further use and the door seal shall not be damaged.

22.109 Pyrolytic self-cleaning ovens shall incorporate an interlock so that access to the **oven** cannot be gained when the temperature in the centre of the **oven** exceeds 350 °C, even if the interlock is defective.

Compliance is checked by inspection and by the following test.

*The **oven** is supplied at **rated voltage** and operated under cleaning conditions, after which it is allowed to cool. While the temperature in the centre of the **oven** exceeds 350 °C, a force of 90 N is applied to levers and handles, and a torque of 2 Nm is applied to rotary knobs. It shall not be possible to open the door.*

The test is repeated with any defect that can be expected in normal use applied to the interlock system, including breakage of a spring, a gravity-operated part failing to drop into position or interruption of the supply, only one defect being simulated at a time. Fault conditions applied during the tests of Clause 19 are not repeated.

22.110 Pyrolytic self-cleaning ovens shall be constructed so that ignitable gases cannot be discharged through vents during the cleaning process.

Compliance is checked by the following test.

*A mixture of 30 g of gravy that consists of two-thirds by mass of beef extract and one-third water, and 15 g of hydrogenated oil shortening is spread evenly over the interior of the **oven**, including the door. The **oven** is operated for 3 h at the maximum setting of the **thermostat**.*

*The **oven** is then operated under cleaning conditions and attempts are made to ignite gases that can be discharged through vents by bursts of sparks. The sparks are approximately 3 mm long, each spark having an energy of at least 0,5 J.*

*The sparks are applied when the temperature in the centre of the **oven** reaches 300 °C and at each subsequent temperature rise of 50 K. The electrodes used to produce the sparks are moved in and around the vents through which gases can be discharged.*

There shall be no continuous burning of gases.

*If the **oven** incorporates a heating element intended to eliminate smoke, the test is repeated with this heating element disconnected if the temperature in the centre of the **oven** exceeds 450 °C under cleaning conditions.*

22.111 Pyrolytic self-cleaning ovens shall be constructed so that there is no risk of emission of flames during the cleaning process.

Compliance is checked by the following test.

*A suitable vessel containing 100 g of salt-free butter is placed on the centre of the **oven** floor.*

The electrodes of a spark generator are positioned approximately 7,5 cm above the surface of the butter.

*The **oven** is then operated under cleaning conditions and bursts of sparks are produced. The sparks are approximately 3 mm long, each spark having an energy of at least 0,5 J. The sparks are generated when the temperature in the centre of the **oven** reaches 300 °C and at each subsequent temperature rise of 50 K.*

There shall be no emission of flames through door seals, vents or other openings.

22.112 **Hobs** shall be constructed so that hinged lids cannot close accidentally.

Compliance is checked by inspection and by manual test.

This requirement is not applicable if the hinge incorporates a click stop or similar means, or if the lid can be opened through an angle of at least 100°, when the appliance is placed against a wall.

22.113 **Hobs** shall be constructed so that inadvertent operation of **touch controls** is unlikely if this could give rise to a hazardous situation due to

– spillage of liquids, including that caused by a vessel boiling over;
– a damp cloth placed on the **touch control** panel.

*Compliance is checked by the following test, the appliance being supplied at **rated voltage**. The test is carried out with each **hob element** energized in turn and then without energizing any **hob elements**.*

*A quantity water to completely cover the **touch control** panel to a depth not exceeding 2 mm, with a minimum of 140 ml, is poured steadily over the **touch control** panel so that bridging occurs between combinations of touch pads.*

*A white cloth having a mass between 140 g/m^2 and 170 g/m^2, and dimensions approximately 400 mm × 400 mm, is folded four times into a square pad, saturated with water and placed over the **touch control** panel in any position without touching any vessel or **cooking zone**.*

In case of doubt, different coloured cloths can be used.

*There shall be no operation of any **hob element** for longer than 10 s.*

*During the test, it shall be possible to switch off the energized **hob element** by operating the **touch controls**, unless it switches off automatically.*

22.114 **Hobs** having **touch controls** shall require at least two manual operations to switch on a **hob element** but only one operation to switch it off. However, additional **hob elements** may be switched on by a single manual operation. In this case, 1 min after all the **hob elements** have been switched off, two manual operations are required to re-energize one **hob element**. Touching the contact surface at the same point twice is not considered to be two manual operations.

Hobs having **touch controls** shall incorporate visual means to indicate when each **hob element** is energized.

Compliance is checked by inspection and by manual test.

22.115 **Induction hob elements** and **induction wok elements**, and other **hob elements** incorporating a **pan detector**, shall be constructed so that the **hob element** can only be operated when a vessel is placed on the **cooking zone**.

Compliance is checked by the following test, the appliance being supplied at ***rated voltage****.*

An iron bar 2 mm thick having dimensions approximately 100 mm × 20 mm is placed in the most unfavourable position on each ***cooking zone*** *in turn. The controls are adjusted to their highest setting.*

For ***induction hob elements*** *and* ***induction wok elements****, the temperature rise of the bar shall not exceed 35 K. Other* ***hob elements*** *shall not operate.*

22.116 **Hob elements** incorporating a **pan detector** shall be constructed so that the **hob element** is not switched on by the vessel if it has been removed for more than 10 min.

Compliance is checked by manual test.

22.117 In appliances incorporating a **pan detector**, a visual means shall indicate when the control for the **hob element** is not switched to the **off position**.

Compliance is checked by inspection.

22.118 It shall not be possible to operate a **grill** while the plug of a **supply cord** is engaged in a socket-outlet located directly above the door.

Compliance is checked by inspection and by manual test.

22.119 **Cooking ranges** incorporating a retractable deflector to prevent excessive temperatures on control knobs shall be constructed so that the user is unlikely to touch hot surfaces of the deflector when operating the controls.

Compliance is checked by measuring the distance between the deflector in its extended position and that part of the control knob touched in normal use. It shall be at least 25 mm, or the temperature rise of those parts within 25 mm of the knob shall not exceed the limits for handles, knobs, grips and similar parts held for short periods only, as specified in Table 3.

22.120 Outer glass panels of **oven** doors and glass in hinged lids of **hobs** shall be made from

– glass that breaks into small pieces when it fractures; or
– glass that is not released or dropped from its normal position when broken.

For glass that breaks into small pieces when it fractures, compliance is checked by the following test which is performed on two samples.

Frames or other parts attached to the glass panel to be tested are removed and the glass is placed on a rigid horizontal flat surface. The edges of the sample to be tested are contained within a frame of adhesive tape in such a manner that the broken pieces remain in place after breakage but without hindering expansion of the sample.

The sample under test is broken by means of a test punch having a head with a mass of 75 g ± 5 g and a conical tungsten carbide tip with an angle of 60° ± 2°. The punch shall be positioned approximately 13 mm from the longest edge of the glass at the midpoint of that edge. The punch is then hit by a hammer so that the glass breaks.

A transparent mask of 50 mm × 50 mm is placed on the fractured glass except within a peripheral margin of 25 mm from the edge of the sample and a semi-circular area having a radius of 100 mm from the point of impact.

The assessment shall be undertaken on at least two areas of the sample, and the areas chosen shall contain the largest particles.

Within 5 min, the number of crack-free particles within the mask are counted and for each assessment shall not be less than 60.

In the case of curved glass, plane pieces of the same material can be used for the test.

For glass that is not released or dropped from its normal position when broken, compliance is checked by breaking the glass when mounted in its normal position in the appliance by means of a test punch having a head with a mass of 75 g ± 5 g and a conical tungsten carbide tip with an angle of 60° ± 2°. The punch shall be positioned approximately 13 mm in from the longest edge of the glass at the midpoint of that edge. The punch is then hit by a hammer so that the glass breaks.

At the conclusion of this test, the glass shall not be broken or cracked such that pieces are released or dropped from their normal position.

22.121 Glass panels of **oven** doors that are intended to be removed by the user for cleaning shall be constructed so that they cannot be fixed in an incorrect orientation.

Compliance is checked by inspection and by manual test.

22.122 **Ovens** with a capacity exceeding 20 l and having withdrawable shelves shall be fitted with stops or a rest position to prevent the inadvertent withdrawal of the shelves This requirement does not apply to shelves that are designed to contain liquids, such as roasting trays and the like. This requirement also does not apply to shelves that are designed to be used in **steam ovens**, having a depth lower than 320 mm and perforated to contain vegetables.

NOTE A stop is a feature of the shelf that prevents its withdrawal by a simple action. Two separate actions, such as pulling and then lifting, are not considered to be a simple action.

The shelves shall be capable of being withdrawn so that when fully extended to the rest position or the maximum distance allowed by the stops, the front edge of the shelves extends beyond the plane of the inside front surface of the **oven** door in the closed position by a distance of not less than 160 mm or 50 % of the depth of the shelf whichever is less.

The shelves shall also be constructed to prevent cooking dishes, or the like, from sliding over the rear edge.

Compliance is checked by inspection and by manual test.

22.123 Appliances incorporating at least one **hob element** shall be designed so that it is possible to switch off any energized **hob element** in the case of failure of any **electronic component**.

Compliance is checked by the following test:

*The appliance is operated under the conditions specified in Clause 11 but supplied at **rated voltage**.*

*The fault conditions in a) to g) of 19.11.2 are then considered and, if necessary, applied one at a time to the **electronic circuit**.*

*It shall be possible to switch off any energized **hob element** during the test.*

*If a **pan detector** is incorporated, a suitable vessel is placed on the **cooking zone**.*

*If the **electronic circuit** is programmable, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of normative Annex R.*

22.124 Appliances incorporating at least one **hob element** shall be designed so that the **hob element** does not become energized unintentionally in case of any **electronic component** being rendered inoperative.

Compliance is checked by the following test:

*The appliance is operated under the conditions specified in Clause 11 with all individual **hob elements** switched off, the appliance being supplied at **rated voltage**.*

*The fault conditions in a) to g) of 19.11.2 are then considered and, if necessary, applied one at a time to the **electronic circuit**.*

*There shall be no operation of any **hob element** for longer than 10 s.*

*If a **pan detector** is incorporated; a suitable vessel is placed on the **cooking zone**.*

*If the **electronic circuit** is programmable, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of normative Annex R.*

22.125 **Pressure steam ovens** shall incorporate a **non-self-resetting pressure relief device** that prevents excessive pressure.

*Compliance is checked by operating the appliance under **normal operation** with **pressure regulators** and temperature controls rendered inoperative.*

*The **pressure relief device** shall operate during this test so as to prevent the internal pressure exceeding the **rated cooking pressure** by more than 20 %.*

22.126 The **pressure relief device** in **steam ovens** shall be positioned or constructed so that its operation does not cause injury to persons or damage to surroundings. Its construction shall be such that it cannot be made inoperative or set to a higher relief pressure.

Compliance is checked by inspection and the tests of Clause 19.

22.127 The operating pressure of **pressure steam ovens** shall not exceed the rated cooking pressure during normal operation.

*Compliance is checked by measuring the operating pressure during the test of Clause 11. The measured pressure shall not exceed the **rated cooking pressure**.*

22.128 Means provided to allow drainage of water from cooking compartments of **steam ovens** shall discharge the water in such a manner that electrical insulation is not affected.

Compliance is checked by inspection and by manual test.

22.129 **Pressure steam ovens** shall incorporate vacuum release means to prevent a partial vacuum forming.

Compliance is checked by inspection.

22.130 Emptying devices such as drain plugs for emptying hot liquids from a **steam oven** shall be constructed so that they cannot be opened inadvertently. This requirement is considered to be met when the emptying device handle is such that, when released, it returns the emptying device automatically to the closed position; or it is of the wheel type; or it is placed in a recess such that it cannot be placed in the open position by means of test probe B of IEC 61032 using a single action with a force of 10 N.

Compliance is checked by inspection and by manual test.

22.131 **Steam ovens** shall be constructed such that there is no spillage of water or sudden jets of steam or hot water likely to expose the user to a hazard when the appliance is used in accordance with the instructions.

If jets of steam or liquids are emitted through **protective devices**, the electrical insulation shall not be affected or the user exposed to a hazard.

Compliance is checked by inspection during the tests of Clause 11.

22.132 **Pressure steam ovens** shall be constructed so that the door cannot be opened while the pressure within the pressurised cooking compartment is excessive. They shall incorporate a means to release the pressure to a value such that the door can be opened without risk.

Compliance is checked by the following test.

*The **pressure steam oven** is operated as specified in Clause 11 until the **pressure regulator** operates for the first time.*

*The **pressure steam oven** is then disconnected from the supply and the pressure allowed to decrease until the pressure is 4 kPa. A force of 100 N is applied to the most unfavourable point where the door or its handle can be gripped. It shall not be possible to open the door.*

The internal pressure is then gradually reduced, the force of 100 N being maintained. There shall be no hazardous displacement of the door when it is released.

*This test is not carried out on **pressure steam ovens** when the door is secured by screw clamps or other devices that ensure that the pressure is automatically reduced in a controlled manner before the door can be opened.*

22.133 The hazard created by **hobs elements** having **off positions** that are not visible during a mains voltage interruption shall be obviated as far as is practicable.

Compliance is checked by inspection and by the following test.

*The appliance is operated under the conditions of Clause 11. The main voltage is interrupted for 10 min and then restored. On restoration of the power supply, none of the **hob elements** shall be re-energized.*

*A manual operation shall be required to re-energise the **hob elements**.*

22.134 For appliances incorporating at least one **hob element**, other than an **induction hob element** or an **induction wok element**, controlled by an **electronic circuit**, safety shall not be impaired in the event of a fault in the **electronic circuit.**

Compliance is checked by the following test:

The appliance is operated under the conditions specified in Clause 11 but supplied at ***rated voltage****.*

The fault conditions in a) to g) of 19.11.2 are applied one at a time to the ***electronic circuit*** *controlling the duty cycle for each* ***hob element*** *in turn.*

The control setting shall not change to a higher setting for longer than 2 min.

The software used to comply with the requirement shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of normative Annex R.

22.135 **Ovens** intended for use on board ships shall withstand the pulses to which they can be subjected.

Compliance is checked by carrying out the half-sine pulse tests specified in IEC 60068-2-27 under the following conditions.

The appliance is fastened in its normal position of use to a shock-testing machine by means of straps around the enclosure.

The type of pulse is a half-sine pulse and the severity is as follows.

– *application of the half-sine pulse is in all 3 axes;*
– *peak acceleration: 250 m/s^2,*
– *duration of each half-sine pulse: 6 ms;*
– *number of half-sine pulses in each direction: 1 000 ± 10.*

The appliance shall not be damaged to the extent that compliance with 8.1, 16.3, Clause 29 is impaired and connections shall not have worked loose.

22.136 **Ovens** intended for use on board ships shall withstand the vibrations to which they can be subjected.

Compliance is checked by carrying out the vibration tests specified in IEC 60068-2-6 under the following conditions.

The appliance is fastened in its normal position of use upon a vibration table by means of straps around the enclosure. The type of vibration is sinusoidal and the severity is as follows:

– *direction of vibration is vertical and horizontal;*
– *amplitude of vibration: 0,35 mm;*
– *sweep frequency range: 10 Hz to 150 Hz;*
– *duration of the test: 30 min.*

The appliance shall not be damaged to the extent that compliance with 8.1, 16.3, Clause 29 is impaired and connections shall not have worked loose.

22.137 **Ovens** intended for use on board ships shall have means to reliably close each door, drawer, or other sliding or hinged part with a latch.

Compliance is checked by inspection and by the following test.

A force of 50 N is applied in an attempt to open the latched door, drawer, or other sliding or hinged part. The force is applied in the most onerous position and direction.

The door, drawer, or other sliding or hinged part shall not open.

22.138 For appliances that are controlled by programmable **electronic circuits** that limit the number of heating elements and motors from being energised at the same time, simultaneous activation of any combination of heating elements and motors shall not render the appliance unsafe.

Compliance is checked as follows:

– *the fault/error conditions specified in Table R.1 are applied and evaluated in accordance with the relevant requirements of normative Annex R; or*

– *the appliance is operated under the conditions of Clause 11 while being supplied at **rated voltage**, the programmable **electronic circuits** being modified to allow simultaneous activation of all heaters and motors under their control. Under these conditions, compliance with 19.13 shall be fulfilled.*

23 Internal wiring

This clause of Part 1 is applicable except as follows.

23.3 *Addition:*

The requirement also applies if parts of a **cooking range** are folded onto the **hob surface**, or separated from their normal position, for transportation purposes.

24 Components

This clause of Part 1 is applicable except as follows.

24.1.3 *Addition:*

*Switches controlling **hob elements** are subjected to 30 000 cycles of operation.*

24.1.4 *Addition:*

– *energy regulators*
  - *for automatic action* *100 000*
  - *for manual action* *10 000*

– ***self-resetting thermal cut-outs***
  - *for heating elements of glass-ceramic **hobs*** *100 000*
  - *for heating elements of other **hobs*** *10 000*

– ***thermostats** controlling the cleaning process in **pyrolytic self-cleaning ovens*** *3 000*

24.101 **Thermostats** and energy regulators incorporating an **off position** shall not switch on as a result of variations in ambient temperatures.

Compliance is checked by the following test that is carried out on three samples of the control.

*The control, adjusted to the **off position**, is placed for 2 h in an ambient temperature of* $-20\ ^{0}_{-5}$ *°C, and then at*

– *t °C, where t is the temperature according to the T-marking;*
– *55 °C, for controls without a T-marking.*

*During the test, the **off position** shall be maintained.*

A test voltage of 500 V is applied across the contacts for 1 min. No breakdown shall occur.

25 Supply connection and external flexible cords

This clause of Part 1 is applicable except as follows.

25.3 *Addition:*

Hobs, built-in ranges and **built-in ovens** may be connected to the supply mains before the appliance is installed.

25.14 *Addition:*

*For **temperature-sensing probes**, the total number of flexings is 5 000. Probes with circular-section cords are turned through 90° after 2 500 flexings.*

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable.

28 Screws and connections

This clause of Part 1 is applicable.

29 Clearances, creepage distances and solid insulation

This clause of Part 1 is applicable except as follows.

29.2 *Addition:*

The microenvironment is pollution degree 3 unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance.

29.3 *Addition:*

This requirement does not apply to the sheath of a **visibly glowing heating element** inaccessible to test probe 41 of IEC 61032.

30 Resistance to heat and fire

This clause of Part 1 is applicable except as follows.

30.2 *Modification:*

Replace the two dashed items in the compliance criteria with the following:

– for **induction wok elements, grills** and **griddles** that do not incorporate a timer, 30.2.2 is applicable;
– for other appliances, 30.2.3 is applicable.

31 Resistance to rusting

This clause of Part 1 is applicable except as follows.

Addition:

*For **ovens** intended for use on board ships compliance is checked by the salt mist test Kb of IEC 60068-2-52:2017,*

– *for **open deck** use, test method 1 is applicable;*
– *for **dayrooms** use, test method 2 is applicable.*

The coatings of metal parts are prepared for the test as follows:

Five scratches are made at least 5 mm apart and at least 5 mm from the edges of the relevant parts to be tested.

The test pin of 21.2 is used for the test. The pin is held at an angle of 80° to 85° to the horizontal and loaded so that the force exerted to its axes is 10 N ± 0,5 N. The scratches are made by drawing the pin along the surface at a speed of approximately 20 mm/s.

After the test, the appliance shall not have deteriorated to such an extent that compliance with this standard, in particular with Clause 8 and Clause 27, is impaired. The coating shall not be broken and shall not have detached from the metal surface.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable except as follows.

32.101 **Pyrolytic self-cleaning ovens** shall be constructed so that carbon monoxide is not discharged in hazardous quantities during cleaning.

Compliance is checked by the following test.

*Twice the quantity of the mixture specified in 22.110 is spread evenly over the interior of the **oven**, including the door. The **oven** is supplied at **rated voltage** and operated for 3 h in the conventional heating mode at the maximum setting of the **thermostat**. If a conventional heating mode is not available, then the forced air heating mode is used.*

*The **oven** is then allowed to cool to **room temperature** and placed in a closed test room having a volume of 20 m^3 to 25 m^3, in which the air is circulated by a low-speed fan. The **oven** is operated under cleaning conditions and the concentration of carbon monoxide is measured 1 m above the centre of the floor.*

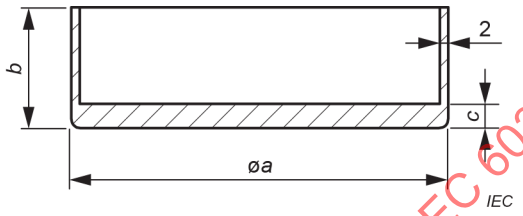
The concentration of carbon monoxide shall not exceed 0,015 %.

*If the **oven** incorporates a heating element intended to eliminate smoke, the test is repeated with this heating element disconnected, unless the cleaning process can only be performed when the heating element is in circuit.*

*If compliance relies on the operation of an **electronic circuit** to calculate the concentration of the carbon monoxide, the test is repeated with the fault conditions in a) to g) of 19.11.2 applied one at a time to the **electronic circuit**.*

*If the **electric circuit** is programmable, the software shall contain measures to control the fault/error conditions specified in Table R.1 and is evaluated in accordance with the relevant requirements of normative Annex R.*

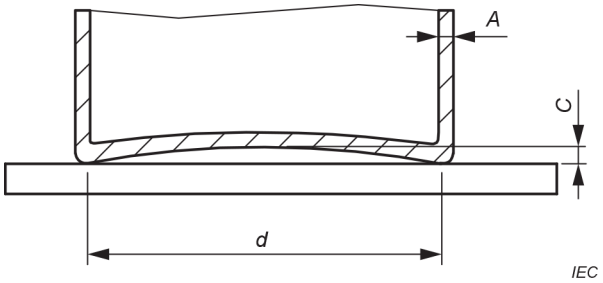
Dimensions in millimetres



Diameter of cooking zone mm	Approximate dimension		
	a mm	b mm	c mm
≤ 110	110	140	8
> 110 ≤ 145	145	140	8
> 145 ≤ 180	180	140	9
> 180 ≤ 220	220	120	10
> 220 ≤ 300	300	100	10

The maximum concavity of the base of the vessel is to be not more than 0,05 mm. The base of the vessel is not to be convex.

Figure 101 – Vessel for testing hob elements



Key

A wall thickness, 2 mm ± 0,5 mm

C maximum concavity

d diameter of the flat area of the base

thickness of base:

d <145 mm, 2 mm ± 0,5 mm

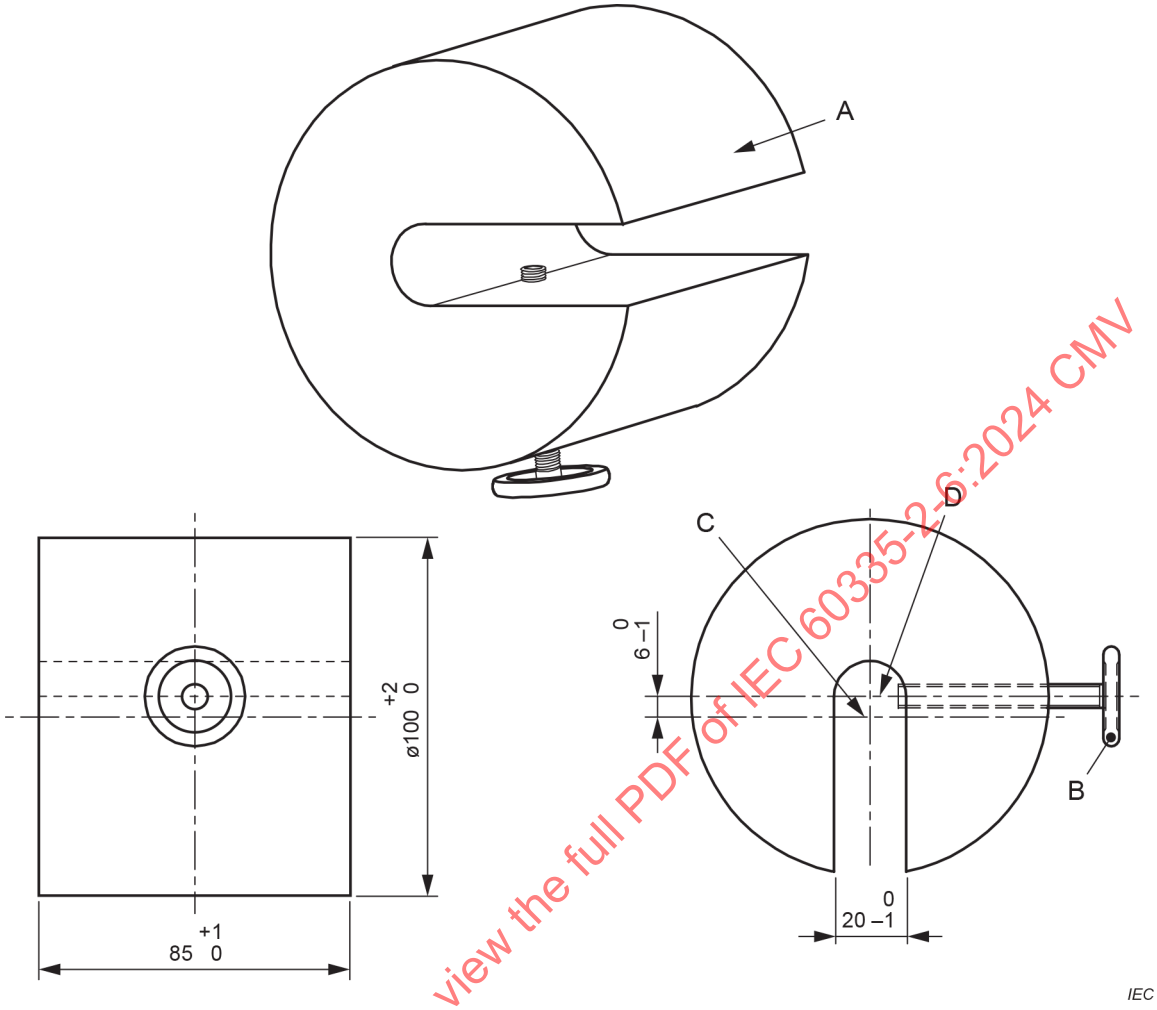
d = 145 mm to 240 mm, 3 mm ± 0,5 mm

d >240 mm, 5 mm ± 0,5 mm

The vessel is made of low carbon steel having a maximum carbon content of 0,08 %. It is cylindrical without metallic handles or protrusions. The diameter of the flat area of the base of the vessel is to be at least the diameter of the **cooking zone**. The maximum concavity of the base of the vessel is 0,006 *d*. The base of the vessel is not to be convex.

Figure 102 – Vessel for testing induction hob elements

Dimensions in millimetres



Key

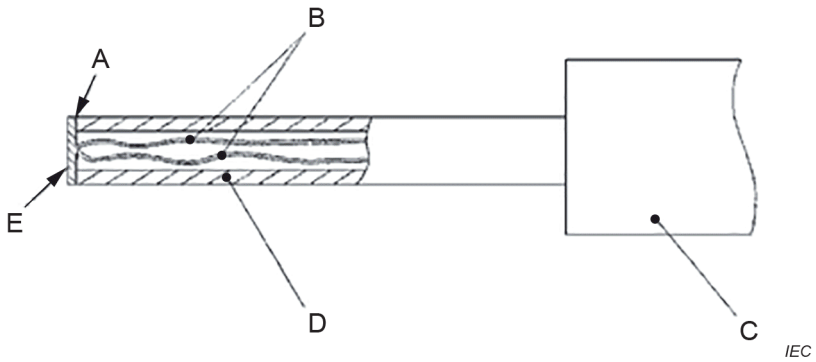
A load, mass approximately 4,5 kg

B fixing screw

C axis of load

D axis of fixing screw

Figure 103 – Load for testing rotating spits



Key

A adhesive

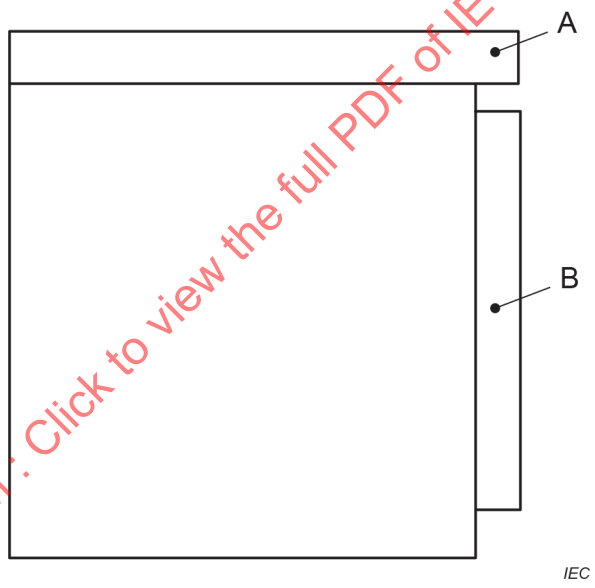
B thermocouple wires 0,3 mm diameter to IEC 60584-1 Type K

C handle arrangement permitting a contact force of 4 N ± 1 N

D polycarbonate tube: inside diameter 3 mm, outside diameter 5 mm

E flat tinned copper disc: 5 mm diameter, 0,5 mm thick with flat contact face

Figure 104 – Probe for measuring surface temperatures

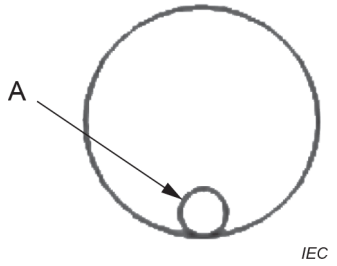


Key

A work surface

B **oven**

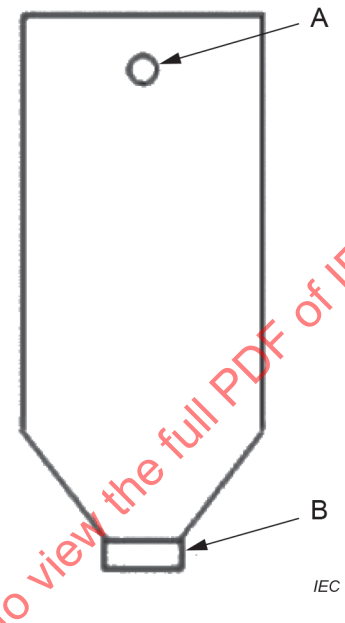
Figure 105 – Arrangement of work surface for spillage test on built-in ovens



Key

A bottle cap hole – diameter 8 mm

Figure 106 – Detail of bottle cap and position of hole



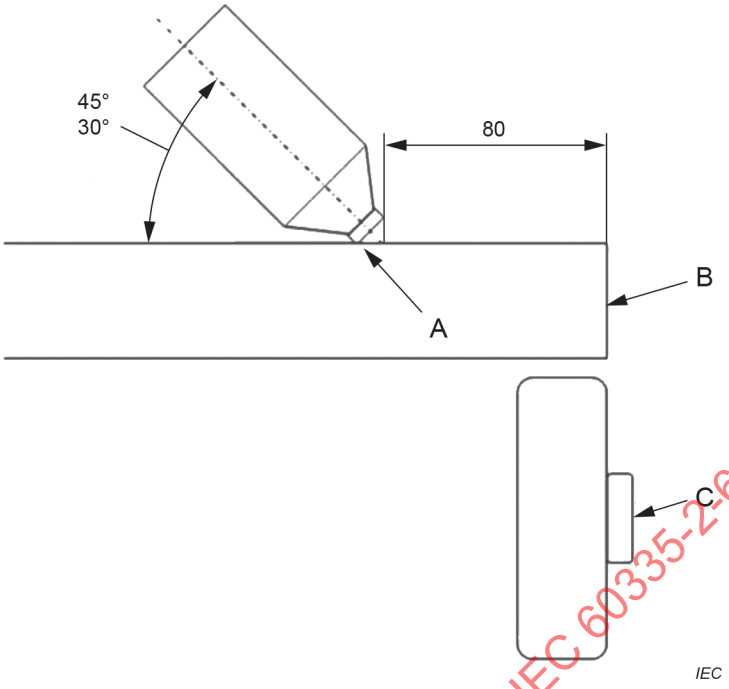
Key

A bottle hole with diameter 8 mm

B bottle cap

Figure 107 – Spillage solution bottle

Dimensions in millimetres



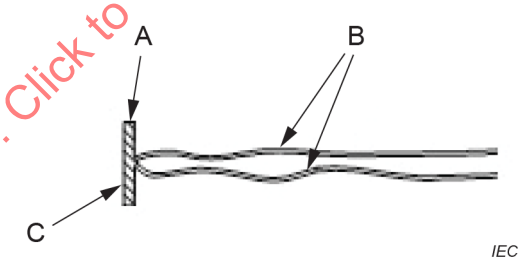
Key

A bottle cap hole position

B edge of work surface

C front of **oven**

Figure 108 – Bottle position for the spillage test



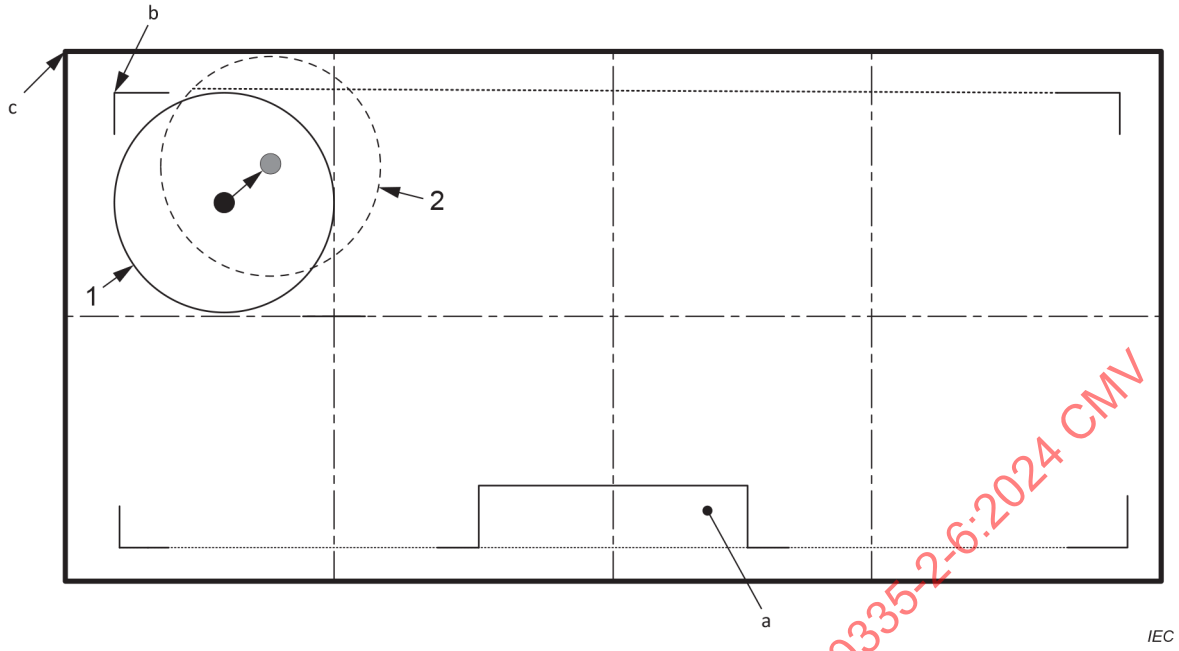
Key

A copper or brass disc: 15 mm diameter, 1 mm thick

B thermocouple wires 0,3 mm diameter to IEC 60584-1 Type K

C thermal conductive grease / heat conductive paste

Figure 109 – Probe for measuring temperatures inside empty vessels



Key

a area of the control

b limitative marking of the cooking area

c outer contour of **hob surface**

1 centered position

2 decentered position

Figure 110 – Indication for decentring vessels

Annexes

The annexes of Part 1 are applicable except as follows:

Annex B
(normative)

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

This annex of Part 1 is applicable except as follows:

B.11.1 *Modification:*

Replace the second, third and fourth paragraphs with the following:

*For appliances operated with **detachable batteries** or **separable batteries** that are disconnected from the appliance for charging purposes, the appliance is operated as specified in 11.7 and 11.101, respectively, until it completes the duration of the test as specified or it no longer operates due to depletion of the **battery**. If the battery is depleted before the appliance completes the duration of the test, the depleted **battery** is immediately replaced with another **battery** that is **fully charged**, the **battery** being the model or type reference of the **battery** provided or indicated in the instructions. The test is continued until the appliance completes the duration of the test as specified or it no longer operates due to depletion of the **battery**.*

*For appliances incorporating **integral batteries** or **separable batteries** not disconnected from the appliance for charging purposes, and that cannot perform their intended function while the **batteries** are being charged, the appliance is operated as specified in 11.7 and 11.101 respectively until it cannot perform its intended function due to the depletion of the **batteries**.*

*For appliances operated with **batteries** that are replaceable, including **integral batteries** that are replaceable, or **non-rechargeable batteries**, the appliance is operated until the minimum capacity of the **battery** as specified in Table B.1 has been delivered or the appliance completes the duration of the test as specified in 11.7 and 11.101 respectively whichever occurs first.*

Annex R
(normative)

Software evaluation

This annex of Part 1 is applicable except as follows:

R.2.2.5 *Modification:*

Replace the first paragraph with the following:

For programmable **electronic circuits** with functions requiring software incorporating measures to control the fault/error conditions specified in Table R.1 or Table R.2, detection of a fault/error shall occur before compliance with Clause 19, 22.40, 22.102, 22.123, 22.124, 22.134, 22.138 or 32.101 is impaired.

R.2.2.9 *Modification:*

Replace the first sentence of the first paragraph with the following:

The software and safety-related hardware under its control shall be initialized and shall terminate before compliance with Clause 19, 22.40, 22.102, 22.123, 22.124, 22.134, 22.138 or 32.101 is impaired.

Annex AA
(informative)

Guidance for the application of remote operation for induction hobs

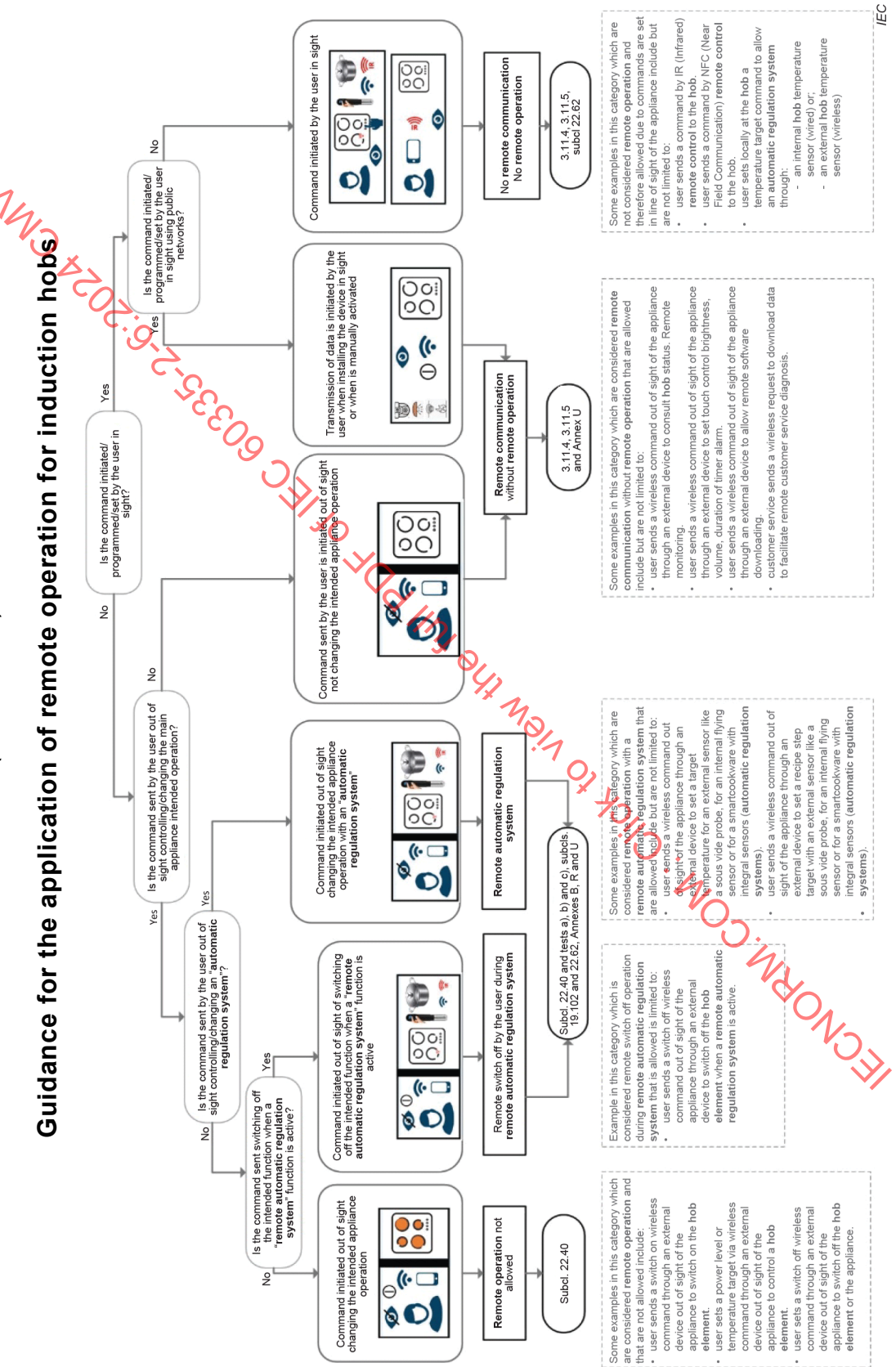


Figure AA.1 – Guidance for the application of remote operation for induction hobs

Bibliography

The bibliography of Part 1 is applicable except as follows.

Addition:

IEC 60335-2-9, *Household and similar electrical appliances – Safety – Part 2-9: Particular requirements for grills, toasters and similar portable cooking appliances*

IEC 60335-2-25, *Household and similar electrical appliances – Safety – Part 2-25: Particular requirements for microwave ovens, including combination microwave ovens*

IEC 60335-2-36, *Household and similar electrical appliances – Safety – Part 2-36: Particular requirements for commercial electric cooking ranges, ovens, hobs and hob elements*

IEC 60335-2-38, *Household and similar electrical appliances – Safety – Part 2-38: Particular requirements for commercial electric griddles and griddle grills*

IEC 60335-2-42, *Household and similar electrical appliances – Safety – Part 2-42: Particular requirements for commercial electric forced convection ovens, steam cookers and steam-convection ovens*

Index of defined terms

The Index of defined terms of Part 1 is applicable except as follows:

SOMMAIRE

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

_____

APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

Partie 2-6: Exigences particulières pour les cuisinières, les tables de cuisson, les fours et les appareils fixes analogues

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8) L'attention est attirée sur les références normatives citées dans cette publication. L'utilisation de publications référencées est obligatoire pour une application correcte de la présente publication.
9) L'IEC attire l'attention sur le fait que la mise en application du présent document peut entraîner l'utilisation d'un ou de plusieurs brevets. L'IEC ne prend pas position quant à la preuve, à la validité et à l'applicabilité de tout droit de brevet revendiqué à cet égard. À la date de publication du présent document, l'IEC avait reçu notification qu'un ou plusieurs brevets pouvaient être nécessaires à sa mise en application. Toutefois, il y a lieu d'avertir les responsables de la mise en application du présent document que des informations plus récentes sont susceptibles de figurer dans la base de données de brevets, disponible à l'adresse https://patents.iec.ch. L'IEC ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de brevets.

L'IEC 60335-2-6 a été établie par le comité d'études 61 de l'IEC: Sécurité des appareils électrodomestiques et analogues. Il s'agit d'une Norme internationale.

Cette septième édition annule et remplace la sixième édition parue en 2014 et l'Amendement 1:2018. Cette édition constitue une révision technique.

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

a) le texte a été aligné sur l'IEC 60335-1:2020;

b) des notes ont été supprimées (15.2) et d'autres ont été converties en texte normatif (Article 1, 3.1.9.101, 7.103, 11.7, 15.2, 16.2, 22.109, 22.120, 22.132, 22.124, Figure 103);

c) le calibre d'essai 19 est désormais employé (8.1.1, 20.2);

d) les limites d'échauffement des surfaces accessibles extérieures ont été alignées (Article 11);

e) des exigences concernant les systèmes de régulation automatique et les systèmes de régulation automatique à distance pour les tables de cuisson à induction ont été ajoutées (3.7.103, 3.11.4, 3.11.5, 3.11.101, 7.12, 19.102, 22.40, 22.62, Annexe AA);

f) des exigences concernant la commande à distance des fours ont été ajoutées (22.51).

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

Projet	Rapport de vote
61/7253/FDIS	61/7275/RVD

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

La version française de cette norme n'a pas été soumise au vote.

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

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

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

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

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

La présente partie 2 complète ou modifie les articles correspondants de l'IEC 60335-1, de façon à transformer cette publication en norme IEC: Exigences particulières pour les cuisinières, les tables de cuisson, les fours et les appareils fixes analogues.

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

NOTE 2 Le système de numérotation suivant est utilisé:

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

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

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

NOTE 3 Les caractères d'imprimerie suivants sont utilisés:

– exigences: caractères romains;

– *modalités d'essais: caractères italiques;*

– notes: petits caractères romains.

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

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

- reconduit,
- supprimé, ou
- révisé.

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

Le comité recommande que le contenu de cette publication soit adopté pour application nationale (obligatoire) au plus tôt 12 mois et au plus tard 36 mois après la date de publication.

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

– 11.101: Le Tableau 103 s'applique aux limites des températures de surface (Australie, Nouvelle-Zélande).

– 24.101: Les socles de prises de courant doivent être équipés de dispositifs à courant différentiel résiduel qui peuvent être combinés avec le dispositif de protection à maximum de courant (Australie).

– 25.3: Les **cuisinières** qui ne sont pas encastrées ne doivent pas être raccordées de façon permanente aux canalisations fixes (Nouvelle-Zélande).

IMPORTANT – Le logo "colour inside" qui se trouve sur la page de couverture de ce document indique qu'il contient des couleurs qui sont considérées comme utiles à une bonne compréhension de son contenu. Les utilisateurs devraient, par conséquent, imprimer ce document en utilisant une imprimante couleur.

INTRODUCTION

Il a été admis par hypothèse, en établissant la présente Norme internationale, que l'exécution de ses dispositions était confiée à des personnes expérimentées et ayant une qualification appropriée.

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

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

Cette information est donnée à l'intention des utilisateurs de la présente Norme internationale et ne constitue nullement un remplacement du texte normatif de la présente norme.

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

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

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

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

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

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

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

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

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

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

– les normes IEC publiées par le comité d'études 59 concernant les méthodes de mesure de l'aptitude à la fonction;

– les normes CISPR 11 et CISPR 14-1, ainsi que les normes applicables de la série IEC 61000-3 concernant les émissions électromagnétiques;

– la norme CISPR 14-2 concernant l'immunité électromagnétique;

– les normes IEC publiées par le comité d'études 111 concernant l'environnement.

APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

Partie 2-6: Exigences particulières pour les cuisinières, les tables de cuisson, les fours et les appareils fixes analogues

1 Domaine d'application

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

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

La présente norme inclut également des exigences relatives aux **fours** destinés à être utilisés à bord de navires.

La liste suivante répertorie les exemples d'appareils qui relèvent du domaine d'application de la présente norme:

– **grils par contact**;
– **grils**;
– **tables de cuisson à induction**;
– **éléments woks à induction**;
– **fours autonettoyants par pyrolyse**;
– **fours à vapeur**.

Dans la mesure du possible, la présente norme traite des dangers courants que présentent les appareils et auxquels sont exposés tous les individus situés à l'intérieur et autour de l'habitation. Cependant, il ne tient en général pas compte:

– des personnes (y compris des enfants); dont
  - les capacités physiques, sensorielles ou mentales; ou
  - le manque d'expérience et de connaissance;

  les empêchent d'utiliser l'appareil en toute sécurité sans surveillance ou instruction;
– des enfants qui jouent avec l'appareil.

L'attention est attirée sur le fait que:

– pour les appareils destinés à être utilisés dans des véhicules ou à bord de navires ou d'avions, des exigences supplémentaires peuvent être nécessaires;
– dans de nombreux pays, des exigences supplémentaires sont spécifiées par les organismes nationaux de la santé, par les organismes nationaux responsables de la protection des travailleurs, par les organismes nationaux responsables de l'alimentation en eau et par des organismes similaires.

La présente norme ne s'applique pas:

– aux appareils prévus pour la restauration à usage commercial;
– aux appareils destinés à être utilisés dans des locaux qui présentent des conditions particulières, telles que la présence d'une atmosphère corrosive ou explosive (poussière, vapeur ou gaz);
– aux grils, aux grille-pain et aux **appareils de cuisson mobiles analogues** (IEC 60335-2-9);
– aux fours à micro-ondes (IEC 60335-2-25).

2 Références normatives

L'article de la Partie 1 s'applique, avec l'exception suivante.

Addition:

IEC 60584-1, *Couples thermoélectriques – Partie 1: Spécifications et tolérances en matière de FEM*

IEC 60068-2-6, *Essais d'environnement – Partie 2-6: Essais – Essai Fc: Vibrations (sinusoïdales)*

IEC 60068-2-27, *Essais d'environnement – Partie 2-27: Essais – Essai Ea et guide: Chocs*

IEC 60068-2-52:2017, *Essais d'environnement – Partie 2-52: Essais – Essai Kb: Brouillard salin, essai cyclique (solution de chlorure de sodium)*

3 Termes et définitions

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

3.1 Définitions relatives aux caractéristiques physiques

3.1.6
courant assigné

Note 101 à l'article: Pour les appareils comportant plus de trois **unités chauffantes** par phase, autres que ceux commandés par des **circuits électroniques** programmables qui limitent le nombre d'éléments chauffants et/ou de moteurs pouvant être alimentés simultanément, un facteur de simultanéité est appliqué au **courant assigné** ou à la **puissance assignée** lors de la détermination du courant utilisé pour définir les dimensions des bornes et la section nominale du **câble d'alimentation**. Le facteur de simultanéité *F* est calculé à l'aide de la formule suivante, où *N* est le nombre d'**unités chauffantes** par phase pouvant être alimentées simultanément:

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

3.1.9 *Modification:*
fonctionnement normal

Remplacer le premier alinéa par ce qui suit:

fonctionnement des appareils dans les conditions spécifiées dans les 3.1.9.101 à 3.1.9.107

Remplacer le premier tiret du deuxième alinéa par ce qui suit:

– la **batterie complètement déchargée** est chargée avec l'**appareil alimenté par batteries** mis en fonctionnement de la manière spécifiée, si cela est admis par la construction de l'appareil;

3.1.9.101 Les **foyers de cuisson**, à l'exception des **foyers de cuisson à induction** et des **éléments woks à induction**, sont mis en fonctionnement avec des récipients contenant de l'eau froide. Le récipient est à fond plat, en aluminium de qualité commerciale non poli, et il est équipé d'un couvercle mis en place de telle façon que la vapeur n'influence pas les résultats d'essai. Les dispositifs de commande thermique sont réglés sur leur position la plus élevée jusqu'à ce que l'eau entre en ébullition, puis le réglage est ajusté de façon à maintenir une légère ébullition. De l'eau est ajoutée de façon à maintenir le niveau pendant l'ébullition.

En cas de doute, des récipients tels que ceux spécifiés sur la Figure 101 sont utilisés.

Les **foyers de cuisson à induction** sont mis en fonctionnement avec des récipients tels que ceux spécifiés sur la Figure 102 qui contiennent de l'huile de friture à **température ambiante**. Les dispositifs de commande thermique sont réglés sur leur position la plus élevée jusqu'à ce que la température de l'huile atteigne 180 °C ± 4 °C, puis le réglage est ajusté de façon à maintenir cette température. La température de l'huile est mesurée 10 mm au-dessus du centre du fond du récipient.

Les **foyers de cuisson à induction** dans une **zone de cuisson à induction flexible** sont mis en fonctionnement avec des récipients conformes à la Figure 102 et les diamètres spécifiés sur la Figure 101 comme suit:

a) le nombre maximal de récipients qui peuvent être commandés séparément en même temps, disposés de façon à couvrir la **zone de cuisson à induction flexible** autant que possible. Toute combinaison de récipients donnant les résultats les plus défavorables doit être utilisée pour l'essai. Plusieurs récipients de même diamètre peuvent être utilisés;

b) le récipient qui fournit la densité de puissance la plus élevée (W/cm^2);

c) le récipient le plus petit qui permet à un **foyer de cuisson à induction** de fonctionner.

Un fonctionnement comme cela est spécifié en a), b) ou c), qui donne la condition la plus défavorable pour les essais spécifiée dans les paragraphes correspondants, est appliqué.

Les **éléments woks à induction** sont mis en fonctionnement avec un wok d'un diamètre de sphère équivalent qui ne diffère pas du diamètre de sphère équivalent de la cavité de l'**élément wok à induction** de plus de $^{0}_{-1}$ %. Ce wok peut être fourni par le fabricant.

Le wok est en acier pauvre en carbone dont la teneur maximale en carbone est de 0,08 % et dont l'épaisseur est de 2 mm ± 0,5 mm. La hauteur du wok doit être égale à environ deux fois la profondeur de la cavité de l'**élément wok à induction**.

Le wok est rempli, jusqu'à environ la moitié de sa hauteur, d'huile de friture à **température ambiante**. Les dispositifs de commande thermique sont réglés sur leur position la plus élevée jusqu'à ce que la température de l'huile atteigne 180 °C ± 4 °C, puis le réglage est ajusté de façon à maintenir cette température. La température de l'huile est mesurée 10 mm au-dessus du centre du fond du récipient.

Pour tous les **foyers de cuisson** autres que ceux situés dans une **zone de cuisson à induction flexible** et les **éléments woks à induction**, le diamètre du fond du récipient est approximativement égal au diamètre de la **zone de cuisson** et la quantité de liquide est spécifiée dans le Tableau 101. Le récipient est placé au centre de la **zone de cuisson**.

Si pour un **foyer de cuisson** plusieurs **zones de cuisson** sont marquées, la **zone de cuisson** la plus défavorable est utilisée pour l'essai.

Pour les **zones de cuisson de forme non circulaire**, le plus petit récipient non circulaire qui couvre autant que possible la **zone de cuisson** est utilisé, en tenant compte du rebord de la **table de cuisson** et des autres récipients. La quantité de liquide est déterminée à partir du plus petit diamètre de la **zone de cuisson**.

Tableau 101 – Quantité de liquide dans le récipient

Diamètre de la zone de cuisson mm	Quantité d'eau ou d'huile l
≤ 110	0,6
> 110 et ≤ 145	1,0
> 145 et ≤ 180	1,5
> 180 et ≤ 220	2,0
> 220 et ≤ 300	3,0

3.1.9.102 Les **fours** et les **fours combinés vapeur-convection** sont mis en fonctionnement vides, la porte fermée. Les dispositifs de commande thermique sont réglés de telle façon que la température moyenne au centre du **four** soit maintenue à:

– 220 °C ± 4 °C pour les **fours** à air pulsé;

– 240 °C ± 4 °C pour les autres **fours**.

Si ces températures ne peuvent pas être atteintes, le dispositif de commande thermique est réglé sur sa position la plus élevée.

Les **fours** sans dispositif de commande thermique sont mis sous et hors tension de telle façon que la température au centre du **four** soit maintenue à 240 °C ± 15 °C.

Les **fours à vapeur à pression atmosphérique** et les **fours à vapeur haute pression** sont mis en fonctionnement conformément aux instructions. Les couvercles et les portes sont mis en place et fermés. Les dispositifs de commande sont réglés sur leur position la plus élevée jusqu'à l'obtention de la température de cuisson, puis réglés sur la position la plus basse qui maintient cette température.

Les générateurs de vapeur destinés à être remplis manuellement sont remplis conformément aux instructions, de l'eau étant ajoutée pour maintenir la production de vapeur.

Les générateurs de vapeur destinés à être remplis automatiquement sont raccordés à une alimentation en eau dont la pression est réglée conformément aux instructions.

La température de l'eau d'alimentation est de:

– 15 °C ± 5 °C pour les appareils destinés à être raccordés à une alimentation en eau froide;

– 60 °C ± 5 °C ou la température indiquée dans les instructions, si cette valeur est plus élevée, pour les appareils destinés à être raccordés à une alimentation en eau chaude.

Les **fours combinés vapeur-convection** sont également mis en fonctionnement avec production de vapeur, mais les dispositifs de commande thermique sont réglés pour le fonctionnement sans vapeur.

3.1.9.103 Les **grils** sont mis en fonctionnement vides, avec la lèchefrite et les supports d'aliments dans la position la plus défavorable en usage normal, la porte et les autres accessoires éventuels étant en place conformément aux instructions. En l'absence de telles instructions, la porte et les autres accessoires sont placés dans la position la plus défavorable dans laquelle ils peuvent être laissés. Les dispositifs de commande thermique sont réglés sur leur position la plus élevée. Toutefois, si les instructions pour les **grils** incorporés dans les **fours** spécifient un réglage plus bas, ce réglage est utilisé. Tout réflecteur destiné à être placé au-dessus des éléments chauffants est mis en place.

3.1.9.104 Les broches tournantes des **fours** ou des **grils** sont mises en fonctionnement, chargées, comme cela est spécifié sur la Figure 103. La charge est placée sur la broche tournante de telle façon que la vis de fixation appuie sur la broche au niveau du diamètre de celle-ci. L'appareil est mis en fonctionnement en prenant en compte les instructions relatives aux points suivants:

– les éléments chauffants à mettre en fonctionnement;

– le réglage du dispositif de commande thermique;

– la position de la porte et de la lèchefrite.

En l'absence de telles instructions, le dispositif de commande est réglé sur la position la plus élevée et la porte est complètement ouverte ou est placée dans la position intermédiaire la plus défavorable dans laquelle elle peut rester.

Toute lèchefrite est placée dans la position la plus basse.

3.1.9.105 Les tiroirs chauffants et compartiments analogues sont mis en fonctionnement en position fermée, les dispositifs de commande étant réglés sur la position la plus élevée.

3.1.9.106 Les **grils par contact** sont mis en fonctionnement de telle façon que la température au centre de la surface chauffée soit maintenue à 275 °C ± 15 °C en réglant les dispositifs de commande thermique ou en mettant l'appareil sous et hors tension.

3.1.9.107 Les **cuisinières** sont mises en fonctionnement avec leurs **unités chauffantes** propres dans les conditions de **fonctionnement normal** indiquées.

3.1.101
pression d'eau assignée
pression d'eau assignée à l'appareil par le fabricant

3.1.102
pression de cuisson assignée
pression maximale de fonctionnement des **fours à vapeur haute pression** attribuée par le fabricant aux parties sous pression de l'appareil

3.5 Définitions relatives aux types d'appareils

3.5.101
four
appareil qui possède une cavité chauffée équipée d'une porte et construit de manière que les aliments, qui peuvent être disposés dans un récipient, puissent être placés sur une étagère

3.5.102
gril
unité chauffante construite de manière que les aliments soient supportés par une grille ou une broche et qu'ils soient cuits par la chaleur rayonnante

Note 1 à l'article: L'opération de cuisson par un **gril** est connue sous le nom de grillage.

3.5.103
table de cuisson
appareil qui comporte un **plan de cuisson** avec un ou plusieurs **foyers de cuisson** et qui est encastré ou fait partie d'une **cuisinière**

3.5.104
cuisinière
appareil qui incorpore une **table de cuisson** et un **four** et qui peut incorporer un **gril** ou un **gril par contact**

3.5.105
four autonettoyant par pyrolyse
four dans lequel les dépôts de cuisson sont éliminés par chauffage du **four** à une température supérieure à 350 °C

3.5.106
four à vapeur
four destiné à la cuisson des aliments par de la vapeur produite dans l'appareil

3.5.106.1
four combiné vapeur-convection
four à vapeur destiné à la cuisson des aliments par chauffage conventionnel et par vapeur générée à la pression atmosphérique dans l'appareil

Note 1 à l'article: La température de fonctionnement peut dépasser le point d'ébullition de l'eau.

3.5.106.2
four à vapeur à pression atmosphérique
four à vapeur dans lequel la pression à l'intérieur du compartiment de cuisson diffère de la pression atmosphérique de 50 kPa ou moins

3.5.106.3
four à vapeur haute pression
four à vapeur destiné à la cuisson des aliments par vapeur directe générée à une pression au moins 50 kPa plus élevée que la pression atmosphérique

3.5.107
gril par contact
unité chauffante qui comporte une surface sur laquelle les aliments à cuire sont placés directement

3.5.108
table de cuisson à induction
table de cuisson qui comporte au moins un **foyer de cuisson à induction** ou un **élément wok à induction**

3.6 Définitions relatives aux parties d'un appareil

3.6.101
unité chauffante
toute partie de l'appareil qui remplit une fonction de cuisson ou de réchauffage indépendante

Note 1 à l'article: Les **foyers de cuisson**, les **fours**, les **grils** et les tiroirs chauffants constituent des exemples.

3.6.102
plan de cuisson
partie horizontale de l'appareil sur laquelle les récipients peuvent être placés

3.6.103
foyer de cuisson
unité chauffante fixée au **plan de cuisson** ou placée sous la **zone de cuisson**

3.6.104
foyer de cuisson à induction
foyer de cuisson qui chauffe les récipients métalliques par courants de Foucault

Note 1 à l'article: Les courants de Foucault sont induits dans le récipient par le champ électromagnétique d'un inducteur.

3.6.105
élément wok à induction
foyer de cuisson à induction avec un **plan de cuisson** de forme approximativement sphérique destiné à recevoir un wok

3.6.106
zone de cuisson
région marquée sur un **plan de cuisson** sur laquelle est placé le récipient pour la cuisson des aliments

Note 1 à l'article: Lorsqu'un **foyer de cuisson** fait saillie au-dessus du **plan de cuisson**, sa surface est la **zone de cuisson**.

3.6.107
détecteur de casserole
dispositif incorporé dans un **foyer de cuisson** et qui empêche son fonctionnement tant qu'un récipient n'est pas placé sur la **zone de cuisson**

3.6.108
touche sensitive
dispositif de commande actionné par le contact ou la proximité d'un doigt, sans mouvement ou avec un faible mouvement de la surface de contact

3.6.109
sonde thermique
dispositif qui est inséré dans les denrées alimentaires pour en mesurer la température et qui est un élément d'un dispositif de commande d'un **four**

3.6.110
zone de cuisson à induction flexible
région d'une **zone de cuisson** avec des **foyers de cuisson à induction**, qui ne comporte pas de marquages pour indiquer à quel endroit doivent être placés les récipients pour la cuisson des aliments

3.7 Définitions relatives aux composants de sécurité

3.7.101
régulateur de pression
dispositif de commande qui maintient, en usage normal, la pression à une valeur donnée

3.7.102
limiteur de pression
dispositif de commande qui limite la pression dans des conditions de fonctionnement anormal

3.7.103
système de régulation automatique
système de régulation des tables de cuisson qui utilisent des capteurs câblés ou sans fil pour activer et commander un processus de cuisson automatique et maintenir une valeur cible

Note 1 à l'article: Les capteurs sans fil peuvent communiquer par radiocommunication.

Note 2 à l'article: La valeur cible peut concerner, par exemple, la température, la durée ou le niveau de puissance.

3.8 Définitions relatives à des sujets divers

3.8.101
pont découvert
surface exposée à un environnement marin

3.8.102
salle de séjour
surface qui peut occasionnellement être exposée à un environnement marin

3.11 Définitions relatives aux fonctionnalités à distance

3.11.4
communication à distance

Note 101 à l'article: La transmission de données pour les fonctions opérationnelles qui ne commandent pas les **unités chauffantes** (luminosité des éclairages ou sonneries, par exemple) et qui peuvent être engagées par l'utilisateur à distance de l'appareil, est considérée comme une **communication à distance**, mais pas comme une **commande à distance**.

Note 102 à l'article: Dans le cas où un capteur sans fil utilise une technologie de communication à courte portée et communique exclusivement avec la **table de cuisson** par le biais de son module de connectivité pour échanger des données de capteur, la communication entre le capteur sans fil et la **table de cuisson** n'est pas considérée comme une communication par un **réseau public**.

3.11.5
commande à distance

Note 101 à l'article: La **commande à distance** désigne les commandes engagées par l'utilisateur à distance de l'appareil et qui commandent les fonctions prévues, comme la commande des **unités chauffantes**.

Note 102 à l'article: La **communication à distance**, y compris un changement des valeurs cibles du système qui exige une confirmation manuelle au niveau de la **table de cuisson**, n'est pas considérée comme une **opération à distance**.

Note 103 à l'article: Des recommandations générales concernant l'application de **systèmes de régulation automatique à distance** pour les **tables de cuisson** sont données à l'Annexe AA informative, Figure AA.1.

3.11.101
système de régulation automatique à distance
système de régulation automatique qui peut être lancé ou modifié au moyen de la **communication à distance**

4 Exigences générales

L'article de la Partie 1 s'applique.

5 Conditions générales d'essais

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

5.3 *Addition:*

*Pour les **fours autonettoyants par pyrolyse**, les essais du 22.108 au 22.111 sont effectués avant les essais de l'Article 19.*

5.4 *Addition:*

*Les appareils qui utilisent également du gaz sont alimentés avec du gaz à la pression assignée appropriée. Des récipients d'un diamètre de 220 mm environ sont remplis de 2 l d'eau, couverts et placés sur les brûleurs de la **table de cuisson**. Les dispositifs de commande sont réglés sur leur position la plus élevée jusqu'à ce que l'eau entre en ébullition. Ils sont ensuite réglés de manière que l'eau frémisse, de l'eau étant ajoutée pour maintenir le niveau si nécessaire.*

5.101 *Les **sondes thermiques de la classe III** ne sont soumises qu'aux essais de l'Article 19.*

5.102 *Les **fours combinés vapeur-convection** sont soumis à l'essai en tant que **fours**.*

6 Classification

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

6.1 *Modification:*

Remplacer le premier alinéa par ce qui suit:

Les appareils doivent être de la **classe I**, de la **classe II** ou de la **classe III**.

Addition:

Les **cuisinières** comportant des socles de prises de courant doivent être des **appareils de la classe I**.

6.2 *Addition:*

Les **fours** destinés à être utilisés sur un **pont découvert** doivent être classés IPX6.

7 Marquage et instructions

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

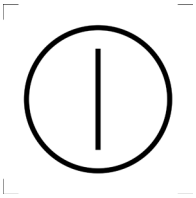
7.1 *Addition:*

La **puissance assignée** totale ou le **courant assigné** total des foyers de cuisson à induction et des éléments woks à induction doit être marqué.

La **pression de cuisson assignée** en kilopascals (kPa) des **fours à vapeur haute pression** doit être marquée.

Si une **cuisinière** comporte un socle de prises de courant protégé par des fusibles, autres que des fusibles de type D, le courant assigné du fusible approprié doit être indiqué par marquage. Lorsqu'un fusible miniature est utilisé, le marquage doit indiquer que le fusible doit avoir un pouvoir de coupure élevé.

7.6 *Addition:*

	[symbole IEC 60417-5010 (2002-10)]	MARCHE/ARRÊT (deux positions stables)
	[symbole IEC 60417-6059 (2011-05)]	Attention, risque de basculement
	[symbole IEC 60417-6060 (2011-05)]	Fixations antibasculement

7.9 *Addition:*

Les interrupteurs de la **zone de cuisson à induction flexible**, les **touches sensitives**, les affichages et éléments analogues doivent être marqués ou placés de façon à indiquer clairement quel récipient est attribué à quel interrupteur, quelle **touche sensitive**, quel affichage ou quel élément analogue.

7.10 *Addition:*

La **position arrêt** des **touches sensitives** des **tables de cuisson** doit être marquée par le symbole O et la position marche par le symbole I. En l'absence de **touche sensitive** pour la **table de cuisson**, cette exigence s'applique aux **touches sensitives** pour chaque **foyer de cuisson**.

Si la même **touche sensitive** est utilisée pour mettre l'appareil sous et hors tension, le symbole IEC 60417-5010 (2002-10) peut être utilisé.

7.12 *Addition:*

Si le **plan de cuisson** est en vitrocéramique ou matériau analogue et protège des **parties actives**, les instructions doivent comporter en substance les informations suivantes:

MISE EN GARDE: si la surface est fêlée, déconnecter l'appareil de l'alimentation pour éviter un risque de choc électrique.

Les instructions pour les **cuisinières** et les **fours** doivent comporter en substance les informations suivantes:

lors de son utilisation, l'appareil devient chaud. Il convient de veiller à ne pas toucher les éléments chauffants situés à l'intérieur du four.

Les instructions pour les **fours** doivent comporter en substance les informations suivantes:

MISE EN GARDE: les parties accessibles peuvent devenir chaudes pendant l'utilisation. Il convient de maintenir les jeunes enfants à distance de l'appareil.

Les instructions pour les **fours** équipés de portes avec des panneaux en verre et les instructions pour les **tables de cuisson** équipées de couvercles en verre à charnières doivent comporter en substance les informations suivantes:

ne pas utiliser de produits d'entretien abrasifs ou de grattoirs métalliques durs pour nettoyer la porte en verre du **four**/le verre des couvercles à charnières de la table de cuisson (selon le cas), ceux-ci pouvant rayer la surface, ce qui peut entraîner l'éclatement du verre.

Si, pendant l'essai de l'Article 11, l'échauffement au centre de la surface interne inférieure d'un tiroir de stockage dépasse la valeur spécifiée pour les poignées qui, en usage normal, ne sont tenues que pendant de courtes périodes, les instructions doivent indiquer que ces surfaces peuvent devenir chaudes.

Les instructions pour les **fours à vapeur haute pression** doivent comporter en substance les informations suivantes:

les conduits du régulateur de pression permettent à la vapeur de s'échapper, il convient donc de vérifier régulièrement ces conduits pour s'assurer qu'ils ne sont pas obstrués.

Les instructions pour les **fours à vapeur haute pression** doivent aussi donner des détails sur l'ouverture en toute sécurité de la porte.

Les instructions pour les **fours à vapeur haute pression** doivent comporter en substance la mise en garde suivante:

MISE EN GARDE: ne pas ouvrir les robinets de purge ou autres dispositifs de vidange tant que la pression n'est pas redescendue approximativement à la pression atmosphérique.

Les instructions pour les **fours autonettoyants par pyrolyse** doivent indiquer que les éclaboussures excessives doivent être éliminées avant le nettoyage et doivent spécifier quels ustensiles peuvent être laissés dans le **four** pendant le nettoyage.

Si le fabricant indique à l'utilisateur de régler, pour le nettoyage, le dispositif de commande sur une position plus élevée que pour les opérations normales de cuisson, les instructions doivent indiquer que dans ces conditions, les surfaces peuvent devenir plus chaudes qu'en usage normal et qu'il convient d'éloigner les enfants.

Les instructions pour les **fours** qui comportent un ventilateur dont la protection peut être retirée pour le nettoyage doivent indiquer que le **four** doit être mis hors tension avant de retirer la protection et que cette dernière doit être réinstallée conformément aux instructions après le nettoyage.

Les instructions pour les **fours** équipés de moyens qui permettent d'utiliser une **sonde thermique** doivent comporter en substance les informations suivantes:

utiliser uniquement la sonde thermique recommandée pour ce four.

Les instructions pour les **fours** qui comportent des étagères doivent décrire comment installer les étagères correctement.

Les instructions pour les **cuisinières**, les **tables de cuisson** et les **fours** doivent indiquer de ne pas utiliser d'appareil de nettoyage à la vapeur.

Les instructions pour les **tables de cuisson à induction** doivent comporter en substance les informations suivantes:

il convient de ne pas déposer d'objets métalliques tels que couteaux, fourchettes, cuillères et couvercles sur le plan de cuisson, car ils peuvent devenir chauds.

Les instructions pour les **tables de cuisson** qui comportent un couvercle doivent indiquer qu'il convient d'éliminer du couvercle tout résidu de débordement avant de l'ouvrir. Elles doivent également indiquer qu'il convient de laisser refroidir le **plan de cuisson** avant de fermer le couvercle.

Les instructions pour les **tables de cuisson** qui comportent des lampes à halogène doivent avertir l'utilisateur de ne pas fixer des yeux les **foyers de cuisson**.

Les instructions pour les **tables de cuisson** qui comportent un **détecteur de casserole** doivent comporter en substance les informations suivantes:

après utilisation, arrêter le foyer de cuisson au moyen de son dispositif de commande et ne pas prendre en compte le détecteur de casserole.

Si l'appareil possède une lampe prévue pour l'éclairage et s'il n'est pas équipé d'un interrupteur destiné à le déconnecter complètement de l'alimentation dans des conditions de surtension de catégorie III, les instructions doivent comporter en substance les informations suivantes:

MISE EN GARDE: s'assurer que l'appareil est déconnecté de l'alimentation avant de remplacer la lampe pour éviter un risque de choc électrique.

Les instructions pour les **tables de cuisson** doivent indiquer que l'appareil n'est pas destiné à être mis en fonctionnement au moyen d'une minuterie externe ou d'un système de commande à distance séparé. Cependant, pour les **tables de cuisson** avec un **système de régulation automatique à distance**, les instructions doivent contenir les informations suivantes:

– des informations qui permettent d'identifier le **système de régulation automatique à distance**;
– une description du raccordement du **système de régulation automatique à distance**;
– des précautions et des recommandations pour le fonctionnement en toute sécurité du **système de régulation automatique à distance**;
– une représentation qui indique l'emplacement du **système de régulation automatique à distance**; et
– une description de la façon d'activer et de désactiver la **communication à distance** de la **table de cuisson** avec le **système de régulation automatique à distance**.

Les instructions pour les **tables de cuisson** doivent comporter en substance les informations suivantes:

Danger d'incendie: ne pas stocker d'objet sur les surfaces de cuisson;

ATTENTION: le processus de cuisson doit être surveillé. Un processus de cuisson court doit être surveillé sans interruption;

MISE EN GARDE: non surveillée, une cuisson sur une table de cuisson et utilisant de la graisse ou de l'huile peut s'avérer dangereuse et peut provoquer un incendie.

Les instructions pour les **tables de cuisson** qui incorporent un **élément wok à induction** doivent comporter une liste des récipients qui peuvent être utilisés, sauf si le fabricant fournit un wok avec l'appareil.

Les instructions pour les **fours** destinés à être utilisés à bord de navires doivent indiquer si l'appareil peut être installé sur un **pont découvert** ou s'il ne peut être installé que dans une **salle de séjour**.

7.12.1 *Addition:*

À moins que les instructions relatives aux **cuisinières** n'indiquent que les cuisinières ne doivent pas être placées sur un socle, les instructions pour les **cuisinières** placées sur le sol doivent indiquer que si la cuisinière est placée sur un socle, des mesures doivent être prises pour empêcher l'appareil de glisser de son socle.

Sauf instruction contraire, les instructions pour les **cuisinières** et les **fours** doivent indiquer que l'appareil ne doit pas être installé derrière une porte décorative, afin d'éviter une surchauffe.

Les instructions pour les appareils destinés à être raccordés à une alimentation en eau doivent comporter l'indication de la **pression d'eau assignée** maximale en mégapascals.

Les instructions pour les **fours** destinés à être utilisés à bord de navires doivent comporter des détails relatifs à la fixation de l'appareil.

7.12.3 *Addition:*

Si une **cuisinière** ne comporte pas de **câble d'alimentation**, les instructions doivent indiquer le type de câble à utiliser, en tenant compte de la température de la surface arrière de l'appareil.

7.12.4 *Addition:*

Les instructions pour les **appareils encastrés** à tableaux de commande séparés doivent indiquer que le tableau de commande ne doit être connecté qu'aux **unités chauffantes** spécifiées afin d'éviter tout danger éventuel.

7.15 *Modification:*

Remplacer la première phrase du troisième alinéa par ce qui suit:

Pour les **appareils fixes**, à l'exception des **appareils installés à poste fixe**, le nom, la marque déposée ou la marque d'identification du fabricant ou du vendeur responsable, ainsi que la référence du modèle ou du type doivent être visibles lorsque l'appareil est installé comme en usage normal.

Addition:

Pour les **appareils installés à poste fixe**, le nom, la marque déposée ou la marque d'identification du fabricant ou du vendeur responsable, ainsi que la référence du modèle ou du type, doivent être apposés par marquage sur l'appareil et, si le marquage n'est pas visible lorsque l'appareil est installé comme en usage normal, ces informations doivent être indiquées dans les instructions ou sur une étiquette supplémentaire qui peut être fixée à proximité de l'appareil après l'installation.

L'indication du courant assigné du fusible qui protège un socle de prise de courant doit figurer sur le socle de prise de courant ou à proximité de celui-ci.

7.101 Les générateurs de vapeur destinés à être remplis manuellement doivent porter l'indication du niveau d'eau maximal, qui doit être visible lors du remplissage.

La vérification est effectuée par examen.

7.102 La **zone de cuisson** des **plans de cuisson** doit être identifiée à l'aide d'un marquage approprié, à moins qu'elle ne soit évidente.

La vérification est effectuée par examen.

7.103 Pour les **cuisinières** normalement placées sur le sol, équipées de portes de **four** à charnières horizontales et dont les charnières sont situées à moins de 430 mm du sol, si un dispositif de stabilisation est nécessaire pour assurer la conformité à l'essai du 20.102, alors:

– le dispositif de stabilisation, sauf pour le matériel de fixation couramment disponible, comme les vis et les boulons, doit porter le symbole IEC 60417-6060 (2011-05) ou comporter en substance les informations suivantes, la hauteur des caractères étant d'au moins 3 mm:

  MISE EN GARDE: Ce dispositif de stabilisation doit être mis en place pour éviter le basculement de l'appareil. Voir la notice d'installation;

– l'appareil doit porter le symbole IEC 60417-6059 (2011-05) ou un marquage, la hauteur des caractères étant d'au moins 3 mm, au point d'entrée de l'alimentation et au moins à un autre endroit, pour attirer l'attention de l'utilisateur sur la nécessité de stabiliser l'appareil.

Si le symbole IEC 60417-6059 (2011-05) ou IEC 60417-6060 (2011-05) est utilisé, sa signification doit être expliquée dans les instructions et la hauteur des caractères doit être d'au moins 30 mm.

La vérification est effectuée par examen et par mesurage.

8 Protection contre l'accès aux parties actives

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

8.1.1 *Addition:*

Pour les parties d'appareils qui sont situées à moins de 850 mm du sol après installation ou en usage normal, en plus d'utiliser le calibre d'essai 18, le calibre d'essai 19 de l'IEC 61032 est également appliqué chaque fois que le calibre d'essai 18 est utilisé, dans les mêmes conditions d'essai que le calibre d'essai 18.

8.1.2 *Addition:*

*Le calibre d'essai 12 de l'IEC 61032 est appliqué sur les parties susceptibles d'être touchées par inadvertance en usage normal par une fourchette ou autre objet pointu analogue. Il ne doit pas être possible de toucher les **parties actives**.*

8.1.3 *Addition:*

Le calibre d'essai 19 de l'IEC 61032 n'est pas appliqué.

*Le calibre d'essai 41 de l'IEC 61032 est appliqué uniquement aux **éléments chauffants lumineux** situés au sommet d'un **four** ou d'un compartiment de grillage.*

9 Démarrage des appareils à moteur

L'article de la Partie 1 ne s'applique pas.

10 Puissance et courant

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

10.1 *Addition:*

*Dans le cas des **fours** et des **fours à vapeur**, le temps de chauffe qui permet d'obtenir la température au centre de la cavité spécifiée pour le **fonctionnement normal** est une période de référence.*

*Dans le cas des **grils par contact**, le temps de chauffe qui permet d'obtenir la température de surface spécifiée pour le **fonctionnement normal** est une période de référence.*

*Dans le cas des **grils** et des tiroirs chauffants, le temps de chauffe pour le **fonctionnement normal** est une période de référence.*

*Dans le cas des **tables de cuisson**, le temps de chauffe avant l'ébullition de l'eau avec les dispositifs de commande réglés sur la position la plus élevée est une période de référence.*

*Dans le cas des **foyers de cuisson à induction** et des **éléments woks à induction**, le temps de chauffe avant que la température de l'huile atteigne 180 °C ± 4 °C avec les dispositifs de commande réglés sur la position la plus élevée est une période de référence. Si la puissance est réduite pendant le temps de chauffe avant que la température de l'huile atteigne 180°C ± 4°C, alors la période de référence est considérée comme étant le temps écoulé jusqu'à la première réduction de la puissance.*

*La puissance des **foyers de cuisson à induction** et des **éléments woks à induction** est mesurée séparément et les tolérances pour les **appareils à moteur** s'appliquent.*

10.2 *Addition:*

*Dans le cas des **fours** et des **fours à vapeur**, le temps de chauffe qui permet d'obtenir la température au centre de la cavité spécifiée pour le **fonctionnement normal** est une période de référence.*

*Dans le cas des **grils par contact**, le temps de chauffe qui permet d'obtenir la température de surface spécifiée pour le **fonctionnement normal** est une période de référence.*

*Dans le cas des **grils** et des tiroirs chauffants, le temps de chauffe pour le **fonctionnement normal** est une période de référence.*

*Dans le cas des **tables de cuisson**, le temps de chauffe avant l'ébullition de l'eau avec les dispositifs de commande réglés sur la position la plus élevée est une période de référence.*

*Dans le cas des **foyers de cuisson à induction** et des **éléments woks à induction**, le temps de chauffe avant que la température de l'huile atteigne 180 °C ± 4 °C avec les dispositifs de commande réglés sur la position la plus élevée est une période de référence. Si le courant est réduit pendant le temps de chauffe avant que la température de l'huile atteigne 180 °C ± 4 °C, alors la période de référence est considérée comme étant le temps écoulé jusqu'à la première réduction du courant.*

*Le courant des **foyers de cuisson à induction** et des **éléments woks à induction** est mesuré séparément et les tolérances pour les **appareils à moteur** s'appliquent.*

11 Échauffements

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

11.1 *Addition:*

*Pour les **cuisinières** et les **fours**, la conformité est également vérifiée par l'essai du 11.101.*

11.2 *Addition:*

*Pour les appareils destinés à être placés sur le sol, une boîte rectangulaire fermée est placée aussi près que possible du côté libre de l'appareil et contre la paroi arrière du coin d'essai. La boîte d'essai est en contre-plaqué peint en noir mat, de 10 mm d'épaisseur. Elle a une largeur de 150 mm, sa face supérieure est de niveau avec le **plan de cuisson** et sa face avant est de niveau avec la surface avant de l'appareil.*

*Les appareils équipés d'un couvercle qui recouvre le **plan de cuisson** sont soumis à l'essai avec le couvercle en position ouverte. Les couvercles qui peuvent être enlevés sans l'aide d'un **outil** sont enlevés, à moins que le **foyer de cuisson** ne puisse pas fonctionner lorsque le couvercle est enlevé.*

*Les **sondes thermiques** sont placées dans le **four** dans toute position susceptible d'être rencontrée en usage normal. Elles ne sont pas raccordées pour commander la température du **four**. L'essai des **fours autonettoyants par pyrolyse** est effectué avec la **sonde thermique** en place, sauf spécification contraire dans les instructions.*

*Les **parties amovibles** destinées à être utilisées pour réduire la température des tableaux de commande sont retirées. Une partie rétractable n'est pas une **partie amovible**.*

11.3 *Addition:*

*La température au centre du **four** et l'échauffement de la surface de la boîte rectangulaire sont déterminés en utilisant les couples thermoélectriques spécifiés pour les parois du coin d'essai.*

*Si le champ magnétique d'un **foyer de cuisson à induction** influence les résultats de manière excessive, les échauffements peuvent être déterminés en utilisant des résistances de platine avec conducteurs de connexions torsadés ou tout autre moyen équivalent.*

*Pendant l'essai du 11.101, lorsque les **surfaces accessibles** extérieures sont suffisamment planes et que l'accès le permet, le calibre d'essai de la Figure 104 est utilisé pour mesurer les échauffements des **surfaces accessibles** extérieures. Le calibre est appliqué sur la surface avec une force de 4 N ± 1 N de manière à établir le meilleur contact possible entre le calibre et la surface. Le mesurage est effectué après une durée de contact de 30 s.*

Le calibre peut être maintenu en place à l'aide d'une pince de laboratoire sur statif ou d'un dispositif analogue. Tout instrument de mesure qui produit les mêmes résultats que le calibre peut être utilisé.

11.4 *Addition:*

*Les **foyers de cuisson à induction** et les **éléments woks à induction** sont alimentés séparément et mis en fonctionnement comme cela est spécifié pour les **appareils à moteur**.*

*Les **cuisinières** sont mises en fonctionnement à 1,15 fois la **puissance assignée** en **fonctionnement normal**. La tension d'alimentation est mesurée lorsque la puissance est stabilisée. Cette tension est utilisée pour alimenter les **unités chauffantes** de la **cuisinière** pendant les essais.*

*Les **fours** sont mis en fonctionnement à 1,15 fois la **puissance assignée** en **fonctionnement normal**. La tension d'alimentation est mesurée au cours du temps de chauffe. Cette tension est utilisée pour alimenter les **unités chauffantes** des **fours** pendant les essais.*

11.6 *Remplacement:*

*Les **appareils combinés** sont mis en fonctionnement comme cela est spécifié pour les **appareils chauffants**.*

*Si les limites d'échauffement sont dépassées dans les appareils qui incorporent des moteurs, des transformateurs ou des **circuits électroniques**, et si la puissance est inférieure à la **puissance assignée**, l'essai est répété en alimentant l'appareil à 1,06 fois la **tension assignée**.*

11.7 *Modification:*

Remplacer le premier alinéa par ce qui suit:

Les appareils sont mis en fonctionnement pendant la durée spécifiée dans les 11.7.101 à 11.7.106.

Remplacer le premier tiret du troisième alinéa par ce qui suit:

– *la **batterie**, qui a été **complètement déchargée**, est chargée pendant 1 h, l'appareil étant mis en fonctionnement de la manière spécifiée dans les 11.7.101 à 11.7.106 si cela est admis par la construction de l'appareil.*

Addition:

Les conditions de régime sont considérées comme étant établies si la température ne s'élève pas de plus de 1 K en 15 min.

11.7.101 *Les **foyers de cuisson à induction** et les **éléments woks à induction** sont mis en fonctionnement pendant 30 min. Les autres **foyers de cuisson** sont mis en fonctionnement pendant 60 min.*

11.7.102 *Les **fours** sont mis en fonctionnement pendant 60 min à partir de la condition à froid.*

*Les lampes des **fours** ne sont pas allumées manuellement.*

*Si un appareil comporte deux **fours** qui peuvent être mis sous tension en même temps, ceux-ci sont soumis à l'essai ensemble.*

*Les **fours autonettoyants par pyrolyse** sont également mis en fonctionnement dans les conditions de nettoyage spécifiées dans les instructions pendant la durée maximale admise par le dispositif de commande ou jusqu'à l'établissement des conditions de régime, si cette période est plus courte. Pendant cette période, les autres **unités chauffantes** qui peuvent être sous tension sont mises en fonctionnement dans les conditions de **fonctionnement normal**.*

*Les **fours** qui comportent une broche tournante sont également mis en fonctionnement pendant 60 min, avec la broche en rotation.*

11.7.103 *Les **grils** sont mis en fonctionnement pendant 30 min. Toutefois, les **grils** équipés de moyens pour réduire la puissance sont mis en fonctionnement pendant 15 min avec le dispositif de commande réglé sur la position la plus élevée, puis pendant 15 min à un réglage qui réduit la puissance moyenne d'environ 50 %.*

*Les **grils** qui comportent une broche tournante sont également mis en fonctionnement pendant 60 min, avec la broche en rotation.*

11.7.104 *Les **grils par contact** qui comportent un thermostat sont mis en fonctionnement jusqu'à l'établissement des conditions de régime. Les autres **grils par contact** sont mis en fonctionnement pendant 30 min dès que la température au centre du **gril** a atteint 275 °C.*

11.7.105 *Les tiroirs chauffants et compartiments analogues sont mis en fonctionnement pendant 30 min.*

11.7.106 *Pour les **cuisinières**, les combinaisons d'**unités chauffantes** qui peuvent être alimentées simultanément sont soumises à l'essai ensemble pendant les durées spécifiées du 11.7.101 au 11.7.105, les **unités chauffantes** qui ont une durée de fonctionnement de 30 min étant mises en fonctionnement pendant les 30 dernières minutes de l'essai.*

NOTE Par exemple, la séquence des essais pour une **cuisinière** qui comporte un **gril** dans le **four** et une broche tournante est la suivante:

– fonctionnement de la **table de cuisson** et du **four**, avec si possible la broche en rotation, pendant 60 min;
– refroidissement jusqu'à une température proche de la **température ambiante**;
– fonctionnement de la **table de cuisson** pendant 60 min avec fonctionnement simultané du gril pendant les 30 dernières minutes;
– refroidissement jusqu'à une température proche de la **température ambiante**;
– fonctionnement de la **table de cuisson** et du **gril**, avec la broche en rotation, pendant 60 min.

11.8 *Modification:*

En lieu et place des échauffements indiqués dans le Tableau 3 pour le bois, les valeurs suivantes s'appliquent.

Les échauffements du plancher et des parois du coin d'essai, des meubles en bois et de la boîte rectangulaire ne doivent pas dépasser les valeurs suivantes:

– *pour les appareils destinés à être placés sur une table* *65 K;*
– *pour les **grills*** *75 K;*
– *pour les autres appareils* *70 K.*

Addition:

*L'échauffement des parties de la face inférieure des **tables de cuisson encastrées** accessibles par un calibre d'un diamètre de 75 mm et à extrémité hémisphérique ne doit pas dépasser 70 K, à moins que les instructions ne spécifient qu'une planche doit être installée sous la **table de cuisson**.*

*L'échauffement des poignées des portes intérieures en verre, des lèchefrites, des **sondes thermiques** et des parties tournantes dans les **fours** ou **grils** n'est pas limité.*

*Pendant l'essai supplémentaire pour les **fours autonettoyants par pyrolyse**, l'échauffement de la surface des boutons, poignées et leviers ne doit pas dépasser les valeurs suivantes:*

– *si elle est en métal* *55 K;*
– *si elle est en porcelaine ou en matière vitrifiée* *65 K;*
– *si elle est en matière moulée, caoutchouc ou bois* *80 K.*

L'échauffement des boutons, poignées et leviers liés à des fonctions qui ne peuvent pas être exécutées pendant le nettoyage n'est pas déterminé.

*Les limites d'échauffement des moteurs, des transformateurs et des composants des **circuits électroniques**, y compris les parties directement influencées par ceux-ci, peuvent être dépassées lorsque l'appareil est mis en fonctionnement à 1,15 fois la **puissance assignée**.*

L'échauffement de la fiche, mesuré 2 mm sous la surface au centre de la face d'engagement, ne doit pas dépasser 45 K.

11.101 *Les **cuisinières** et les **fours** sont placés comme cela est spécifié en 11.2. Toutefois, les appareils destinés à être placés sur le sol sont installés avec leur surface arrière placée contre l'une des parois du coin d'essai et éloignés de l'autre paroi. Une boîte rectangulaire telle que spécifiée en 11.2 est placée contre l'un des côtés de l'appareil. L'appareil est alimenté à la **tension assignée** et mis en fonctionnement dans les **conditions de fonctionnement normal**, sauf pour le réglage de température.*

*Toutes les **unités chauffantes**, à l'exception des **grils**, qui en usage normal peuvent être reliées en même temps au réseau d'alimentation, sont mises sous tension.*

*Les **fours à vapeur haute pression** et les **fours à vapeur à pression atmosphérique** sont mis en fonctionnement dans chacun des modes vapeur, avec leurs dispositifs de commande réglés sur la position la plus élevée. Les autres **fours** sont mis en fonctionnement sans autre accessoire qu'une grille placée sur les supports de l'étagère, aussi près que possible du centre vertical du **four**. La température moyenne au centre du **four** est maintenue à 200 °C ± 4 °C.*

*Cependant, si le **four** est un **four autonettoyant par pyrolyse**, celui-ci est mis en fonctionnement dans les conditions de nettoyage conformément au 11.7.102.*

*Les **foyers de cuisson** et les **grils par contact** sont mis en fonctionnement conformément au 11.7.*

Les tiroirs chauffants et compartiments analogues sont mis en fonctionnement avec leurs dispositifs de commande réglés sur la position la plus élevée.

*Les **fours à vapeur haute pression** et les **fours à vapeur à pression atmosphérique** sont mis en fonctionnement pendant 30 min. Les autres appareils sont mis en fonctionnement pendant 60 min ou jusqu'à l'établissement des conditions de régime, si cette période est plus courte.*

Les échauffements ne sont pas mesurés sur:

- *les surfaces qui ne sont pas accessibles par un calibre d'un diamètre de 75 mm et à extrémité hémisphérique, sauf si celles-ci sont protégées par un **dispositif de protection amovible**;*
- *les surfaces qui, sur les **cuisinières**, sont situées soit au maximum à 25 mm au-dessous du niveau du **plan de cuisson**, soit au-dessus du **plan de cuisson**;*
- *les petites parties telles que les orifices d'aération des **fours**, les charnières et les garnitures, dont la largeur de la **surface accessible** est inférieure à 10 mm;*
- *les surfaces qui se trouvent au maximum à 10 mm du bord de la porte du **four**.*

Pendant cet essai, l'échauffement des surfaces ne doit pas dépasser les valeurs spécifiées dans le Tableau 102.

Tableau 102 – Échauffements maximaux pour les surfaces accessibles extérieures spécifiées en conditions de fonctionnement normal

Surface	*Échauffements des surfaces accessibles extérieures* [a] *K*	
	Parties situées à moins de 850 mm du sol après installation	***Parties situées à plus de 850 mm du sol après installation***
Métal nu	*38*	*42*
Métal recouvert [b]	*42*	*49*
Verre et céramique	*51*	*56*
Plastique de plus de 0,4 mm d'épaisseur [c, d]	*58*	*62*
NOTE Les limites d'échauffement des poignées, boutons, manettes, claviers, pavés numériques et parties analogues sont spécifiées dans le Tableau 3.		
[a] *L'échauffement des parties des **fours autonettoyants par pyrolyse**, qui fonctionnent dans les conditions de nettoyage indépendamment de la hauteur par rapport au sol, est de 20 K de plus que l'échauffement spécifié pour les parties situées à plus de 850 mm du sol après installation.*		
[b] *Un métal est considéré comme recouvert lorsqu'un revêtement en émail, en poudre ou non constitué majoritairement de plastique d'une épaisseur minimale de 90 µm est utilisé.*		
[c] *La limite d'échauffement du plastique s'applique également aux matières plastiques dont l'épaisseur de la finition métallique est inférieure à 0,1 mm.*		
[d] *Lorsque l'épaisseur du revêtement plastique ne dépasse pas 0,4 mm, les limites d'échauffement du métal recouvert ou du matériau en verre ou céramique s'appliquent.*		

*Si la porte du **four** est protégée par un dispositif de protection, les limites d'échauffement indiquées dans le Tableau 102 s'appliquent au dispositif de protection. Toutefois, si le dispositif de protection est un **dispositif de protection amovible**, les limites d'échauffement indiquées dans le Tableau 102 pour les parties situées à plus de 850 mm du sol après installation s'appliquent aux parties de la porte du **four** protégée par le dispositif de protection.*

*Dans le cas des **fours** destinés à être utilisés sur un plan de travail, les limites d'échauffement spécifiées dans le Tableau 102 pour les parties situées à plus de 850 mm du sol s'appliquent.*

*Si le **four** peut être utilisé pour griller et si les instructions indiquent qu'il convient de fermer la porte pour l'opération de grillage, l'essai est répété avec le **four** fonctionnant en gril, les dispositifs de commande étant réglés conformément aux instructions. Le **gril** est mis en fonctionnement pendant 30 min conformément au 11.7.103. Toutefois, si le **four** comporte une broche tournante, la durée de l'essai est de 60 min, les dispositifs de commande étant réglés de façon à obtenir les conditions les plus défavorables spécifiées dans les instructions. Les mesurages sont effectués uniquement sur la surface avant des portes du **four**.*

NOTE En Australie et en Nouvelle-Zélande, le Tableau 102 est remplacé par le Tableau 103.