11.101 ***Toasters*** *are placed as specified in 11.2 and are operated for three cycles at* ***rated power*** *under* ***normal operation****.*

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

Temperature rises are not measured on:

- *the top side of top loaded appliances and surfaces within 25 mm below the top surface;*
- *surfaces within 25 mm around the outline of the* ***hot functional surface****;*
- *surfaces within 25 mm from the ventilation openings;*
- *underside surfaces that are not accessible with test probe 41 of IEC 61032, the probe being applied with a force not exceeding 1 N.*

11.102 ***Ovens****,* ***rotary grills*** *and* ***cookers*** *are placed as specified in 11.2 and are supplied at* ***rated power input*** *and operated under* ***normal operation****.*

All ***heating units*** *that can be energised simultaneously during normal use are switched on.*

Ovens *are operated without shelves or other accessories.*

Temperature rises are not measured on the following surfaces (see Figure 106):

- *surfaces on the oven door or drawer within 10 mm from the edge of the door or drawer (Zone 1);*
- *surfaces around the oven door or drawer within 10 mm from the left, right or lower edge of the door or drawer, or 25 mm from the upper edge of the door or drawer (Zone 2);*
- *surfaces within 25 mm of ventilation openings (Zone 3);*
- *underside surfaces and rear surfaces that are not accessible with test probe 41 of IEC 61032, the probe being applied with a force not exceeding 1 N;*
- *surfaces within 25 mm from the level of the top surface of* ***cookers*** *when the* ***hotplates*** *are in operation.*

Appliances are operated until steady conditions are established or for 60 min, whichever is shorter.

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

Ovens *having settings higher than 240 °C are also operated at the maximum setting until steady conditions are established or for 60 min, whichever is shorter. The temperature rise limits of Table 102 for top surfaces and door or drawer surfaces are increased by 10 K.*

11.103 ***Contact grills****,* ***waffle irons****,* ***radiant grills****,* ***raclette grills****,* ***barbecues****,* ***candy floss appliances*** *and* ***hot plates*** *are placed as specified in 11.2 and are supplied at* ***rated power input*** *and operated under* ***normal operation****.* ***Induction hotplates*** *and* ***induction wok hotplates*** *are operated at* ***rated voltage*** *instead of* ***rated power input.***

The test for ***barbecues*** *is repeated with an aluminium plate placed on the food support. The aluminium plate shall be approximately 1,5 mm thick and shall be made of commercially available aluminium. Its dimensions shall be such that there is a 10 mm gap between the edges of the plate and outer edges of the food support.*

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

Temperature rises are not measured on

- *surfaces within 25 mm around the outline of the **hot functional surface**;*
- *surfaces within 25 mm from the ventilation openings;*
- *underside surfaces that are not accessible with test probe 41 of IEC 61032, the probe being applied with a force not exceeding 1 N;*
- *the lid of griddles, if any, used to prevent splashing.*

11.104 ***Breadmakers**, **pop-corn makers** and **food dehydrators** are placed as specified in 11.2 and operated under **normal operation. Pop-corn makers** and **food dehydrators** are supplied at **rated power input** and **breadmakers** are supplied at **rated voltage.***

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

Temperature rises are not measured on

- *surfaces within 25 mm from the edge of the lid;*
- *surfaces within 25 mm from the ventilation openings;*
- *windows and surfaces within 25 mm from the edge of the window;*
- *underside surfaces that are not accessible with test probe 41 of IEC 61032, the probe being applied with a force not exceeding 1 N.*

11.105 ***Roasters** are placed as specified in 11.2 and are supplied at **rated power input** and operated under **normal operation**.*

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

Temperature rises are not measured on:

- *the lids;*
- *surfaces within 25 mm from the edge of the lid;*
- *surfaces within 25 mm from the ventilation openings;*
- *underside surfaces that are not accessible with probe 41 of IEC 61032, the probe being applied with a force not exceeding 1 N.*

12 Void

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 an **oven**, either the **oven** or the grill is operated, whichever is more unfavourable.*

***Induction wok hotplates** are operated with the wok pan that is supplied by the manufacturer with the **induction wok hotplate** at the point of sale.*

13.2 *Addition:*

*If there is earthed metal between **live parts** and the surface of glass-ceramic or similar material of **hotplates**, the leakage current is measured between **live parts** and each vessel in turn connected to the earthed metal. It shall not exceed 0,75 mA. 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.*

13.3 *Addition:*

*If there is earthed metal between **live parts** and the surface of glass-ceramic or similar material of **hotplates**, 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:*

*For **ovens**, 0,5 l of water containing approximately 1 % NaCl is poured uniformly over the bottom surface of the **oven**.*

***Hotplates** and **cookers** are positioned so that the top surface is horizontal. A vessel having the largest diameter shown in Figure 103, which does not exceed the diameter of the **cooking zone**, is completely filled with water containing approximately 1 % NaCl and positioned centrally over the **cooking zone**. A further quantity of approximately 0,5 l of the 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 solution from the appliance. For **induction wok hotplates**, the test is performed using the wok pan that is supplied by the manufacturer with the **induction wok hotplate** at the point of sale.*

*If the heating element of a **hotplate** incorporates a thermal control, 0,02 l of the saline solution is poured over the **cooking zone** so that it flows over the control. A vessel is then placed on the **cooking zone** to depress any movable part.*

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

NOTE 101 If the opening is protected, the funnel is positioned so that the solution falls onto the heated surface as close as possible to the opening.

For other appliances with heating elements that are covered by vessels in normal use, the spillage test is carried out by steadily pouring saline solution onto the heating surface over a period of 1 min, 0,1 l of solution being used for every 100 cm^2 of the heating surface.

*The spillage test is not carried out on **roasters**.*

15.101 Appliances intended to be partially or completely immersed in water for cleaning shall have adequate protection against the effects of immersion.

Compliance is checked by the following tests, which are carried out on three additional appliances.

*The appliances are operated under **normal operation** at 1,15 times **rated power input**, until the **thermostat** operates for the first time. Appliances without a **thermostat** are operated until steady conditions are established. The appliances are disconnected from the supply, any appliance connector being withdrawn. They are then completely immersed in water containing approximately 1 % NaCl and having a temperature between 10 °C and 25 °C, unless they are marked with the maximum level of immersion, in which case they are immersed 5 cm deeper than this level.*

After 1 h, the appliances are removed from the saline solution, dried and subjected to the leakage current test of 16.2. Care shall be taken to ensure that all moisture is removed from the insulation around the pins of appliance inlets.

This test is carried out four more times, after which the appliances shall withstand the electric strength test of 16.3, the voltage being as specified in Table 4.

*The appliance having the highest leakage current after the fifth immersion is dismantled and inspection shall show that there is no trace of liquid on insulation that could result in a reduction of **clearances** and **creepage distances** below the values specified in Clause 29.*

*The remaining two appliances are operated under **normal operation** for 240 h at 1,15 times **rated power input**. After this period, the appliances are disconnected from the supply and immersed again for 1 h. They are then dried and subjected to the electric strength test of 16.3, the voltage being as specified in Table 4.*

*Inspection shall show that there is no trace of liquid on insulation that could result in a reduction of **clearances** and **creepage distances** below the values specified in Clause 29.*

16 Leakage current and electric strength

This clause of Part 1 is applicable except as follows.

16.1 *Addition:*

*For **hotplates,** the tests are carried out with a vessel as specified for **normal operation** placed on each **cooking zone**.*

***Induction wok hotplates** are operated with the wok pan that is supplied by the manufacturer with the **induction wok hotplate** at the point of sale.*

16.2 *Addition:*

*If there is earthed metal between **live parts** and the surface of glass-ceramic or similar material of **hotplates**, the leakage current is measured between **live parts** and each vessel in turn connected to the earthed metal. It shall not exceed 0,75 mA. 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 **hotplates**, 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:*

The tests of 19.4 and 19.5 are only applicable to

- ***breadmakers**;*
- ***food dehydrators**;*
- *the following appliances, if they incorporate a timer or if their instructions indicate a cooking operation longer than 1 h:*
  - ***cookers**;*
  - ***hotplates** other than **induction hotplates**;*
  - ***ovens**;*
  - ***roasters**;*
  - ***rotary grills**.*

***Toasters** are also subjected to the tests of 19.101, 19.102 and 19.103.*

***Induction hotplates** are also subjected to the tests of 19.104,19.105 and 19.107, but 19.2, 19.3 and 19.4 are not applicable. However, **induction wok hotplates** are not subjected to the test of 19.104.*

***Pop-corn makers** are also subjected to the test of 19.106.*

19.2 *Addition:*

***Radiant grills** and **raclette grills** that are loaded from the front, **rotary grills**, **ovens**, **hotplates** and **cookers** are placed as near to the walls of the test corner as possible.*

*Appliances are tested empty. Lids, drawers and doors are open or closed, whichever is more unfavourable. **Detachable parts** are in position or removed, whichever is more unfavourable.*

***Hotplates** are operated without a vessel and with the controls adjusted to the highest setting.*

***Cookers** are only tested with the **heating unit** that results in the most unfavourable conditions, their controls being adjusted to the highest setting. However, **ovens** are operated*

if they do not have an indicating lamp to show when they are switched on, controls being adjusted to the highest setting.

NOTE 101 A lamp used for illuminating the **oven**, that is visible through the door or drawer and is automatically switched on and off with the **oven**, is considered to be an indicating lamp.

19.4 *Addition:*

*Air-circulating fans of **food dehydrators** are disconnected.*

19.8 Not applicable.

19.10 Not applicable.

19.11.2 *Addition:*

*For **toasters** having devices with an off position obtained by electronic disconnection, the fault conditions a) to g) are also simulated with the appliance supplied at **rated voltage** but with the controls switched off.*

Heating elements shall not become energized.

19.13 *Addition:*

*During the test of 19.102 and 19.103, flames from the bread inside the **toaster** and any smoke from the bread shall be ignored.*

*The temperature rise of the windings of **induction hotplates** shall not exceed the values specified in 19.7.*

*The electric strength test of **induction hotplates** is carried out immediately after switching off the appliance.*

19.101 ***Toasters** are operated at **rated power input** and under **normal operation**, but without bread, for six cycles of operation. The appliance is then allowed to cool to approximately room temperature.*

This test is carried out 500 times.

The ejector mechanism shall operate satisfactorily and no sustained arcing shall occur. Electrical connections shall not work loose and the appliance shall withstand the electric strength test of 16.3. 19.13 is not applicable.

NOTE 1 Forced cooling can be used.

NOTE 2 A simulated load could be necessary to operate the ejector mechanism.

19.102 ***Toasters**, loaded with the bread specified for **normal operation**, are operated at **rated power input**. The ejector mechanism is prevented from releasing and the supply is maintained to the heating elements after the timer has completed its cycle.*

*The test is terminated after any fire has extinguished, after which any residual bread is removed from the **toaster**.*

19.103 ***Toasters**, loaded with the bread specified for **normal operation**, are operated at **rated power input** for 2 cycles with the control at maximum setting. The bread is not replaced.*

19.104 ***Induction hotplates*** *are supplied at* ***rated voltage*** *and operated with a steel disk placed on the centre of the* ***cooking zone****. The disk has a thickness of 6 mm and the smallest diameter, rounded up to the nearest centimetre, which allows the appliance to operate.*

19.105 ***Induction hotplates*** *are supplied at* ***rated voltage*** *and operated under* ***normal operation*** *but with any control that limits the temperature during the test of Clause 11 short-circuited.*

NOTE If the appliance incorporates more than one control, they are short circuited in turn.

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

19.106 ***Pop-corn makers*** *are operated under conditions of Clause 11 for a period of five minutes but with the pop corn outlet blocked by means of a grid with a mesh size small enough to keep the pop corn from being ejected from the appliance.*

19.107 ***Induction hotplates*** *are operated under the conditions of Clause 11 but with empty vessels, controls being adjusted to the highest setting.*

Induction wok hotplates *are operated under the conditions of Clause 11 with an empty wok pan that is supplied by the manufacturer with the* ***induction wok hotplate*** *at the point of sale, controls being adjusted to the highest setting.*

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.101 **Ovens** having doors with a horizontal hinge at their lower edge or drawers and on which a load is likely to be placed shall have adequate stability.

Compliance is checked by the following test.

The ***oven*** *is placed on a horizontal surface with the door or drawer open and a mass of 3,5 kg is gently placed on the geometric centre of the door or drawer.*

NOTE A sandbag can be used for the load.

The ***oven*** *shall not tilt.*

This test is not carried out on ***ovens*** *with doors having a dimension less than 225 mm from the hinge to the opposite edge or on* ***ovens*** *with doors which cannot support dishes in the fully open position.*

21 Mechanical strength

This clause of Part 1 is applicable except as follows.

21.1 *Addition:*

For appliances intended for outdoor use, the impact energy is increased to 0,7 J.

If the appliance incorporates ***visibly glowing heating elements*** *enclosed in glass tubes, the blows are applied to the tubes without removing any heater guards 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.*

*For **hotplates** having surfaces of glass-ceramic or similar material, three blows are applied to parts of the surface that are not exposed to impacts during the test of 21.101, the impact energy being 0,7 J. The blows are not applied to surfaces within 20 mm of knobs.*

NOTE 101 If the surface comprises a single piece of material, except for the outer frame, this test is not carried out.

21.101 Surfaces of **hotplates** of glass-ceramic or similar material shall withstand the stresses liable to occur in normal use.

Compliance is checked by the following test.

***Induction wok hotplates** are tested with a wok pan that is supplied by the manufacturer with the **induction wok hotplate** at the point of sale. The wok pan is filled with sand or shot so that the total mass, including the mass of the wok pan, is equal to 1,8 kg ± 0,01 kg.*

*The **hotplate** is operated at **rated power input** with its control adjusted to the highest setting. **Induction hotplates** are operated as specified in Clause 11. When steady conditions are established, the **hotplate** is switched off and a vessel with its base horizontal is dropped from a height of 150 mm onto the **cooking zone**. The vessel has a copper or aluminium base that is flat 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.*

*The vessel is dropped 10 times onto each **cooking zone**. It is removed and the appliance is operated at **rated power input** until steady conditions are established.*

*A quantity of $1^{+0,1}_{0}$ l of water containing approximately 1 % NaCl is poured steadily over the **hotplate**.*

*The appliance is then disconnected from the supply. After 15 min, all excess liquid is removed and the appliance is allowed to cool to approximately room temperature. The same quantity of the saline solution is poured over the **hotplate** after which excess liquid is removed again.*

*The surface of the **hotplate** shall not be broken and the appliance shall withstand the electric strength test of 16.3.*

22 Construction

This clause of Part 1 is applicable except as follows.

22.24 *Addition:*

Heating elements shall be constructed or supported so they are unlikely to become displaced in normal use.

Compliance is checked by inspection.

22.101 **Radiant grills** shall not incorporate a timer that is intended to delay the operation of a heating element, unless they have a **thermostat** and are incorporated in an **oven** or other compartment. **Hotplates** shall not incorporate a timer that is intended to delay the operation of a heating element.

Compliance is checked by inspection.

22.102 **Barbecues** shall not have bare heating elements.

Bare heating elements for **ovens** shall only be located at the top of the heated compartment.

Compliance is checked by inspection.

22.103 **Oven** ventilation openings shall be constructed so that they do not discharge moisture or grease in such a way that **clearances** and **creepage distances** are affected.

Compliance is checked by inspection.

22.104 **Ovens** shall be constructed so that shelves can easily slide in the supports and do not fall out of position when the sides are displaced as much as possible.

Compliance is checked by inspection and by manual test.

22.105 Appliances shall not have openings on the underside that would allow small items to penetrate and touch **live parts**.

*Compliance is checked by inspection and by measuring the distance between the supporting surface and **live parts** through openings. This distance shall be at least 6 mm. However, if the appliance is fitted with legs, this distance is increased to 10 mm if the appliance is intended to stand on a table and to 20 mm if it is intended to stand on the floor.*

22.106 Grills and **barbecues** shall be constructed so that their heating elements are fixed in position or prevented from operating when they are not in their normal position of use.

The requirement is not applicable if the appliance complies with the standard with the element placed in any position.

Compliance is checked by inspection.

22.107 **Hotplates** shall be constructed so that heating elements are prevented from rotating about a vertical axis and are adequately supported in all positions of adjustment of their supports.

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

Compliance is checked by inspection.

22.108 **Hotplates** 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 control panel.

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

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

The test is carried out with each heating element energised in turn and then without energising any heating element.

A cloth having a mass between 140 g/m^2 and 170 g/m^2 and dimensions of 400 mm × 400 mm is folded four times into a square pad and saturated with water. It is placed over the control panel in any position.

There shall be no inadvertent operation of any heating element for longer than 10 s.

22.109 **Hotplates** incorporating **touch controls** shall require at least two manual operations to switch on a heating element but only one to switch it off.

NOTE Touching the contact surface at the same point twice is not considered to be two operations.

Compliance is checked by manual test.

22.110 **Induction hotplates** shall be constructed so that they can only be operated with a suitable vessel 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 100 mm × 20 mm is placed in the most unfavourable position on the **cooking zone**. The controls are adjusted to their maximum setting.*

The temperature rise of the bar shall not exceed 35 K.

22.111 Heating elements in **breadmakers** shall be located so that they are not exposed to dough that may rise over the edge of the dough container during normal use of the appliance.

Compliance is checked by inspection and in case of doubt by the following test.

A dough mixture as specified in the instructions has added ingredients to cause the dough to overflow the pan. The overflowing dough mixture shall not come into contact with the heating elements.

NOTE An overflow can be achieved by increasing the ingredients in incremental amounts (for example 10 %) until overflow is achieved.

22.112 Reconnection of the power supply to a **breadmaker** after an interruption shall not result in a fire due to an extended heating period.

Compliance is checked by the following test.

*All batteries are removed and the **breadmaker** is supplied at **rated voltage** and operated in its heating mode without a load.*

After 1 min, the power supply is interrupted for a period of 5 min and then restored. The appliance shall continue to operate in its heating mode from the same point in the cycle, or a manual operation shall be required to restart it.

If the appliance continues to operate automatically, the test is repeated but with a 5 min longer period of interruption. If the appliance still continues to operate automatically, the test is repeated but with the periods of interruption increased by at least 5 min each time.

The appliance shall eventually require a manual operation to restart it.

22.113 **Toasters** having an ejector mechanism shall be constructed so that they switch off automatically after the normal toasting time even if the ejector mechanism is blocked by the bread.