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(JEMA)

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

ICS 13.120; 97.040.20

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Electrical Manufacturer's Association (JEMA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS C 9335-2-6 : 1998** is replaced with this Standard.

This revision has been made based on **IEC 60335-2-6 : 2002** *Household and similar electrical appliances—Safety—Part 2-6 : Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances* for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

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

Introduction This Japanese Industrial Standard has been prepared based on IEC **60335-2-6** *Household and similar electrical appliances—Safety—Part 2-6 : Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances* published in 2002 as the fifth edition with some modifications in the technical contents. This is to be read with conjunction with **JIS C 9335-1 : 2003** *Household and similar electrical appliances—Safety—Part 1 : General requirements*.

In this Standard, the portions underlined with dots are the matters modified from the original International Standard. The list of modifications is given in annex 1 (informative) with the explanation being attached.

1 Scope This section of **JIS C 9335-2** deals with the safety of stationary electric cooking ranges, hobs, ovens and similar appliances for household use, their rated voltage being not more than 250 V for single-phase appliances, and 480 V for other appliances.

NOTE 101 Examples of appliances that are within the scope of this Standard are

- griddles;
- grills;
- induction hobs;
- 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

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

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 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).

NOTE : The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and JIS are IDT (identical), MOD (modified), and NEQ (not equivalent) according to ISO/IEC Guide 21.

IEC 60335-2-6 : 2002 *Household and similar electrical appliances—Safety—Part 2-6 : Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances* (MOD)

2 Normative references The normative references shall be as stated in clause 2 of JIS C 9335-1, except as follows.

JIS C 1602 *Thermocouples*

NOTE : IEC 60584-1 : 1995 *Thermocouples—Part 1 : Reference tables* is identical with the said standard.

3 Definitions For the purpose of this Standard clause 3 of JIS C 9335-1 is applicable except as follows.

3.1.6 Addition:

NOTE 101 For appliances having more than three heating units per phase, 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:

$$F = 0.35 \pm \frac{0.65}{\sqrt{N}}$$

3.1.9 Replacement:

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

3.1.9.101 Hob elements, other than induction hob 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. 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.

NOTE 1 The lid is positioned so that steam does not affect the test.

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 approximately half their capacity of cooking oil at room temperature. Thermal controls are adjusted to their highest setting until the oil temperature reaches $180\text{ }^{\circ}\text{C} \pm 4\text{ }^{\circ}\text{C}$ and then adjusted so that this temperature is maintained.

For all hob 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.

NOTE 2 If several cooking zones are marked for one hob element, the most unfavourable zone is used for the test.

NOTE 3 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.

Table 101 Quantity of liquid in the vessel

Diameter of cooking zone mm	Quantity of water L
≤ 110	0.6
> 110 and ≤ 145	1
> 145 and ≤ 180	1.5
> 180 and ≤ 220	2
> 220 and ≤ 300	3

3.1.9.102 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

- $220\text{ }^{\circ}\text{C} \pm 4\text{ }^{\circ}\text{C}$ for ovens with forced air circulation;
- $240\text{ }^{\circ}\text{C} \pm 4\text{ }^{\circ}\text{C}$ for other ovens.

NOTE : 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 $240\text{ }^{\circ}\text{C} \pm 15\text{ }^{\circ}\text{C}$.

Steam ovens are operated in accordance with the instructions. 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

- $15\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ for appliances to be connected to a cold water supply;
- $60\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ or the temperature indicated in the instructions, whichever is the higher, for appliances to be connected to a hot water supply.

Steam 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 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 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 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 $275\text{ }^{\circ}\text{C} \pm 15\text{ }^{\circ}\text{C}$ 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.

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

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

NOTE : The cooking operation in a grill is known as grilling or broiling.

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

3.104 cooking range appliance incorporating a hob and an oven and which may incorporate a grill or griddle

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

3.106 steam oven oven intended for cooking food by steam generated at atmospheric pressure in the appliance

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

3.108 induction hob hob containing at least one induction hob element

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

NOTE : Examples are hob elements, ovens, grills and warming drawers.

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

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

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

NOTE : The eddy currents are induced in the bottom of the vessel by the electromagnetic field of a coil.

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

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

NOTE : When a hob element protrudes above the hob surface, its surface is the cooking zone.

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

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

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

3.201 flat control control actuated by moving of mechanical contact resulted from pushing by a finger

If the pushing pressure is not more than 40 N, such a control is considered to be a touch control.

4 General requirement The general requirement shall be as stated in clause 4 of JIS C 9335-1.

5 General conditions for the tests General conditions for the tests shall be as stated in clause 5 of JIS C 9335-1 except as follows.

5.3 Addition to 5.3 of JIS C 9335-1:

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 to 5.4 of JIS C 9335-1:

Appliances that also use gas are supplied with gas at the appropriate rated pressure. Vessels having a diameter of 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.

6 Classification Classification shall be as stated in clause 6 of JIS C 9335-1 except as follows.

6.1 Modification of 6.1 of JIS C 9335-1:

Appliances shall be class 0I, class I, class II or class III.

7 Marking and instructions Marking and instructions shall be as stated in clause 7 of JIS C 9335-1 except as follows.

7.1 Addition to 7.1 of JIS C 9335-1:

The total rated power input or rated current of induction hob elements 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 of the relevant fuse. When a miniature fuse-link is provided, this marking shall indicate that the fuse-link is to have a high breaking capacity.

7.6 Addition to 7.6 of JIS C 9335-1:

 [symbol 5010 of IEC 60417-1] ON/OFF (push-push)

7.10 Addition to 7.10 of JIS C 9335-1:

The off position of touch controls for hobs shall be marked by the figure 0 and the on position by the figure 1. If there is no touch control for the hob, this requirement applies to the touch controls for each hob element.

NOTE 101 If the same touch control is used for switching on and off, symbol 5010 of IEC 60417-1 may be used.

7.12 Addition to 7.12 of JIS C 9335-1:

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.

If the instructions state that the oven can be used as a grill with the door open, they shall contain the substance of the following:

WARNING : Accessible parts may become hot when the grill is in use. Children should be kept away.

The instructions for pyrolytic self-cleaning ovens shall state that excess spillage must 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 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 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 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.

7.12.1 Addition to 7.12.1 of JIS C 9335-1:

The installation instructions for cooking ranges that are placed on the floor shall state that if the range is placed on a base, measures have to be taken to prevent the appliance slipping from the base.

NOTE 101 This statement is not required if the instructions specify that the range should not be placed on a base.

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

7.12.3 Addition to 7.12.3 of JIS C 9335-1:

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 to 7.12.4 of JIS C 9335-1:

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 Addition to 7.15 of JIS C 9335-1:

When it is not practical for the marking of fixed appliances to be visible after the appliance has been installed, the relevant information shall be included in the instructions or on an additional label that can be fixed near the appliance after installation.

NOTE 101 An example of such an appliance is a built-in hob.

The marking for the rated current 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.

8 Protection against access to live parts Protection against access to live parts shall be as stated in clause 8 of JIS C 9335-1 except as follows.

8.1.2 Addition to 8.1.2 of JIS C 9335-1:

Test probe 12 of **JIS C 0922** is applied without appreciable force 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 Modification of 8.1.3 of JIS C 9335-1:

The use of test probe 41 instead of test probe B and test probe 13 is only allowed when visibly glowing heating elements are situated at the top of an oven or grilling compartment.

9 Starting of motor-operated appliances Clause 9 of **JIS C 9335-1** is not applicable.

10 Power input and current Power input and current shall be as stated in clause 10 of **JIS C 9335-1** except as follows.

10.1 Addition to 10.1 of JIS C 9335-1:

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

The contribution of a socket-outlet to the power input is considered to be 1 kW.

NOTE 101 Socket-outlets are not loaded during the test.

10.2 Addition to 10.2 of JIS C 9335-1:

The current of induction hob elements is measured separately and the tolerances for motor-operated appliances apply.

The contribution of a socket-outlet to the current is considered to be 1 kW divided by the rated voltage.

NOTE 101 Socket-outlets are not loaded during the test.

11 Heating Heating shall be as stated in clause 11 of **JIS C 9335-1** except as follows.

11.1 Addition to 11.1 of JIS C 9335-1:

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

11.2 Addition to 11.2 of JIS C 9335-1:

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.

NOTE 101 A retractable part is not considered to be a detachable part.

11.3 Addition to 11.3 of JIS C 9335-1:

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.

NOTE 101 If the magnetic field of an induction hob element unduly influences the results, the temperature rises can be determined using platinum resistances with twisted connecting wires or any equivalent means.

11.4 Addition to 11.4 of JIS C 9335-1:

Induction hob 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.

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:

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

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 are operated for 30 min. Other hob elements are operated for 60 min.

11.7.102 Ovens are operated for 60 min. If a rotating spit is provided, it is in operation.

NOTE 1 Steam ovens are operated in each mode of operation.

NOTE 2 Lamps in ovens are not manually switched on.

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