**Date:**

# Schedule 34

# Induction Hobs

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## 1. Scope:

This schedule specifies the requirements which are necessary to participate in the star labelling program for countertop induction hobs, also commercially known as induction cooktops or stoves, used for household and similar purposes having cooking zones, at rated voltage not exceeding 250 V, ac single phase 50 Hz.

## 2. Normative Reference:

This schedule shall be read in conjunction with the following standards with all amendments, for the purpose of star labelling i.e.

**a)** **IS 19014:2022** Household Electric Cooking Appliances - Part 2: Performance Requirements of Electric Hobs.

**b)** **IEC 62301:2011:** Household electrical appliances - Measurement of standby power.

**c)** **IS 302-2-6:** Safety of household and similar electrical appliances, Part 2: Particular requirements, Section 6: Cooking Ranges, Hobs, Ovens and Similar Appliances.

## 3. Terms and Definitions:

For the purpose of this schedule, the following definitions in addition to those given in IS 19014:2022, IEC 62301:2011 and IS 302-2-6 with all the amendments shall apply.

**3.1 Induction cooking zone:** Cooking zone on which the pan is heated by means of an induction element below the glass ceramic and the eddy currents are inducted at the bottom of the pan by means of magnetic field.

**3.2 Cooking area with limitative markings:** Area where cookware is placed and heated by an inducted magnetic field. The area is marked to show the limits where more than one cookware can be used simultaneously while the cookware pieces can be used and controlled separately from each other at the same time.

**3.3 Cooking Area Without Limitative Markings:** Area where cookware is placed and heated by an inducted magnetic field without limitative markings.

**3.4 Maximum power:** Maximum possible power setting while only one cookware is used.

**3.5 Standardized cookware:** Cookware that is in accordance with the specifications mentioned in sub-clause 8.6.1 of IS 19014:2022.

**3.6 Standby mode:** It is the mode where the product is switched to standby using appliance controls or switches that are accessible and intended for operation by the user during normal use to attain the lowest power consumption that may persist for an indefinite time while connected to a main power source and used in accordance with the manufacturer's instructions.

*Note: For definition of standby mode IEC 62301 is relevant.*

**3.7 Energy Consumption of hob ($E_{hob}$):** The electrical energy (in Wh) consumed per 1000 g of water load. It is the average of the normalized energy consumption of the hob per cooking area and is calculated by considering all cookware pieces under test,using the following formula:

$$E_{hob} = \frac{1000\text{g}}{n_{cw}} \times \sum_{cw=1}^{n_{cw}} (E_{cw} / m_{cw})$$

Where,

$E_{hob}$ is the energy consumption calculated per 1000 g water in Wh;

$E_{cw}$ is the energy consumption with a single cookware under test in Wh;

$m_{cw}$ is the quantity of water used for the test of the respective cookware piece in g;

$n_{cw}$ is the number of cookware pieces on the stove

**3.8 Thermal Efficiency:** means the ratio of the heat received in a heating unit of an induction hob to the energy input to a heating unit of an induction hob.

Thermal efficiency shall be calculated for heating period only when subjected to test in accordance with clause 10.7 of IS 19014:2022. The thermal efficiency calculation is based on the time taken for the water temperature to rise by 75 K and excludes the

simmering time period. The following equation shall be used to determine the thermal efficiency.

Thermal Efficiency, $\eta = \{(c_1 \times m_1 + c_2 \times m_2) \times \Delta T / (3.6 \times 10^3 \times E)\} * 100\%$

Where,

$\eta$ is Thermal efficiency (%) of the Induction Hob

$c_1$ is Specific heat of water, 4.18 kJ/Kg-$^o$C

$m_1$ is Mass of water (kgs)

$c_2$ is Specific heat of Cookware bottom material, Stainless Steel AISI Type 430, 0.450 KJ/Kg-$^o$C

$m_2$ is Total mass of Cookware body and lid (kg);

$E$ is Electricity consumption (kWh) for heating until water temperature reaches $T_c$ as per IS 19014:2022;

$\Delta T$ is the temperature rise, $\Delta T = T_2 - T_1$ ($^o$C)

**3.9 Star Rating:** The number of stars displayed on the Star label. The available stars are between a minimum of one and a maximum of five shown in one-star interval. The star rating is calculated from the Star Rating Band on the basis of Energy Consumption of Hob ($E_{hob}$).

**3.10 Star Rating Band:** The Star Rating Band is a range of Energy Consumption ($E_{hob}$) for a particular star rating which is arrived at by calculations and is used for determining the number of stars to be displayed on the Star Label.

**3.11 Label Period:** It is the label validity period of the energy consumption standards provided under the star rating plan specified in this schedule.

**3.12 Label:** Any written, printed, marked, stamped or graphic matter affixed to or appearing on the product or packaging, provided that the product inside the packaging to which the label is affixed conform to all the requirements given in this schedule.

**3.13 Family of models:** Family of models is the range of models of a particular brand, to which a single set of test reports is applicable and where each of the models has the same relevant physical characteristics, performance characteristics, star rating, Energy consumption ($E_{hob}$).

**3.14 Validity of Label** means the validity period of energy consumption standards specified in this schedule.

## 4. Testing Guidelines:

**4.1** The tests specified in this schedule shall be carried out as per IS 19014:2022 for performance requirements, IS 302-2-6 for safety requirements and IEC 62301 for

standby power, with all amendments. The testing guideline for each of the performance parameters is mentioned below.

**4.2 Performance testing parameters:** For the purpose of determining the performance of an Induction hob, following tests shall be carried out

4.2.1 Energy Consumption ($E_{cw}$, $E_{hob}$)
4.2.2 Thermal efficiency, $\eta$ as described in 3.8 of this schedule
4.2.3 Heating up time
4.2.4 Standby power
4.2.5 All safety tests as per IS 302-2-6

**5. Test Report:**

The results of tests shall be reported in the prescribed format as given in Annexure I of this Schedule.

**5.1 Rounding off:** The test values shall be rounded off to respective significant figures as per IS 2:1960- Rules for rounding off numerical values.

**5.2 Sample size:**

**5.2.1 Safety Test:** For determining compliance to the safety parameters mentioned in clause 4.2 5 of this Schedule, only one unit is required.

**5.2.2 Performance Test:** For determining the performance of the product with respect to the performance parameters mentioned in clause 4.2.1 to 4.2.4 of this Schedule, only one unit is required.

**6. Tolerance Limit:** The tolerance limits for all the measurements, measuring instruments and the cookware dimensions shall be in accordance with IS 19014:2022.

**7. Pre-eligibility criteria:** For participation in BEE's star labeling program, it is mandatory that the product shall meet the following requirements:

**7.1** (i) Compliance to all safety requirements as per IS 302-2-6 with all amendments;

(ii) Power consumption in standby mode $\leq$ 0.8W in accordance with IEC 62301:2011.

(iii) Thermal efficiency $\geq$ **80%**

**8. Star Rating Plan:**

Star Rating would be evaluated on the basis of Energy consumption of Hob ($E_{hob}$). The starrating bands are given in the Table 1.

| Table 1<br>Star Rating Band for Induction Hob<br>Valid from Date of launch to 31st December, 2024 | |
|---|---|
| **Star rating** | **Energy Consumption, $E_{hob}$ (Wh)** |
| 1 Star * | $200 \geq \mathbf{E_{hob}} > 194$ |
| 2 Star * * | $194 \geq \mathbf{E_{hob}} > 188$ |
| 3 Star * * * | $188 \geq \mathbf{E_{hob}} > 182$ |
| 4 Star * * * * | $182 \geq \mathbf{E_{hob}} > 175$ |
| 5 Star * * * * * | $\mathbf{E_{hob}} \leq 175$ |

**8.1** Energy consumption ($E_{hob}$) of the induction hob as defined under clause 3.8 of the Schedule shall be compared with the Energy consumption ($E_{hob}$) for various Star Rating Bands as given in Table 1.

**8.2** There shall be no negative tolerance for the Star Rating Bands and all tested products shall meet minimum threshold limit for each Star Rating Band.

**8.3** For Check & challenge testing: Energy consumption ($E_{hob}$) value shall be accepted as valid, when measured Energy consumption ($E_{hob}$) is equal to or less than the declared Energy consumption ($E_{hob}$).

## 9. Label Design and Manner of Display:

**9.1 Material & Dimension of Label:** The label shall be self-adhesive and shall be designed as set out in sample label.

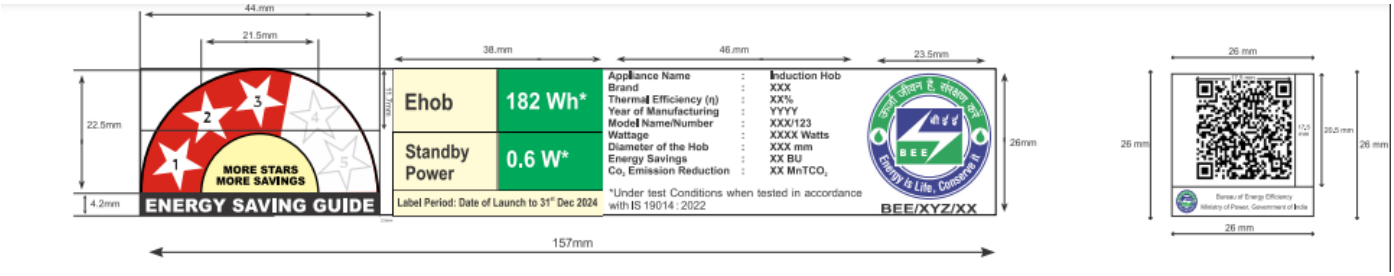



**Figure 1: Dimensions of the label to be affixed on induction hobs**

**9.2 Color scheme of label:** The label shall be printed as per the following specification in the following colors on a white background:

Red: Pantone warm red

Yellow: Pantone 116

Black: Pantone Black

Green: Pantone 340

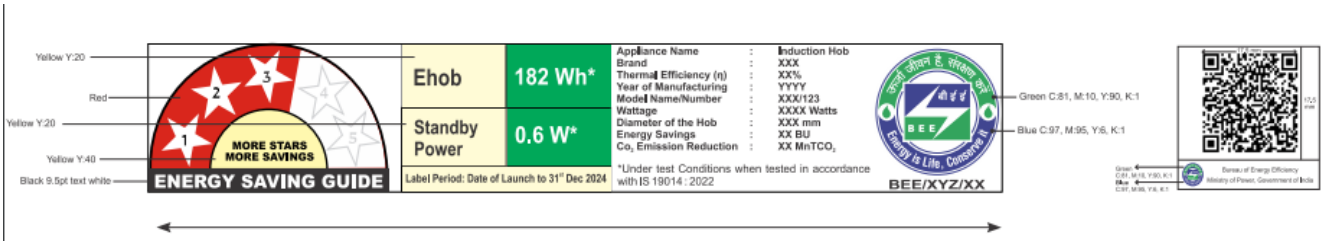



**Figure 2: Color scheme of the label to be affixed on induction hobs**

**The following color scheme for Bureau's logo, namely: -**

Blue – Hue(H)-239o Saturation(S):64% Brightness(B):59%

Luminance or lightness(L) :28, Chromatic components - a:24 b:54

Red(R):54 Green(G):55 Blue(B):151

Cyan(C):97% Magenta(M):95% Yellow(Y):6% Black(K):1%

Web color code - #363797

GREEN – Hue(H)-150o Saturation(S):10% Brightness(B):67%

Luminance or lightness(L) :61, Chromatic components -a: -53 b:32

Red(R):0 Green(G):170 Blue(B):87

Cyan(C):81% Magenta(M):10% Yellow(Y):90% Black(K):1%

Web color code - #00AA56;

Note: The color tone at the background of Electricity Consumption Display (Green) will be similar as followed for the Bureau of Energy Efficiency Logo.

**9.3 Position of label (Placement):**

**9.3.1 Product:** The energy label shall be affixed on the Top left/right side of the product.

*Note: Dimension of the label as given under clause 9.1 can be reduced provided that aspect ratio shall remain the same.*

**9.3.2 Packaging:** The energy label shall be affixed on the Top side of product packaging.

*Note: Dimension of the label as given under clause 9.1 can't be reduced and thus shall be adhered to while affixing the label on packaging.*

**9.4 Content of Label:** The label will mention the following:

(i) Appliance: Induction hob

(ii) Thermal Efficiency, $\eta$ (%)

(iii) Energy consumption, $E_{hob}$ (Wh)

(iv) Star Rating Level

(v) Brand

(vi) Model Name/Number

(vii) Year of Manufacturing

(viii) Rated Wattage

(ix) Standby Power

(x) Diameter of the heating Area in (mm)

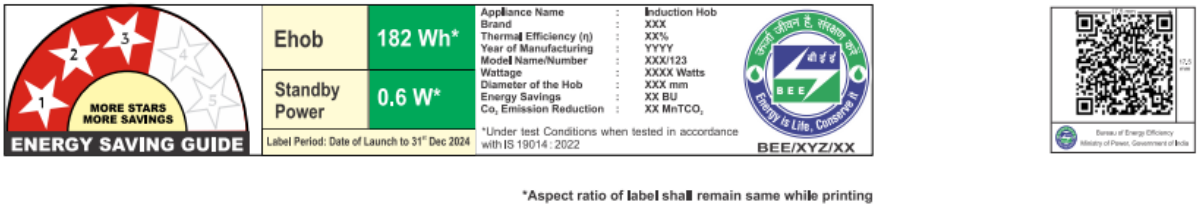
(xi) Label Period

(xii) BEE-logo

(xiii) Unique Series code

(xiv) Compliance standard

**9.5** A typical example of how a sample label would look like for Induction hob is:




*Aspect ratio of label shall remain same while printing

**Figure 3: Sample of the label to be affixed on induction hobs**

## 10. Fees

**10.1 Security Deposit:** The user of label with respect to each equipment shall deposit a security deposit of Rs 1 lakh (**for large scale industries**) or Rs 25,000/- (**for small and medium scale industries**) along with the application for seeking authority to use label.

**10.2 Model Registration fee:** Manufacturer shall pay a fee of INR 2000 (Rupees Two thousand only) on application for assignment of authority.

**10.3 Renewal fee:** Manufacturer shall pay a fee of INR 1000 (Rupees One thousand only) on application for model renewal of authority.

**10.4 Labeling fee:** For affixation of label on each piece of Induction hob, the fee will be **INR 1** for 5 Star, **INR 3** for 4 Star and **INR 5** for 3 Star and below.

***Note**: The labeling fee structure is subject to revision at the time of mandatory notification, at BEE's discretion.*

**10.5 Check Testing**: Check testing of the product shall be carried out as described in the Operations Manual of BEE's S&L program.

**10.6 Test Reports :** For the purpose of model registration, the manufacturers shall submit the test report from an in house/ third party NABL accredited test laboratory or any test lab accredited by the respective national accreditation body who have MRA with ILAC and/or APAC in having the scope of accreditation to test the induction hob in accordance with IS 19014:2022, IEC 62301 and IS 302-2-6 with all amendments.

## ANNEXURE 1

**Test report proforma for reporting the test results in accordance with requirements of IS 19014:2022 and IEC 62301**

1. **Complete and attach a separate copy of the particulars below for each test type, as applicable:**

   i. Name and address of the test lab
   ii. Tel/E-mail
   iii. Date of receipt of samples (in case of outside lab)
   iv. Name of the testing personnel
   v. Number of samples received
   vi. Condition of samples when received
   vii. Whether all the test to be conducted are clearly mentioned in the test request

2. **Details of the Electric Induction hob**

   i. Appliance: Induction hob
   ii. Brand and name of the manufacture:
   iii. Model name/number:
   iv. Serial number/lot number/batch number of the sample under test
   v. Rated voltage / frequency:
   vi. Rated Wattage:
   vii. Standby Power Consumption:
   viii. Thermal Efficiency, $\eta$ (%):
   ix. Energy consumption ($E_{hob}$):
   x. Diameter of the heating Area in (mm):
   xi. Heating up time:

3. **Test summary**

**3.1 Safety Tests:** Compliance with all safety tests for Induction hob in accordance with clause 8 to 32 except for clause 9, 12 and 18 of IS 302-2-6 shall be reported in the prescribed format given in Annex 2 of this schedule if tested in manufacturers own test lab or submitted separately if the testing is done in an independent outside test lab.

### 3.2 Performance tests

3.2.1 Power Measurement

3.2.2 Energy Consumption

a) $E_{cw}$

b) $E_{hob}$

3.2.3 Heating up time (3 readings)

3.2.4 Standby Power

3.2.5 Thermal Efficiency

The values for these tests shall be reported as per the prescribed format mentioned in the table below:

| **Parameters** | **Ambient Test Conditions** | **Rated/ Declared Value** | **Measured Value** | **Remarks (Compliant/ Non-compliant)** |
|---|---|---|---|---|
| Stand by Power | | | | |
| Heating up time (Reading 1) | | | | |
| Heating up time (Reading 2) | | | | |
| Heating up time (Reading 3) | | | | |
| Thermal Efficiency (η)% | | | | |
| Energy Consumption of the cookware ($E_{cw}$) | | | | |
| Energy Consumption of the hob ($E_{hob}$) | | | | |

## ANNEXURE 2

**Test report proforma for reporting the test result in accordance with IS 302-2-6**

| Sr. No | Nature of Test | Declared value wherever applicable | Measured value with regards to Declared value | Comply (Yes/No) |
|---|---|---|---|---|
| 1 | Protection against access to live parts | | | |
| 2 | Power input and current | | | |
| 3 | Heating (Temperature rise) | | | |
| 4 | Leakage current and electric Strength at operating temperature | | | |
| 5 | Transient over voltages | | | |
| 6 | Moisture resistance | | | |
| 7 | Leakage current and electric Strength | | | |
| 8 | Overload protection of transformers and associated circuits | | | |
| 9 | Abnormal operation | | | |
| 10 | Stability and mechanical hazards | | | |
| 11 | Mechanical strength | | | |
| 12 | Construction | | | |
| 13 | Internal wiring | | | |
| 14 | Components | | | |

| Sr. No | Nature of Test | Declared value wherever applicable | Measured value with regards to Declared value | Comply (Yes/No) |
|---|---|---|---|---|
| 15 | Supply connection and external flexible cords | | | |
| 16 | Terminals for external conductors | | | |
| 17 | Provision for earthing | | | |
| 18 | Screws and connections | | | |
| 19 | Clearances, creepage distances and solid insulation | | | |
| 20 | Resistance to heat and fire | | | |
| 21 | Resistance to rusting | | | |
| 22 | Radiation, toxicity and similar hazards | | | |