



Government of India  
**MINISTRY OF POWER**



**BUREAU OF ENERGY EFFICIENCY**

Ministry of Power, Govt. of India  
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 R. K. Puram, New Delhi - 110066

# Standards and Labeling Program for Packaged Boiler



**MORE STARS  
 MORE SAVINGS**

**POWER SAVINGS  
 GUIDE**

**THERMAL EFFICIENCY**  
 XX%

Label Period: 1<sup>st</sup> March, 2024 to 31<sup>st</sup> Dec, 2026

Appliance	: Packaged Boiler
Brand	: XXXX
Model/Year	: ABC/XXXX
Fuel Type	: XXXX
Capacity	: XX TPH
Pressure	: XX Kg/cm <sup>2</sup>
Energy Savings/Year**	: XX TOE
CO <sub>2</sub> Emission Reduction/Year**†	: XX KgCO <sub>2</sub>

BEE:XYZXX

\*Under test conditions, when tested in accordance with IS 13079.  
 †Actual efficiency will vary as per site conditions.  
 \*\*Based on theoretical calculations.



Bureau of Energy Efficiency  
 Ministry of Power, Government of India

# Standards and Labeling Program for Packaged Boiler

The Bureau of Energy Efficiency (BEE) is an agency of the Government of India, under the Ministry of Power, established in March 2002 under the provisions of the Energy Conservation Act, 2001. Standards & Labeling (S&L) Program for equipment and appliances was initiated in 2006 with the main objective to provide the consumers an informed choice about the energy and cost-saving potential of the star labeled appliances/equipment being sold in the Indian market.

The program targets display of energy performance labels on high energy end-use appliances and equipment and lays down minimum energy performance standards. This scheme prescribes the criteria for each type of appliance to be rated between 1-star and 5-star, with 1-star being the least efficient and 5-star being the most efficient. Star rating on a product allows a common consumer to compare the operating cost and environmental impact of similar products. This also allows them to make informed choices and see the potential operating costs and greenhouse gas impacts.

The S&L program has covered 35 appliances till January 2024 out of which 16 are under mandatory regime while the remaining 19 are under voluntary regime. The scheme has resulted in overall electricity saving of 81.64 billion units translating to an abatement of 58 million tons of CO<sub>2</sub> emission in FY 2022-2023.

## Savings from S&L program in FY 2022-2023



**Electricity Saved**  
81.64 Billion Units



**Cost Saving**  
INR 54,323 Crores



**CO<sub>2</sub> Emission Reduction**  
58 million Tonnes

## LAUNCH OF S&L PROGRAM FOR PACKAGED BOILER

A packaged boiler is a type of closed vessel designed and constructed with steel plate to generate steam by heating water with the help of combustion of various fuels namely oil, coal, gas and biofuel. Packaged boiler is a boiler which is factory-made, ready to use boiler. Packaged boilers are the principal equipment employed for meeting both steam and hot water requirements in almost all process industries. Packaged boilers find application in textile industry, metals & mining, chemical industry, cement industry, pharmaceuticals, food processing, rice mills, sugar plants, paper mills, wood processing plants and automobile plants. Packaged boilers also account for a major portion of thermal energy consumption in the commercial sector such as hotels & hospitals.

In industrial and commercial sector, improving energy-efficiency of Packaged Boilers can help reduction of annual energy bills. The thermal efficiency for gas fired & oil fired boilers has the range of 88% to 98% and range for coal fired and biomass fired boilers varies from 80% to 88% approximately, which shows the scope of efficiency improvement of about 8% to 10%.

The Bureau of Energy Efficiency (BEE) under Ministry of Power aims to improve the efficiency of packaged boilers to reduce the overall fossil fuel consumption in alignment with the target set by India to reduce the emissions intensity of its GDP by 45% by 2030 and the commitment to achieve Net Zero status by 2070. BEE is set to bring packaged boilers under the ambit of S&L program from 1<sup>st</sup> March 2024 in Voluntary Phase.

## PRODUCT CLASSIFICATION

Packaged Boilers are classified as IBR (Indian Boiler Regulation) compliant boilers and non-IBR compliant boilers. Classification is also done based on type of fuel used in boilers.

IBR compliant boilers exhibit a water holding capacity of 25 liters and steam pressure of 3.5 Kg/cm<sup>2</sup>. They support varying capacities, ranging from 1 tonne/hour to 1,650 tonne/hour. Non-IBR compliant boilers are available in various capacities from 0.05 tonne/hour – 0.85 tonne/hour. They are widely used for small applications in both industrial and commercial segments.

Based on fuel type, Packaged Boilers are classified into Coal fired, Oil fired, Gas fired and Biomass fired boilers.

Coal fired packaged boilers use coal for producing thermal energy by combustion. Oil fired packaged boiler uses different types of fuel oil, including petrol, diesel, kerosene oil, artificial oil and other fuel oil for producing hot gas by combusting them in the boiler. Gaseous fuels used in packaged boilers include natural gas, coke oven gas, coal gas and producer gas. Natural gas is widely used in gas fired packaged boilers. Biomass fired boilers use fuels obtained from agriculture, food processing wastes, fuel crops, sewage sludge and animal manure. Biomass fired packaged boilers possess some advantages, including renewability, reduced dependability on fossil fuels, waste reduction and are projected to propel the demand for packaged boilers in the coming years.

# Standards and Labeling Program for Packaged Boiler

## MARKET

The boiler market in India is expected to grow from INR 5,859 Crores in FY19 to INR 8,831 Crores in FY30 with an expected CAGR of 3.8%.

The boiler industry in India is dominated by domestic players. The manufacturing of boilers is mainly concentrated in the Western and Southern regions of the country, especially in the areas of Mumbai, Pune, Ahmedabad, Hyderabad, Coimbatore and Nagpur.

Based on the market research, projection of BEE's 2011 study on boilers, interaction with manufacturers and Central Boiler Board data on IBR certified packaged boiler, the annual sales for packaged boilers market was estimated to be 2400 units in 2019.

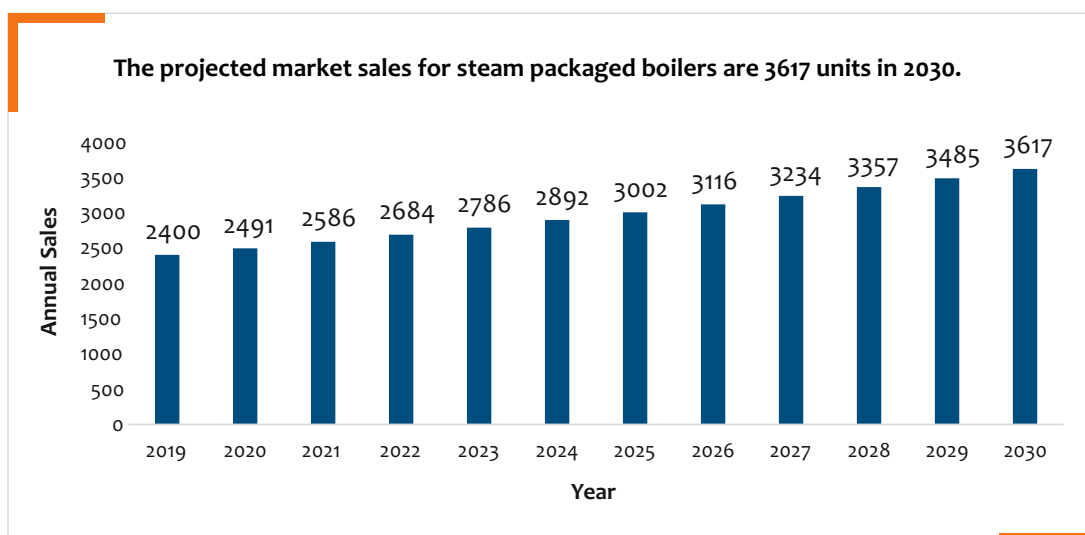


Figure 1: Estimated Packaged Boiler market by volume (2019-2030)

## Market Segmentation

The classification of IBR approved Packaged Boilers has been segmented based on steam output of the boiler in Tonne per hour (TPH). Market share of IBR approved boilers with a capacity less than 10 TPH is about 79% and between 10 TPH to 20 TPH is about 16.5%.

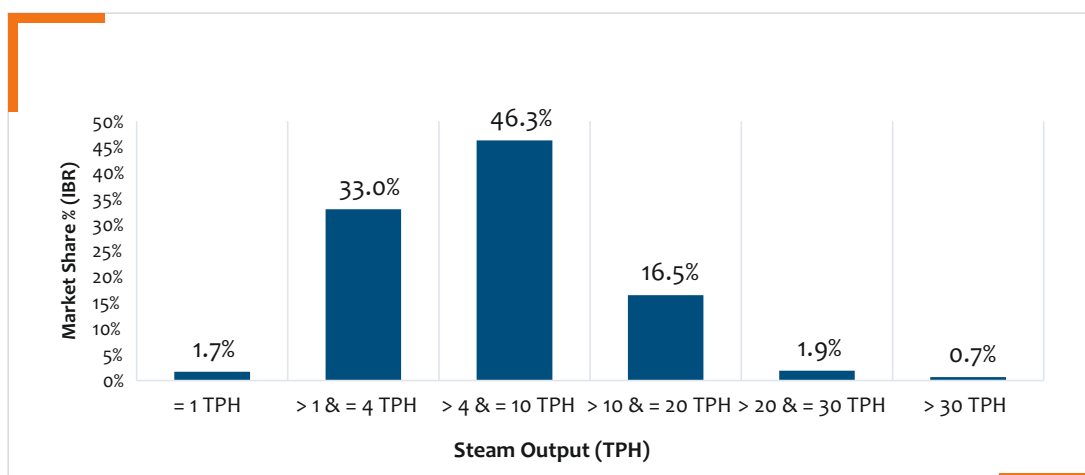


Figure 2: Market segmentation by IBR category and steam output (tonne per hour)

Non-IBR boilers generally have steam output capacity ranging from 0.05 to 0.5 TPH (50 – 500 kg/hr) and water is heated below 100°C. Hundreds of MSMEs are engaged in manufacturing of non-IBR packaged boilers.

Based on the consultation with boiler stakeholders, it is estimated that 2400 units of packaged boiler are sold annually under the IBR category whereas around 1.7% boilers are sold annually under the non-IBR category.

## Star Labeling Programme

A star labeling plan is being launched by BEE to improve the energy efficiency of packaged boilers and facilitate consumers make informed choices. One star to five star will be awarded to each packaged boiler based on their thermal efficiency on the Net Calorific Value (NCV) basis in %, with 1-star being the minimum energy performance level. The programme specifies the essential characteristics for packaged boilers under the scope of IS 13979:1994 being manufactured, commercially purchased, sold, or imported in India.

Thermal efficiency on the NCV basis is calculated using indirect method considering heat loss fractions due to dry flue gas, hydrogen in fuel, moisture in fuel & air.

A specimen of the star rating label is shown in Figure 3 below.

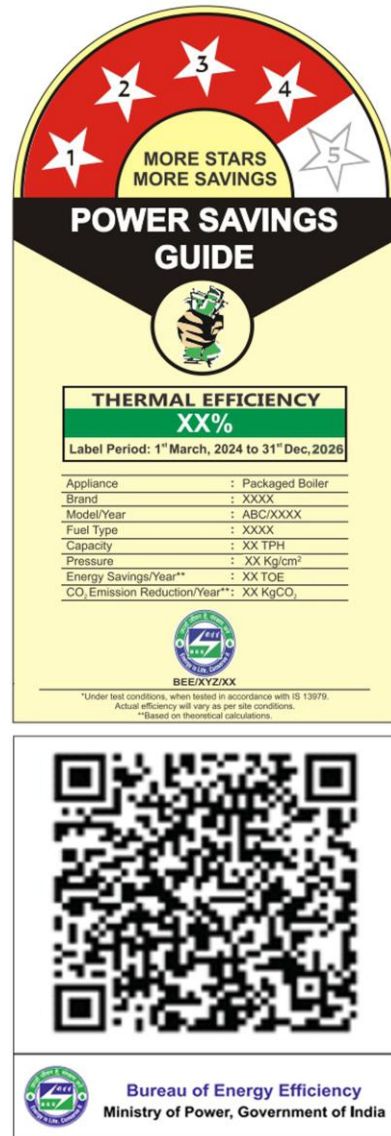


Figure 3: Sample Label for Packaged Boilers

# Standards and Labeling Program for Packaged Boiler

## Star Rating Bands

The star rating levels for the packaged boilers according to fuel across all capacities under Indian Boiler Regulation (IBR) are shown in Table 1 below. The program is intended to launch in a voluntary phase initially from 1<sup>st</sup> March 2024 to 31<sup>st</sup> December 2026.

Star Rating	Thermal Efficiency (%) on NCV basis			
	Natural Gas	Oil	Coal	Biomass
1 Star	>= 88% and < 92%	>= 88% and < 90%	>= 80% and < 82%	>= 80% and < 82%
2 Star	>= 92% and < 94%	>= 90% and < 92%	>= 82% and < 84%	>= 82% and < 84%
3 Star	>= 94% and < 96%	>= 92% and < 94%	>= 84% and < 86%	>= 84% and < 86%
4 Star	>= 96% and < 98%	>= 94% and < 96%	>= 86% and < 88%	>= 86% and < 88%
5 Star	>= 98%	>= 96%	>= 88%	>= 88%

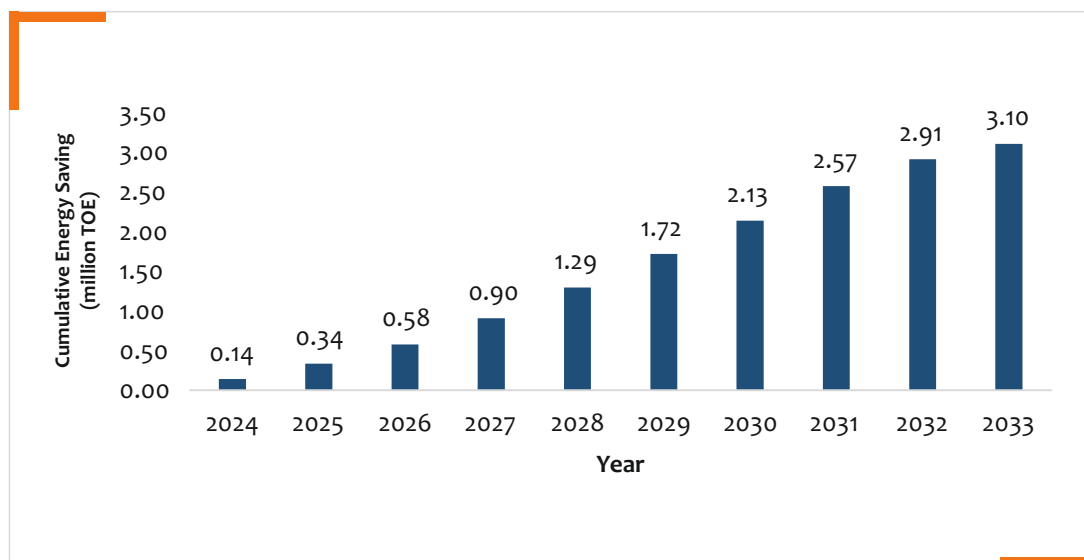
Table-1: Star Rating Band for Packaged Boilers

## Potential Energy Saving & CO<sub>2</sub> Emission Deduction

The penetration of EE label boilers is expected to increase from 10% in 2024 to 100% in 2033. In the next 10 years of implementation of S&L programme for packaged boilers, from 2024 to 2033, a cumulatively energy savings of ~ 3.1 million Tonne of Oil Equivalent (TOE) and CO<sub>2</sub> emission reduction of 7.23 million Tonne of CO<sub>2</sub> Equivalent are envisaged.



# Standards and Labeling Program for Packaged Boiler



**Figure 4: Cumulative energy savings till 2033**

## Schedule - 36

### Standards and Labeling program for Packaged Boiler

#### 1. Scope

This schedule specifies the requirement for participating in the star labeling program for Packaged Boilers using solid fuel, biomass, oil and natural gas as fuel across all capacities under Indian Boiler Regulation (IBR) with or without air pre-heater, economizer, or waste heat recovery system, covered under the scope of IS 13979: 1994 as amended from time to time, being manufactured, imported or assembled for the purpose of commercial sale in India.

# Standards and Labeling Program for Packaged Boiler

## 1.1. In particular, this schedule specifies the following:

- 1) Definitions
- 2) Reference Standard
- 3) Test Method and Guidelines
- 4) Test Report requirements
- 5) Star Rating plan
- 6) Validity period of the label
- 7) Model registration process
- 8) Fee structure
- 9) Label design and its contents
- 10) Check testing mechanism
- 11) Test report format

## 2. REFERENCE STANDARD

This schedule shall be read in conjunction with the following standards for the purpose of star labeling program:

Reference Standard	Title of the Standard
IS 13979: 1994 as amended from time to time	Method of Calculation of Efficiency of Packaged Boilers

# Standards and Labeling Program for Packaged Boiler

## 3. TERMINOLOGY

For the purpose of this schedule, the following definitions in addition to those given in IS 13979: 1994 with as amended from time to time shall apply:

- 3.1. **Family of models:** It is the range of models to which a single set of test reports is applicable and where each of the models has the same relevant physical characteristics, measured efficiency star rating and other performance characteristics.
- 3.2. **Indian Boiler Regulation (IBR) compliant Boilers:** In compliance with IBR regulations, these boilers exhibit water holding capacity of 25 liters and steam pressure of 3.5 Kg/cm<sup>2</sup>. They support varying capacities, ranging from 1 tonne/hour to 1,650 tonnes/hour and are extensively used in the Auto, Pharma, Chemical, Sugar, Cement and Power sectors.
- 3.3. **Label:** Any written, printed, marked, stamped or graphic matter affixed to, or appearing on the product and the packaging provided always that the product inside the packaging to which the label is thus applied conforms to every requirement of this schedule.
- 3.4. **Label Period:** It is the label validity period of the thermal efficiency standards provided under the star rating plan as specified in the schedule.
- 3.5. **Non-IBR compliant Boilers:** They comply in part with IBR regulations, ensuring that either water holding capacity or steam pressure is kept constant. Available from 0.05 tonnes/ hour–0.85 tonnes/hour capacity, they are widely used in both industrial and commercial segments.

# Standards and Labeling Program for Packaged Boiler

- 3.6. **Packaged Boiler:** “Packaged Boiler” means any closed vessel which is used specifically for generating steam under pressure and includes any mounting or other fitting attached to such vessel, which is wholly or partly under pressure when steam is shut off and is certified as per Indian Boiler Regulation.
- 3.7. **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 thermal efficiency.
- 3.8. **Star Rating Band:** The Star Rating Band is a range of thermal efficiency which is arrived at by an established tests method and calculations and is used for determining the number of stars to be displayed on the Star Label.
- 3.9. **Validity of Label:** The validity period of Thermal Efficiency Rating table specified in this schedule.

## 4. TESTING PARAMETERS

- 4.1. **Thermal Efficiency:** The test shall be carried out as per IS 13979:1994 by indirect method on N.C.V. (Net Calorific Value) basis.

## 5. TESTING GUIDELINES

- 5.1. **Methods of Tests:** The methodology and the test protocol for measurement of the thermal efficiency specified in this schedule shall be as per IS 13979:1994 as amended from time to time (if any). The efficiency parameter for the allotment of star ratings under this scheme shall be based on Thermal Efficiency by indirect method on N.C.V. basis.

# Standards and Labeling Program for Packaged Boiler

- 5.2. The guidelines for testing shall be in accordance with clause 4.2, 4.4, 4.5, 6 and 7.2 of IS 13979:1994.
- 5.3. The analysis of the fuel and unburnt combustible in the refuse and other parameters specified in **Annex - A** of IS 13979 shall be carried out in accordance with the method given in 5.4, 5.5 and 5.6. The report of analysis of all the applicable parameters shall be as specified in E of **Annex - A**.

## 6. TEST REPORT

- 6.1. Test reports from NABL accredited test agencies for field testing of the unit installed at the site as per IS 13979 shall only be accepted.
- 6.2. The report of fuel analysis and refuse analysis of the unburnt fuel/combustible shall only be accepted from a NABL accredited laboratory or any other accreditation bodies who are signatory to MRA with APAC and/or ILAC.
- 6.3. The calibration certificate for measurement equipment used in testing shall be accepted only from a NABL accredited laboratory or any other accreditation bodies who are signatory to MRA with APAC and/or ILAC.
- 6.4. Test report submitted at the time of registration of the model should not be older than 3 months.
- 6.5. The test result shall be reported in the prescribed format as given in **Annexure - A** of this schedule.

# Standards and Labeling Program for Packaged Boiler

6.6. Other parameters like observed values of various parameters during measurement, constant quantities, system data and data on fuel and refuse analysis shall be recorded and reported along with the test report as given in **Annexure - A** of IS 13979.

## 7. TOLERANCE LIMIT

For the purpose of rating allotment, tolerance limits shall be applicable only on measured parameters tested as per IS 13979:1994. The declared efficiency value shall be considered valid if the measured efficiency lies within their tolerance limit as defined in clause 4.3 of IS 13979:1994.

During check testing, the model must comply with its star rating as per the thermal efficiency band specified in rating plan.

## 8. RATING PLAN

The star rating parameter for the labeling program shall be Thermal Efficiency by indirect method on N.C.V. (Net Calorific Value) basis. Thermal Efficiency thresholds for Coal, Biomass, Oil & Natural Gas fired Packaged Boilers are shown in **Table - 2**.

Star Rating	Thermal Efficiency (%) on NCV basis			
	Natural Gas	Oil	Coal	Biomass
1 Star	>= 88% and < 92%	>= 88% and < 90%	>= 80% and < 82%	>= 80% and < 82%
2 Star	>= 92% and < 94%	>= 90% and < 92%	>= 82% and < 84%	>= 82% and < 84%
3 Star	>= 94% and < 96%	>= 92% and < 94%	>= 84% and < 86%	>= 84% and < 86%
4 Star	>= 96% and < 98%	>= 94% and < 96%	>= 86% and < 88%	>= 86% and < 88%
5 Star	>= 98%	>= 96%	>= 88%	>= 88%

**Table-1: Star Rating Plan – Voluntary Phase**  
(Valid from 1st March 2024 to 31st December 2026)

## 9. COMPANY REGISTRATION

For participating in the Packaged Boiler Star Rating program, the manufacturer must first register his organization. The manufacturer shall submit to BEE all necessary documents required as per BEE guidelines. BEE after scrutiny and subject to submission of all documents by the manufacturer shall grant company registration to the organization/manufacturer to participate in BEE's Packaged Boiler labeling program.

## 10. MODEL REGISTRATION

- 10.1. For a Star Rating label, manufacturer shall apply on BEE's website ([www.beestarlabel.com](http://www.beestarlabel.com)) along with a valid test report of the model/family of models and other documents as required for registration process.
- 10.2. The manufacturer may register a packaged boiler model under star labeling program, with a physical test report from NABL/ILAC/APAC accredited lab tested as per the test conditions mentioned in IS 13979:1994. In the absence of above, BEE may also accept test report from manufacturer's self-test facility accredited by national accreditation body having scope of the tests mentioned in IS 13979:1994.
- 10.3. NABL/ILAC /APAC accredited laboratory will undergo for testing of a packaged boiler model at site of installation in presence of manufacturer. Manufacturer shall submit the test report to BEE to accord formal approval for the model registration.
- 10.4. All measuring instruments for testing the energy performance values of boiler shall be calibrated on regular basis and shall have accuracy as per clause 4.2.7 of IS 13979:1994.

# Standards and Labeling Program for Packaged Boiler

- 10.5. The manufacturer shall submit the test reports of thermal efficiency, calorific value of fuel, etc. as per Annexure - A of this schedule.
- 10.6. Manufacturer shall submit the test report comprises of thermal efficiency, calorific value of fuel, etc., as per Annexure - A of this schedule to BEE to complete the process of Registration and Star Rating allotment for the model/family of models.

## 11. FEES

- 11.1. For the purpose of registration with BEE, every permittee would be required to deposit a refundable label security fee of INR 1,00,000/- (Rupees One Lakh Only), payable by only electronic mode in favor of the Bureau of Energy Efficiency, New Delhi. In case of small-scale industries (SSI units), the label security fee shall be INR 25,000/- (Rupees Twenty-five thousand only), provided they submit the valid SSI registration certificate.
- 11.2. Application fee payable for a new model registration shall be INR 2,000/- (Rupees Two thousand only), payable by only electronic mode in favor of the Bureau of Energy Efficiency, New Delhi.
- 11.3. No application fee is payable on application for renewal of permission to affix label on model.
- 11.4. Labeling fee for affixation of label on each unit sold of the registered boiler model is INR 200/- (Rupees Two Hundred Only) per Tonne per Hour (TPH). The labeling fees also shall be submitted by manufacturer through the online portal on a quarterly basis.



# Standards and Labeling Program for Packaged Boiler

- 11.5.** Boiler Manufacturer will be required to update BEE with basic details such as model number, model name, capacity, thermal efficiency, test report number applicable, customer's installation location address, commissioning status, etc. for each unit of registered model sold at the end of each quarter on BEE's online portal.

## **12. LABEL DESIGN AND MANNER OF DISPLAY**

### **12.1. Label Content**

1. Product Name: Packaged Boilers
2. Type of Boiler:
3. Brand
4. Model Name/Number
5. Thermal Efficiency,  $\eta$  (%)
6. Fuel Type
7. Capacity (TPH)
8. Pressure (Kg/cm<sup>2</sup>):
9. Star Rating Level:
10. Year of Manufacturing:
11. Label Period:
12. Energy Saving/Year (TOE):
13. CO<sub>2</sub> Emission Reduction/Year (KgCO<sub>2</sub>):
14. Reference Standard

### **12.2. Placement of Label and QR Code**

With an intent to authenticate the star rating approval issued for a model of packaged boiler, BEE will share the printable/readable version of the dedicated QR code for each model along with approval letter with manufacturers. The QR code is recommended to be placed just below the star label being affixed on each unit of the packaged boiler. The QR code will

# Standards and Labeling Program for Packaged Boiler

contain the information as mentioned in Sub-Clause 12.1 under Clause 12 of Packaged Boiler Schedule.

The placement of the label along with QR code shall be at the discretion of the manufacturer where it has clear visibility, is not easily removable and also no possibility of the label and QR code getting spoiled over time.

## 12.3. Material, Dimension and Shape

The label shall be made of any corrosion resistant and durable material (aluminum anodized) and shall be screwed or riveted on the boiler as per the dimensions, design and colour scheme as given in **Figure 5 to 7**.

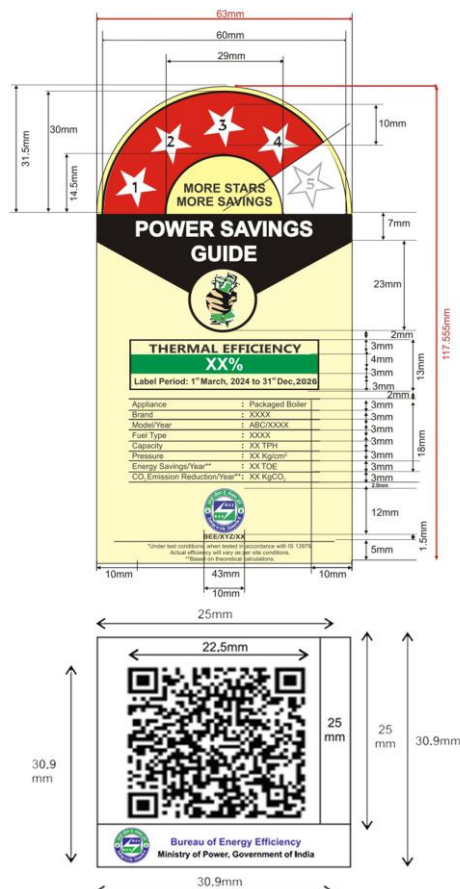


Figure 5: Dimension of the Label

# Standards and Labeling Program for Packaged Boiler

## 12.4. Color scheme

The label shall be printed as per the color scheme given in Figure 6.

### BLUE –

Hue (H) - 2390 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)-1500 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 ©: 81% Magenta (M): 10% Yellow (Y): 90% Black (K): 1% Web color code - #00AA56;



Figure 6: Color scheme of the Label

# Standards and Labeling Program for Packaged Boiler

## 12.5. Sample Label

An example of a star label to be affixed on the model is shown in Figure 7.

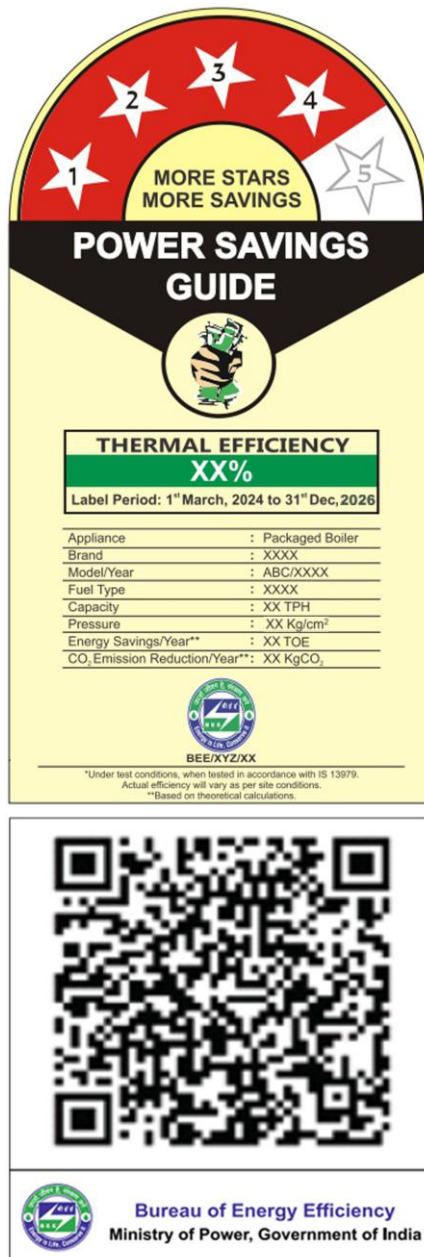


Figure 7: Sample Label

# Standards and Labeling Program for Packaged Boiler

## 13. CHECK TESTING

- 13.1. Manufacturer will be required to share boiler installation and commissioning data with BEE for each unit of registered boiler sold on a quarterly basis. Manufacturer will be required to provide prior intimation at the time of registration to boiler customer or user at the time of sale of star labeled boiler about BEE's check testing at their site if the model is selected for check testing.
- 13.2. BEE shall conduct check testing on randomly selected boilers to ensure that the packaged boilers conform to the declared star level and other related information displayed on its label and that it complies with the other terms and conditions of permission. BEE may conduct the on-site check testing using quarterly data shared by manufacturer after the commissioning of the boiler and safety certification by Central Boiler Board (CBB).
- 13.3. All the tests shall be conducted by the BEE/ SDA or its authorized representative for the purpose of check testing. BEE shall authorize a NABL accredited test agency to conduct performance testing at the installation site of star labeled boiler.
- 13.4. For the purpose of check testing, one boiler installation site shall be selected by BEE at random from the installation and commissioning data shared by manufacturer for registered models/ family of models. The performance test will be conducted by BEE's authorized agency at the facility of boiler customer with prior intimation to the manufacturer and the customer. The manufacturer will be required to coordinate with BEE and the boiler customer for site testing.

## Standards and Labeling Program for Packaged Boiler

- 13.5.** Based on finding of the on-site test result reported to BEE by the empaneled test agency during check testing of the boiler, BEE would validate the check testing result and initiate further action, accordingly.
- 13.6.** In case of failure of the model in first check testing, BEE shall conduct second check testing of the same single model available at the different user premises. The permittee / user of the label would be accordingly informed about the failure of the first check testing and shall be advised to deposit the cost of check testing in advance. If permittee fails to deposit/pay the expenses, Bureau shall continue the verification by check/challenge testing and stop further processing of new application received of the respective permittee. If the same model is not available, for second testing then check testing result of the first sample shall be treated as final and shall be binding on the permittee.
- 13.7.** In case of failure in model during second check test, Bureau shall proceed with the following actions:
- direct the permittee, under intimation to all the State Designated Agencies, that the permittee within a period of two months from the date of issuance of such intimation, shall-
    - a. Change the particulars displayed on advertising material & submit a fresh application with revised thermal efficiency declaration for the respective model/family of models.
    - b. Correct the star level displayed on the label of the equipment or remove the defects and deficiencies found during testing from the existing and new stock.
  - Further, Bureau/SDA shall proceed to publish, for the benefit of the consumers, the name of the permittee, brand name, model

# Standards and Labeling Program for Packaged Boiler

name or model number, logo and other specification in any national or regional daily newspaper and in any electronic or in any other manner as it deems fit within two months.

- 13.8.** The permittee, within ten days of the conclusion of the period of two months from the date of issuance of intimation as mentioned above shall send the action taken report on the prescribed format (please see Annex - B: Action Taken Report on failure of check testing from Permittee to BEE) with respect to action taken in compliance with the direction; and

Where the permittee fails to comply with the directions issued by the Bureau/ SDA, the Bureau under intimation to all other State Designated Agencies, shall-

- withdraw the permission granted to the permittee;
- initiate further adjudication proceedings against the permittee and the under section 27 of the Act.

# Standards and Labeling Program for Packaged Boiler

## ANNEXURE - A

### Form for reporting test results / design appraisal

The results of tests shall be reported as per IS 13979:1994 as amended from time to time with the relevant sections from the mentioned appendix applicable and shall clearly mention the following:

#### 1. General details of Model

Date of test:

Test report number:

Test officer:

As declared by the manufacturer:

1	Manufacturer/Brand:	
2	Model Number:	
3	Serial Number:	
4	Capacity (TPH / Kg / hour):	
5	Total Heating surface area (sq. m.):	
6	Pressure (Kg / sq. cm.):	
7	Working Fuel (Solid Fuel / Biomass / Oil / Natural Gas Fired):	
8	Construction Type (Stationary Grate /Inclined Grate/ Travelling Grate/ F.B.C. /Other):	
9	Tube Type (Smoke tube /Water tube /Hybrid Combination of External Water Wall Furnace & Smoke Tube /Small package/ Other):	
10	Firing Method (Auto / Manual):	
11	Waste Heat Recovery (Yes/No):	
12	Economizer (Yes/No):	
13	Air Preheater (Yes/No):	



# Standards and Labeling Program for Packaged Boiler

## 2. Percentage Losses and Thermal Efficiency

S. No.	Parameter	Value
1	Loss due to combustible in refuse (LR) (%)	
2	Loss due to flue gas (LD) (%)	
3	Losses due to radiation, convection and conduction ( $L_{sn}$ ) (%)	
4	Loss due to sensible heat lost through refuse (%)	
5	Unmeasured Losses (%)	
6	Total Losses (%)	
7	<b>Measured Thermal efficiency (by Indirect Method) (On N.C.V. basis) = 100% – (Total Losses in %)</b>	
8	<b>Measured Calorific Value of Fuel (KCal/kg):</b>	

## 3. Star Rating declaration

Parameter	Declared value
Thermal efficiency (by Indirect Method) (On N.C.V. basis)	
Calorific Value of Fuel (kJ/kg)	
Star Rating as applicable	

Note 1: The declared performance values shall be used for the star rating.

Note 2: The declared performance values shall be considered as final values for the purpose of check testing conducted by BEE, SDA, or its authorized representative. The measured performance values shall be verified based on the tolerance limits as per item 7 of this schedule.

# Standards and Labeling Program for Packaged Boiler

## ANNEXURE - B

Action Taken Report on failure of check testing from Permittee to BEE

### Action Taken Report

(To be furnished on Company's letter head)

To,  
.....

Dated

THE SECRETARY,  
BUREAU OF ENERGY EFFICIENCY  
(MINISTRY OF POWER, GOVT. OF INDIA)  
4<sup>TH</sup> FLOOR, SEWA BHAWAN,  
SECTOR 1, R.K. PURAM,  
NEW DELHI-110 066  
INDIA.

Pursuant to the provisions of Schedule No. 36 of the Bureau of Energy Efficiency, we M/s.....the manufacturer of packaged boiler were permitted to affix label on the packaged boiler conforming to the energy consumption standard of ..... star level vide BEE letter No. .... dated .....for the model number.....

Pursuant to the provisions of schedule for failure of model in check testing, were giving directions vide BEE letter number.....dated.... to take necessary corrective action. In the light of directive issued by the Bureau, we hereby declare that the following actions have been taken at our end.

# Standards and Labeling Program for Packaged Boiler

	<b>Action Directed</b>	<b>Status</b>	<b>Action Taken</b>
(i)	Correct the star level displayed on the label of the packaged boiler to comply with the directions of the Bureau	Yes/No/NA	The star level has been corrected from.....star to.....star with effect from (Date)
(ii)	Withdraw all the stocks from the market to comply with the directions of the Bureau. and	Yes/No/NA	All the stocks from the market have been withdrawn to comply with the directions of the Bureau.
(iii)	Change the particulars displayed on advertising material.	Yes/No/NA	Yes/No/NA

The above declaration is true to the best of our knowledge and belief.

Signature

.....

Name

.....

Designation

.....

For and on behalf of

.....

Name of the Company/Firm etc.

.....

Seal of the Firm/Company

.....

## BEE's Key Endeavours



Standards & Labeling Program (S&L)



Demand Side Management (DSM)



Energy Conservation Building Code (ECBC)



Perform, Achieve and Trade (PAT)



Energy Efficiency in Micro Small and Medium Enterprises (MSMEs)



Electric Vehicle Energy Efficiency

You're welcome to reach us at:



### BUREAU OF ENERGY EFFICIENCY (BEE)

Ministry of Power, Govt. of India  
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