

Schedule – 12

WASHING MACHINES

1. SCOPE

- 1.1. This schedule specifies the requirement for participating in the energy labeling program for all types of washing machines covered under the scope of IEC 60456 and IS 302-2-7 meant for household and similar use, being manufactured, imported and sold in India.
- 1.2. This schedule covers the test and other requirements for washing machines. In particular, this scheme specifies the following:
 - a. Wash performance
 - b. Rinse performance
 - c. Energy consumption
 - d. Water consumption
 - e. Water extraction performance (residual water content)

For the purpose of this schedule, the star rating shall be based on per-cycle energy consumption per kg (kWh/cycle/kg), with energy consumption measured as per methodology specified in IEC 60456:2010.

- 1.3. This schedule does not apply to:
 - a) appliances intended exclusively for industrial purposes; and
 - b) 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).

2. NORMATIVE REFERENCES

This schedule shall be read in conjunction with the following standards with all amendments, for the purpose of star labeling

Reference Standard	Title of the Standard
IEC 60456:2010	Clothes washing machines for household use – Methods for measuring the performance
IS 302-7-7:2010	Safety of household and similar electrical appliance Part-2, Particular requirement section 7

NOTE: The test procedure given in IEC 60456 shall apply till the revised version of IS 14155 is published

3. TERMINOLOGY

For the purpose of this schedule the following definitions in addition to those given in IEC 60456:2010, and IS 302-2-7:2010 shall apply.

3.1 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 physical characteristics, wash capacity, wash performance, energy consumption, water consumption, and other performance characteristics.

3.2 Label means any written, printed, marked, stamped or graphic matter affixed to, or appearing, the washing machine.

3.3 Validity of Label: means the validity period of per-cycle energy consumption per kg under energy labeling plan specified in this schedule.

4. TESTING GUIDELINES:

4.1 Methods of Tests: All the tests specified in this schedule shall be carried out as per IEC 60456:2010 with all amendments. The wash/rinse cycles to be used for determination of various performance parameters shall be as follows:

- a. Standard cotton 30° C programme for semi-automatic and top loaders (with or without in-built heater)
- b. Standard cotton 60° C programme for front loaders (with or without) in-built heater

NOTE: Inlet water temperature shall be $35^{\circ} \text{C} \pm 5^{\circ} \text{C}$ for testing purpose.

4.2.1 Wash performance: The wash performance test of the washing machine shall be conducted as per IEC 60456:2010 with all amendments. The wash performance test shall be carried out at the wash/rinse programme mentioned in section 4.1 of this schedule.

Wash performance values are with respect to Wascator values. The guidelines and specifications w.r.t. testing procedure and protocols of IEC 60456. The value of wash performance shall be indicated as a percentage.

4.2.2 Rinse performance: The rinse performance test of the washing machine shall be conducted as per IEC 60456:2010 with all amendments. The rinse performance test shall be carried out at the wash/rinse programme mentioned in section 4.1 of this schedule.

4.2.3 per-cycle Energy and water consumption: The per-cycle energy and water consumption of the washing machine shall be calculated as per IEC 60456:2010 with all amendments. The test shall be carried out at the wash/rinse programme mentioned in section 4.1 of this schedule.

The energy consumption and water consumption values obtained from the test shall be divided by the washing machine's capacity and reported as per-cycle energy consumption per kg and per-cycle water consumption per kg respectively.

4.2.4 Water extraction performance (residual water content): The residual water content in the base load shall be calculated as per IEC 60456:2010 with all amendments. The test shall be carried out at the wash/rinse programme mentioned in section 4.1 of this schedule

4.2.5 Testing Conditions: As per guidelines mentioned in IEC 60456:2010, and section 4.1 of this schedule.

5. TEST REPORT

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

6. TOLERANCE LIMIT

For each unit tested shall comply with minimum qualification requirements of measured **Wash Performance, Water extraction performance, Water consumption (maximum) and Rinse Performance**. There shall be no tolerance for minimum qualification criteria.

Tolerance as specified in the IEC 60456:2010 shall be considered. However, there shall be no tolerance for star rating band. The product tested must be at par or better than the label threshold.

7. MINIMUM QUALIFICATION REQUIREMENTS

7.1 The products should conform to all the requirements of IEC 60456 with all its amendments to participate in BEE labelling Program.

7.2 BIS certification mark or Quality System Certification as per ISO: 9000 should be required to participate in BEE labelling Program

7.3 The product shall meet the following performance requirement. The manufacturer shall submit test report from a lab accredited by NABL/ILAC/APLAC which can be a third party test lab or manufacturer own test lab capable of testing as per IEC 60456: 2010 with all amendments. These would be additional parameters verified other than energy consumption in the BEE check/challenge testing of the sample drawn.

Table 1: Pre-Qualification criteria for Front Loaders

Parameter	Minimum requirement
Wash Performance (Soil Removal %)	≥ 95%
Water extraction performance (RMC value)	≤ 75%
Water consumption (maximum)	≤ 9 L/kg/cycle
Rinse Performance	≤ 2.25

Table 2: Pre-Qualification criteria for Semi-automatic and top loaders

Parameter	Minimum requirement
Wash Performance (Soil Removal %)	≥ 80%
Water extraction performance (RMC value)	≤ 75%
Water consumption (maximum)	≤ 23 L/kg/cycle
Rinse efficiency	≤ 2.25

8. RATING PLAN

Table: 3: Star Rating Plan – Voluntary Phase

Front loaders (drum type)-Cotton 60 ° C Valid from 8th March 2019 to 31st December 2020	
Star rating	Energy consumption (E) per cycle kWh/kg/cycle
1-star	$0.16 < E \leq 0.18$
2-star	$0.14 < E \leq 0.16$
3-star	$0.11 < E \leq 0.14$
4-star	$0.09 < E \leq 0.11$
5-star	$E \leq 0.09$

Table: 4: Star Rating Plan – Voluntary Phase

Top loaders & semi-automatic machines -Cotton 30 ° C Valid from 8th March 2019 to 31st December 2020	
Star rating	Energy consumption (E) per cycle kWh/kg/cycle
1-star	$0.0171 < E \leq 0.0185$
2-star	$0.0158 < E \leq 0.0171$
3-star	$0.0145 < E \leq 0.0158$
4-star	$0.0132 < E \leq 0.0145$
5-star	$E \leq 0.0132$

There is no negative tolerance for the Star Rating Bands. All tested products must meet the minimum threshold for each Star Rating Band. The scope for manufacturing tolerance and other variations shall be accounted by the manufacturer or permittee while determining the Star Rating of a particular model.

9. FEES

1. Application fee payable on application for assignment of the authority to affix label is INR 2000/- (Rupees Two thousand only)
2. Application fee payable on application for renewal of authority to affix labels is INR 1000/- (Rupees One thousand only).
3. Labeling fee for affixation of label on each unit of washing machine is INR 30/- (Rupees Thirty only)-

10 LABEL DESIGN AND MANNER OF DISPLAY

10.1 Placement: All washing machine must display the label at the point of sale. The label shall be affixed on the front side (along right front -top corner and not on the display panel) of the product. The label shall also be displayed on the packaging.

For the washing machines not on display, the label may be affixed to the exterior of the packing and the label may be attached to the unit when put on sale.

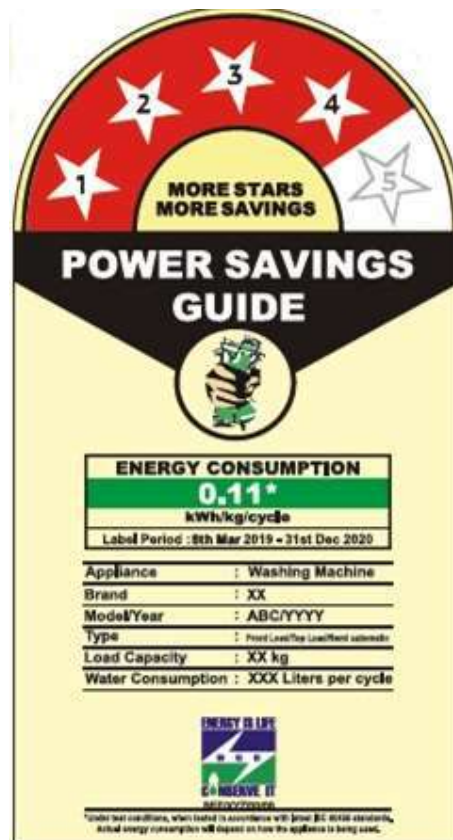
10.2 Material, Dimension and Shape

The label shall be of durable cardboard, or be self- adhesive and shall be cut to one of the outlines shown in figure 1.

10.3 Sample Label

An example of a printed star label to be affixed on the model is shown in Figure 1.

Figure 1



Sample Label

**ANNEXURE I
TEST REPORT FORMAT FOR MANUFACTURERS LAB and INDEPENDENT LAB**

1. General Information

Manufacturer/ Laboratory Name			
Address			
Date of Receipt (for Independent Labs)			
Test standard followed			
Test Report No.		Date of testing	
Tested by		Reviewed By	

2. Details of the Sample Tested

Brand Name		Model No.	
Model Name		Year of Manufacturer	
Washing machine type		Semi Auto/Top load/Front load	
		In-built heater present? (Yes/no)	
Serial No.		Wash/rinse programme followed	
Capacity (kg)		Wash performance (%)	
Rinse performance		Water consumption per cycle (L/kg)	
Remaining moisture content (RMC) (%)			

Energy consumption per cycle (kWh/kg/cycle) Cotton 30 °C /Cotton 60 °C	
Star Rating	

3. Measuring Equipment/Instruments Details

Sr. No.	Instrument/Equipment Name	Make	Accuracy Class	Range and least count	Cal. Valid Date