



**GUIDE ON MINIMUM ENERGY PERFORMANCE
STANDARD (MEPS) REQUIREMENT FOR
WASHING MACHINE**

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1.0 Scope

This guide specifies minimum energy performance standard (MEPS) and energy labeling requirements of washing machines for households use, with or without heating devices utilizing cold and/or hot water supply.

The following equipment is excluded from the scope of this guide:

- a) Models that have been granted exemption by the relevant regulatory authority;
- b) washing machine capacity of more than 16kg;
- c) washer-dryers (washing machine which includes both a spin extraction function and a means for drying the textiles, usually by heating and tumbling);
- d) manual washing machine where the machine requires user intervention at one or more points during the programme to enable the machine to proceed to the next operation i.e twin tub/semi auto

This guide does not specify the procedure for Certificate of Approval (COA) application. For COA application procedure and information, please visit to Energy Commission website at www.st.gov.my.

2.0 Testing Standard

The following references are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the reference (including any amendments) applies.

IEC 60456: 2010, *Clothes Washing Machines for household use – Methods for measuring the performance*

MS IEC 60456: 2012, *Clothes Washing Machines for household use – Methods for measuring the performance*

3.0 Terms and definitions

3.1 Energy efficiency factor (EEF)

Ratio of the total energy consumption for a complete programme to the rated capacity in kilogram(kg). The unit is Wh/kg.

3.3 Top Loading (Vertical Axis) washing machine

Washing machine in which the load is placed in a drum which rotates around an axis which is vertical or close to vertical. For the purpose of this document, vertical axis is where the angle of the axis of rotation is more than 45 degrees to horizontal. Where the drum does not rotate, the washing machine shall be classified as a vertical axis washing machine.

3.4 Front Loading (Horizontal Axis) washing machine

Washing machine in which the load is placed in a drum which rotates around an axis which is horizontal or close to horizontal. For the purpose of this document, horizontal axis is where the angle of axis is less than or equal to 45 degrees to horizontal.

3.5 Rated capacity

Maximum mass in kg of dry textiles of a particular type which the manufacturer declares can be treated in the washing machine on the default programme.

3.6 Minimum energy performance standards (MEPS)

The minimum level of energy efficiency which has to be met by each of applicable washing machine.

3.7 Star Rating

The number of stars displayed on the energy label. Available stars are between a minimum of two and a maximum of five.

3.8 Programme

Series of **operations** which are pre-defined within the **washing machine** and which are declared by the manufacturer as suitable for washing certain textile types

4.0 Measuring condition

4.1 Electricity Supply

The washing machine shall be tested at the 230V, 50Hz.

4.2 Water Hardness

The soft water shall be used with the total water hardness of 0.5 ± 0.2 mmol/litre

4.3 Water temperature

Cold water shall be used with the temperature of 20 ± 2 degree Celsius

4.4 Water level

The water level of the washing machine shall be set at maximum level.

4.5 Test material (base load)

Cotton base load shall be used during the test.

4.6 Program

The washing machine shall be tested using the standard programme of the washing machine, and shall meet the minimum requirement as stated in Table 1 below

Type	Main Wash (Minimum time, Minutes)	Rinse (Quantity)	Spin (Minimum time)
Top Loading	1 time (5 minutes)	2 times	5 minutes
Front Loading	1 time (10 minutes)	2 times	5 minutes

Table 1 : Minimum Requirement on Washing Machine Programme

Other condition which not stated in this guide shall follow the standard MS IEC 60456:2012 or equivalent standard IEC 60456:2010.

5.0 Energy Efficiency Ratio (EER)

The energy efficiency ratio (EER) for washing machine shall be calculated in accordance with the equation below:

$$\text{Energy Efficiency Ratio (EER)} = \frac{\text{Measured Energy Consumption (kwh)} \times 1000 \text{ (Wh)}}{\text{Rated Capacity (kg)}}$$

where;

Measured Energy Consumption (kwh) = Obtained from test report

Rated Capacity (kg) = Obtained from test report

6.0 Star Rating

The star rating for top loading washing machine and front loading washing machine shall be in accordance to Table 2 and Table 3 respectively.

a) Top Loading Washing Machine \leq 16kg

Star Rating	Energy Efficiency Ratio (Wh/kg)
5	<6.0
4	$6.0 \leq \text{EER} < 10.0$
3	$10.0 \leq \text{EER} < 17.0$
2	$17.0 \leq \text{EER} < 22.5$
1	≥ 22.5

Table 2 : Star Rating Table for Top Loading Washing Machine

b) Front Loading washing machine \leq 16kg

Star Rating	Energy Efficiency Ratio (Wh/kg)
5	< 70
4	$70 \leq \text{EER} < 90$
3	$90 \leq \text{EER} < 140$
2	$140 \leq \text{EER} < 220$
1	≥ 220

Table 3: Star Rating Table for Front Loading Washing Machine

**Note: In case of Top Loading washing machine come with heater, the Star Rating shall be determined using Table 3.

7.0 MEPS Requirement

The MEPS requirement is 2-Star.

8.0 Energy Efficiency Label

Based on Electricity Regulation 1994 (Amendments 2013) Regulation 101A (3)

"Any equipment that meets all the requirements of efficient use of electricity under subregulation (1) shall be affixed with an efficiency rating label in such form and manner as may be determined by the Commission."

All manufacturers and importers, must affix the Energy Efficiency Label onto the products before it can be sold to the customer.

8.1 Information required on the label

Please refer to the picture below for the information that must be included in the MEPS label.

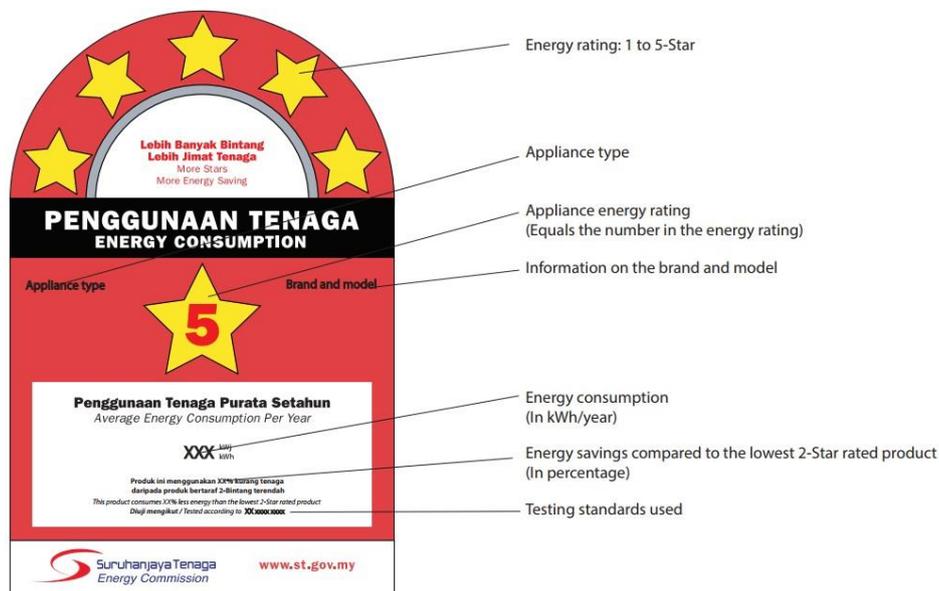


Figure 1: Information Required in the Label

8.2 Calculation Method

The formula for calculation of energy consumption and percentage of energy saving compared to lowest 2-Star are as follow:

$$\begin{aligned}
 A &= \text{Annual Energy Consumption (kWh)} \\
 &= 365 \times \text{Energy Consumption from the test report (kWh)}
 \end{aligned}$$

$$\begin{aligned}
 B &= \text{Energy consumption per year for the lowest 2-Stars rating model (kWh)} \\
 &= \frac{365 \times \text{EER of lowest 2 Star} \times \text{Rated capacity}}{1000}
 \end{aligned}$$

Where;

EEF lowest 2-Star = 22.5 Wh/kg for top loading washing machine

EEF lowest 2-Star = 220.0 Wh/kg for front loading washing machine

$$\text{Percentage energy saving compared to the lowest 2 stars rating model} = 100\% - \left(100 \times \frac{A}{B}\right)$$

8.3 Size Specification

Please refer to the picture below for the size specification



Figure 2: Size Specifications

8.4 Font Specification

The font guide specified below is the minimum requirement. The font can be bigger proportionate to the label size but cannot be smaller.

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Figure 3:Font Specifications

8.5 Colour Specification

The label shall be printed according to the colour specifications as follow:



Figure 4:Color Specifications

8.6 Design for 2-Star Rating Until 5-Star Rating



**Note: The softcopy of energy efficient label with AI format can be obtained from Energy Commission. Please send your request for the softcopy file to meps@st.gov.my.