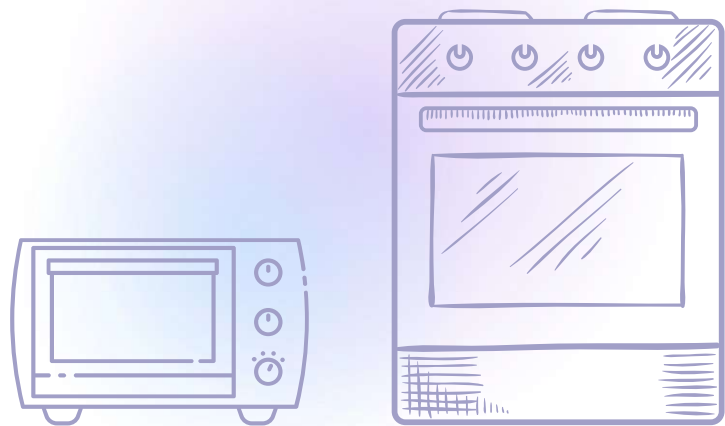


GUIDELINES ON THE MINIMUM ENERGY PERFORMANCE STANDARDS (MEPS) FOR ELECTRIC OVEN





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ELECTRIC OVEN**

[1 NOVEMBER 2023]

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**ELECTRICITY SUPPLY ACT 1990
[Act 447]**

**GUIDELINES ON THE MINIMUM ENERGY PERFORMANCE
STANDARDS FOR ELECTRIC OVEN**

GP/ST/No.35/2023

IN exercise of the powers conferred by section 50C of the Electricity Supply Act 1990 [Act 447], the Commission issues the following Guidelines:

Purpose

1. The purpose of these Guidelines is to provide guidelines on technical requirements in determining the Minimum Energy Performance Standards (MEPS) for an electric oven.

Citation and commencement

2. These guidelines may be cited as the Guidelines on the Minimum Energy Performance Standards (MEPS) for Electric Oven.

3. These guidelines come into operation on 1 November 2024.

Dated: 01 November 2023

DATO' IR. TS. ABDUL RAZIB BIN DAWOOD

Chief Executive Officer

Energy Commission

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1. OBJECTIVE

These Guidelines are developed by the Commission to specify the Minimum Energy Performance Standard (MEPS) and the energy labelling requirements for an electric oven for domestic consumers.

2. SCOPE

2.1. These Guidelines shall apply to portable electric oven and built-in electric oven with the following function mode:

- (a) conventional mode;
- (b) convectional mode;
- (c) conventional and convectional mode; and
- (d) conventional, convectional and steam mode.

2.2. These Guidelines are not applicable for the following equipment:

- (a) an oven using energy sources other than electricity;
- (b) an oven offering a 'microwave heating' function;
- (c) a small cavity oven below than 10 litres usable volume;
- (d) a large cavity oven more than 90 litres useable volume;
- (e) an oven with a clearance height less than 120 mm and clearance width or depth less than 250 mm;
- (f) a heat storage oven;
- (g) an oven without adjustable temperature control;
- (h) an oven which are heated with steam as a primary heating function or only with steam mode; or
- (i) any other electric oven model that has been granted an exemption by the Commission.

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3. INTERPRETATION

3.1. In these Guidelines, the following terms shall bear the following meanings:

the Act	means the Electricity Supply Act 1990 [Act 447];
Built-in Electric Oven	means an electric oven that is designed as a built-in equipment as stated in the IEC 60350-1:2016;
CAB	means a local conformity assessment body registered with and foreign conformity assessment body recognized by the Commission, respectively;
COA	means the Certificate of Approval issued in accordance with regulation 97 of the Electricity Regulations 1994;
Commission	means the Energy Commission established under the Energy Commission Act 2001 [Act 610];
Convectional mode	means the operation function of an oven with forced air circulation when a built-in fan circulates heated air inside the cavity of the oven;
Conventional mode	means the operation function of an oven only using natural convection for circulation of heated air inside the cavity of the oven;
EEl	means the Energy Efficiency Index for each cavity of an electric oven;
Lowest 2 Star rating	means the lowest value specified for 2-star rating in Table 1 and Table 2 of paragraph 7 respectively, which will be

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	calculated and determined through local market survey;
MEPS	means the minimum energy performance standards which refers to the minimum level of energy efficiency that must be met by an equipment;
Portable Electric Oven	means the type of electric oven that can be moved from one place to another and not designed for built-in installation;
Steam mode	means the operation function of an oven when heat transmission by condensation of steam with a temperature > 100 °C; and
Test Report	means an energy performance testing report referred to in regulation 101B of the Electricity Regulations 1994.

- 3.2. Subject to paragraph 3.1, the terms adopted and used in these Guidelines shall bear the same meaning as they are defined in the Act.
- 3.3. If there is any conflict between the provisions of these Guidelines and of those contained in the Act, the provisions of the Act shall prevail.

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4. TESTING STANDARD

- 4.1. The testing standard for an electric oven under these Guidelines shall be in accordance with the IEC 60350-1:2016 standard.
- 4.2. For any electric oven that is equipped with various function modes, the minimum test requirement that must be fulfilled shall be in accordance with the table below, and the data obtained from the minimum testing shall be included in the Test Report:

Function	Minimum test requirement
Conventional mode only	Conventional mode
Convectional mode only	Convectional mode
Conventional and convectional mode	Convectional mode
Conventional, convectional and steam mode	Convectional mode

5. EFFICIENCY PERFORMANCE CRITERIA

- 5.1. The energy consumption per cycle corresponding to the best performing mode (conventional mode or convectional mode) shall be used to determine the EEI.
- 5.2. For each cavity of an oven, the EEI shall be calculated according to the following formula:

$$\text{EEI cavity} = \frac{\text{EC electric cavity}}{\text{SEC electric cavity}} \times 100$$

Where:

EEI cavity = EEI for each cavity of an electric oven, in %, rounded to the first decimal place,

EC electric cavity = Energy consumption required to heat a standardized load in a cavity of an electric oven during a cycle, expressed in kWh, rounded to the second decimal place,

SEC electric cavity = Standard Energy Consumption (electricity) required to heat a standardized load in a cavity of an electric oven during a cycle, expressed in kWh, rounded to the second decimal place, and determined as following calculation depending on the type of an electric oven:

$$\begin{aligned} \text{SEC electric cavity for Built – in Electric Oven} \\ = 0.0105 \times V + 0.1436 \end{aligned}$$

$$\begin{aligned} \text{SEC electric cavity for Portable Electric Oven} \\ = 0.0126 \times V + 0.3439 \end{aligned}$$

Where:

V = Volume of the cavity of the electric oven in litres (L), rounded to the nearest integer.

6. MEASUREMENT CONDITIONS

- 6.1. The electric oven shall be tested at the voltage of 230V and the frequency of 50Hz.
- 6.2. The minimum clearance height less than 120 mm shall be measured from the floor of the lowest shelf to the lowest point on the ceiling, as illustrated in Figure 1:

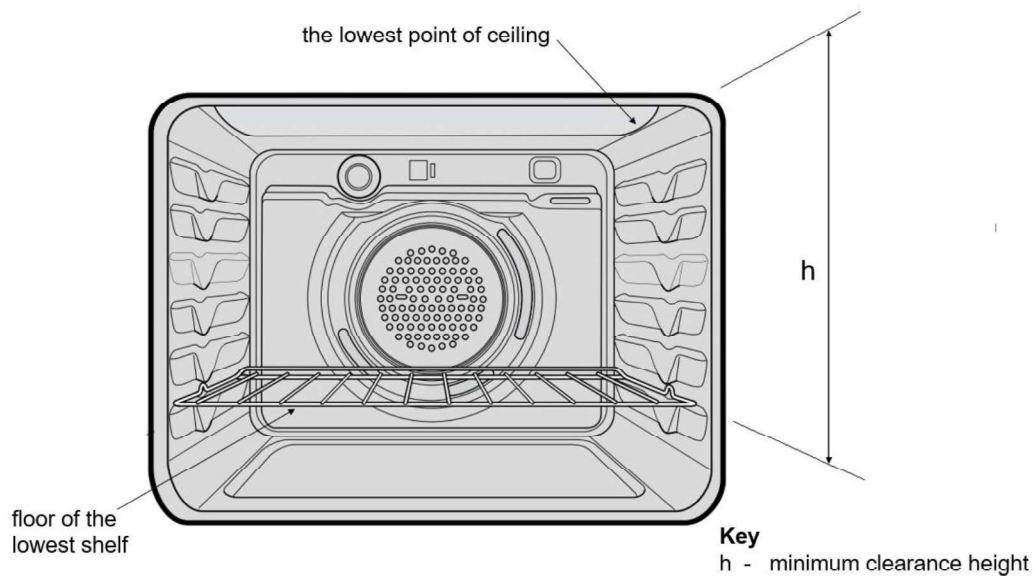


Figure 1: Minimum clearance height

- 6.3. The relevant information shall be declared by the manufacturer and shall be stated in the product user instruction manual or product literature. The relevant information are as follows:
- (a) the type of the electric oven;
 - (b) the total rated power of the electric oven;
 - (c) the useable volume of the electric oven; and
 - (d) the dimension of useable internal dimension (height x width x depth) of the electric oven.
- 6.4. The Test Report shall only be issued by CAB and includes—
- (a) coloured photographs showing the name plate, exterior, interior and critical components of the electric oven;
 - (b) the critical components list with technical specification and description of the components of the electric oven; and
 - (c) the data and calculation sheet of the electric oven based on energy consumption for heating a load as per Annex E in IEC 60350-1:2016.

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- 6.5. In the event where there is any use of alternative component or modification made onto the electric oven that may change its efficiency status or its design other than cosmetic, a retesting shall be conducted, and the result of such retesting shall be included in the report and submitted to the Commission for verification purposes for the issuance of the COA.

7. STAR RATING

- 7.1. The star rating for a built-in electric oven shall be in accordance with Table 1 below:

Star rating	EEI (%)
5	$EEI < 82$
4	$82 \leq EEI < 92$
3	$92 \leq EEI < 115$
2	$115 \leq EEI < 140$
1	$140 \leq EEI$

Table 1. Star rating for built-in electric oven

- 7.2. The star rating for a portable oven shall be in accordance with Table 2 below:

Star rating	EEI (%)
5	$EEI < 85$
4	$85 \leq EEI < 95$
3	$95 \leq EEI < 110$
2	$110 \leq EEI < 120$
1	$120 \leq EEI$

Table 2. Star rating for portable electric oven

8. MEPS REQUIREMENT

- 8.1. An electric oven shall meet at least the Lowest 2 Star rating in order to fulfill the MEPS requirement before the issuance of the COA.

9. ENERGY EFFICIENCY LABEL

9.1. It shall be the responsibility of the manufacturer or importer to affix an energy efficiency label on any equipment model that has met all requirements of efficient use of electricity and has been issued the COA by the Commission, in accordance with regulation 101A of the Electricity Regulation 1994.

9.2. The information to be included in the label is as per Figure 2 below:



Figure 2: Energy Efficiency Labelling Specification

9.3. The following details are the calculation method of annual energy consumption and energy savings specified in energy efficiency label:

(a) annual energy consumption:

$$\text{kWh} = 365 \times \text{Energy Consumption (kWh)}$$

(b) value of energy savings compared to the lowest 2-Star rated product (in percentage):

$$\left(100 - 100 \times \left(\frac{\text{EEI cavity}}{\text{EEI lowest 2 - star}} \right) \right)$$

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For the avoidance of doubt, the word “product” on the energy efficient label refers to an equipment as defined in the Act.

- 9.4. Size specification: The size of the energy efficiency label shall be proportionate to the size specified in Figure 3.



Figure 3: Size Specification of Energy Efficiency Label

- 9.5. Font and colour specification: The energy efficiency label shall be printed according to the type, minimum size of the font and colour specification as per Figure 4 below and shall be legible and visible to the unaided eye.

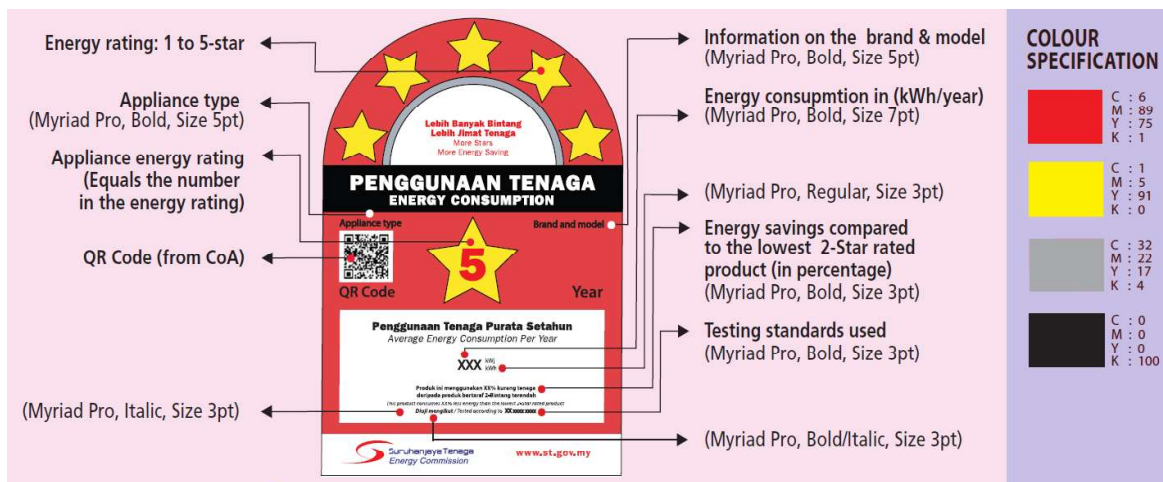


Figure 4: Colour Specification of Energy Efficiency Label

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- 9.6. The QR code shall be downloaded from <https://edik.st.gov.my/> with reference to the COA approval number and the printed QR code shall be readable by a QR code scanner.
- 9.7. Design specification: The designs for the energy efficiency label for each star rating are as per Figure 5.



Figure 5: Sample design of Energy Efficiency Label

- 9.8. Label placement: The energy efficient label shall be affixed to the equipment as shown in Figures 5a and 5b and shall be clearly visible and legible from the front.



Figure 5a: Placement of label

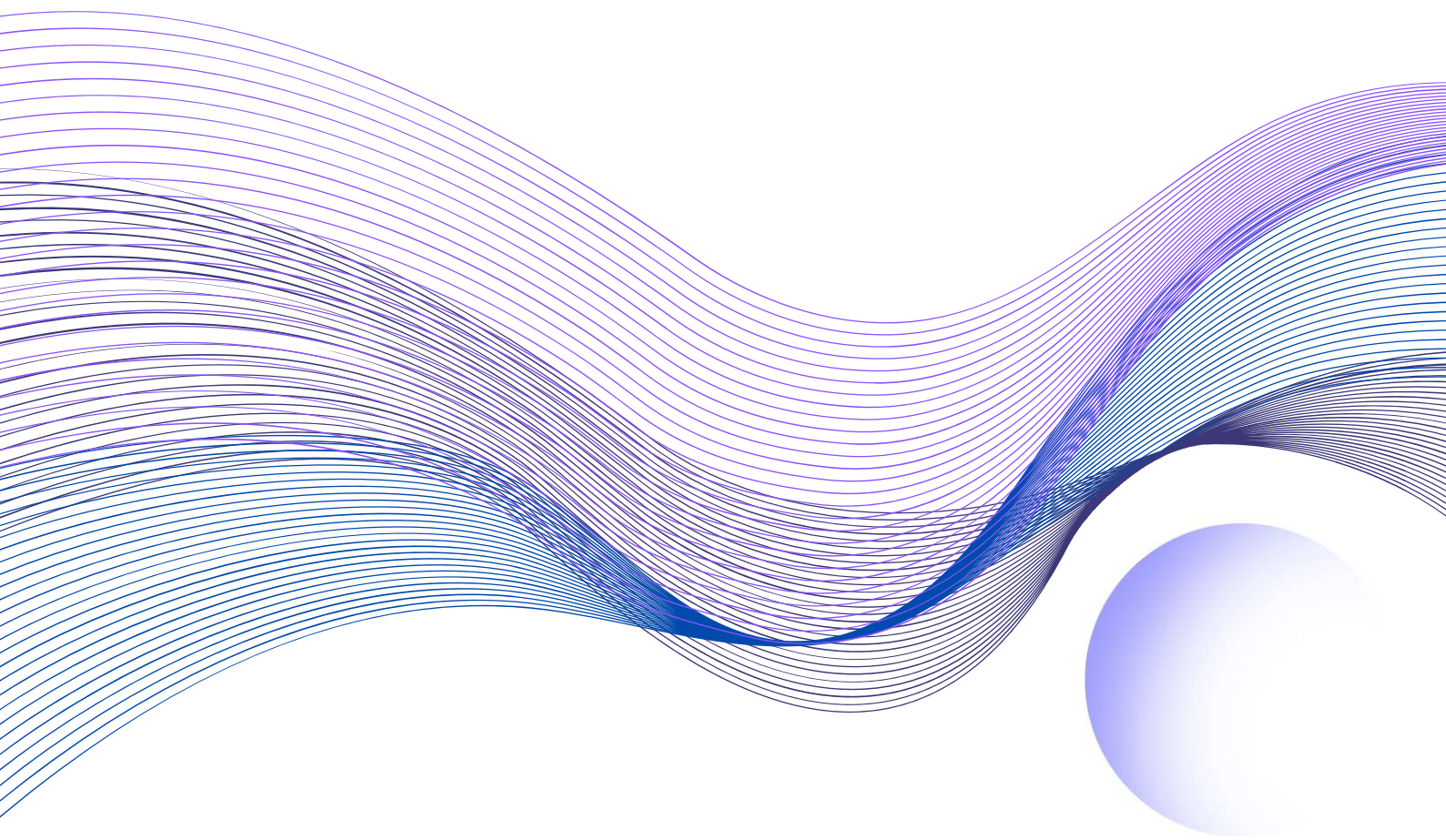
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Figure 5b: Placement of label

- 9.9. Label AI Format: A softcopy of the energy efficiency label in AI format can be obtained from the Commission by emailing to meps@st.gov.my after the COA is approved.

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