

المواصفات القياسية الإماراتية

UAE.S 5010- 10 :2021

بطاقة البيان - بطاقة بيان كفاءة الطاقة للأجهزة الكهربائية

الجزء العاشر: الأفران

Labeling – Energy Efficiency Label for Electrical Appliances

Part 10 : Cooking Appliances

دولة الإمارات العربية المتحدة

UNITED ARAB EMIRATES

ICS:

جميع حقوق الطبع محفوظة

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Standards of United Arab Emirates

	تاريخ اعتماد مجلس الوزراء
	تاريخ النشر بالجريدة الرسمية
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ICS:

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تقديم:

وزارة الصناعة والتكنولوجيا المتقدمة هي الجهة المسؤولة عن أنشطة التقييس بالدولة ومن مهامها إعداد المواصفات القياسية أو اللوائح الفنية الإماراتية بواسطة لجان فنية متخصصة.

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وقد اعتمدت كلائحة فنية وذلك بموجب قرار مجلس الوزراء رقم () بتاريخ / / هـ، الموافق / / 2021م.

Foreword

Ministry of Industry and Advance Technology (MOIAT) has a national responsibility for standardization activities. One of MOIAT main functions is to issue Emirates Standards/Technical regulations through specialized technical committees (TCs).

MOIAT through the technical program of committee "Technical committee for program of Energy Efficiency Electrical Vacuum Cleaners has prepared the UAE Standard No. UAE.S 5010- 10 :2021 "Labeling – Energy Efficiency Label for electrical appliances – Part 10 : **Cooking Appliances**".

This standard has approved as Emirates (Technical Regulation) under UAE Cabinet Decree No. (), held on 00/00/2021.

Labeling – Energy Efficiency Label for Electrical Appliances

Part 10 : cooking appliances

1. Scope

This Regulation establishes requirements for the labelling and the provision of supplementary product information for domestic electric and gas ovens (including when incorporated into cookers) and it also covers domestic electric and/or gas hobs.

2. This Regulation shall not apply to:

- ovens that use energy sources other than electricity or gas;
- ovens which offer a 'microwave heating' function;
- portable ovens;
- heat storage ovens;
- ovens which are heated with steam as a primary heating function;
- ovens designed for use only with gases of the 'third family' (propane and butane).

2. Reference standards

- UAE.S EN 30-2-1:2015 Domestic cooking appliances burning gas - Part 2-1: Rational use of energy – General
- UAE.S EN 15181:2017 Measuring method of the energy consumption of gas fired ovens
- UAE.S IEC 60350-1 :2016 Household electric cooking appliances - Part 1 : Ranges, ovens, steam ovens and grills - Methods for measuring performance
- UAE.S IEC 60350-2 :2017 Household electric cooking appliances - Part 2 : hobs - Methods for measuring performance

3. Technical Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

1. 'oven' means an appliance or part of an appliance which incorporates one or more cavities using electricity and/or gas in which food is prepared by use of a conventional or fan-forced mode;
2. 'cavity' means the enclosed compartment in which the temperature can be controlled for preparation of food;
3. 'multi-cavity oven' means an oven with two or more cavities, each of which is heated separately;
4. 'small oven' means an oven where all cavities have a width and depth of less than 250 mm or a height less than 120 mm;
5. 'portable oven' means an oven with a product mass of less than 18 kilograms, provided it is not designed for built-in installations;
6. 'microwave heating' means heating of food using electromagnetic energy;
7. 'conventional mode' means the operation mode of an oven only using natural convection for circulation of heated air inside the cavity of the oven;
8. 'fan-forced mode' means a mode when a built-in fan circulates heated air inside the cavity of the oven;
9. 'cycle' means the period of heating a standardized load in a cavity of an oven under defined conditions;
10. 'cooker' means an appliance consisting of an oven and a hob using gas or electricity;

11. 'operation mode' means the status of the oven or hob during use;
12. 'heat source' means the main energy form for heating an oven or hob;
13. 'electric hob' means an appliance or part of an appliance which incorporates one or more cooking zones and/or cooking areas including a control unit and which is heated by electricity;
14. 'gas hob' means an appliance or part of an appliance which incorporates one or more cooking zones including a control unit and which is heated by gas burners of a minimum power of 1,16 kW;
15. 'hob' means an 'electric hob', a 'gas hob' or a 'mixed hob';
16. 'mixed hob' means an appliance with one or more electrically heated cooking zones or areas and one or more cooking zones heated by gas burners;
17. 'cooking zone' means a part, with a diameter of at least 100 mm, of a hob where cookware is placed and heated with not more than one piece of cookware heated at a time; the area of the cooking zone may be visibly marked on the surface of the hob;
18. 'cooking area' means a part of an area of an electric hob heated by an inducted magnetic field, where cookware is placed for heating without visible marking for the cookware and where more than one item of cookware can be used simultaneously;
19. 'standby mode' means a condition where the equipment is connected to the mains power source, depends on energy input from the mains power source to work as intended and provides only reactivation function, or reactivation function and only an indication of enabled reactivation function, and/or information or status display, which may persist for an indefinite time;

4. General requirements:

All cooking appliances covered by this technical regulation must meet the following requirements:

4.1 National (local) requirements:

The following requirements must be met in the electrical product covered by this standard:

Voltage : 220V - 240V

Frequency : 50Hz

4.2 Electrical safety requirements:

Electrical cooking appliances falling within the scope of this standard must fulfill the requirements Included in the UAE conformity assessment system (ECAS) for low voltage electrical appliances.

4.3 Energy efficiency classification

4.3.1 Energy Efficiency for a domestic oven

4.3.1.1 Measurements and calculations:

The energy consumption of a cavity of a domestic oven shall be measured for one standardised cycle, in a conventional mode and in a fan-forced mode, if available, by heating a standardised load soaked with water.

It shall be verified that the temperature inside the oven cavity reaches the temperature setting of the thermostat and/or the oven control display within the duration of the test cycle.

The energy consumption per cycle corresponding to the best performing mode (conventional mode or fan-forced mode) shall be used in the following calculations.

For each cavity of a domestic oven, the Energy Efficiency Index (EI_{cavity}) shall be calculated according to the following formulas:

For domestic electric ovens:

$$EI_{cavity} = \frac{EC_{electric\ cavity}}{SEC_{electric\ cavity}} \times 100$$

$$SEC_{electric\ cavity} = 0,0042 \times V + 0,55 \text{ (in kWh)}$$

For domestic gas ovens:

$$EEI_{cavity} = \frac{EC_{gas\ cavity}}{SEC_{gas\ cavity}} \times 100$$

$$SEC_{gas\ cavity} = 0,044 \times V + 3,53 \text{ (in MJ)}$$

Where:

- EEI_{cavity} = Energy Efficiency Index for each cavity of a domestic oven, in %, rounded to the first decimal place,
- $SEC_{electric\ cavity}$ = Standard Energy Consumption (electricity) required to heat a standardised load in a cavity of an electric heated domestic oven during a cycle, expressed in kWh, rounded to the second decimal place,
- $SEC_{gas\ cavity}$ = Standard Energy Consumption required to heat a standardised load in a cavity of a domestic gas-fired oven during a cycle, expressed in MJ, rounded to the second decimal place,
- V = Volume of the cavity of the domestic oven in litres (L), rounded to the nearest integer,
- $EC_{electric\ cavity}$ = Energy consumption required to heat a standardised load in a cavity of an electric heated domestic oven during a cycle, expressed in kWh, rounded to the second decimal place,
- $EC_{gas\ cavity}$ = Energy consumption required to heat a standardised load in a gas-fired cavity of a domestic oven during a cycle, expressed in MJ, rounded to the second decimal place.

4.3.1.2 Energy efficiency index (EEI) values

The energy efficiency classes of domestic ovens shall be determined separately for each cavity in accordance with values as set out in Table 1 .

Table (1): Energy efficiency index (EEI_{cavity})

Stars rating	Energy efficiency index (EEI_{cavity})
most efficient 5	$EEI \leq 45$
4	$45 < EEI \leq 62$
3	$62 < EEI \leq 82$
2	$82 < EEI \leq 107$
lowest efficient 1	$107 < EEI \leq 132$

4.3.2 Energy Efficiency for domestic hobs

4.3.2 .1 Measurements and calculations:

4.3.2.1.1 Domestic electric hobs

The energy consumption of a domestic electric hob ($EC_{electric\ hob}$) is measured in Wh per kg of water heated in a normalised measurement (Wh/kg) considering all cookware pieces under standardised test conditions and rounded to the first decimal place according to the UAE.S IEC 60350-2.

4.3.2.1.2 Domestic gas hobs

The energy efficiency of gas burners in a domestic hob is calculated as follows:

$$EE_{gas\ burner} = \frac{E_{theoretic}}{E_{gas\ burner}} \times 100$$

Where:

- $EE_{gas\ burner}$ = energy efficiency of a gas burner in % and rounded to the first decimal place,
- $E_{gas\ burner}$ = energy content of the consumed gas for the prescribed heating in MJ and rounded to the first decimal place,

— E theoretic = theoretic minimum required energy for the corresponding prescribed heating in MJ and rounded to the first decimal place.
The energy efficiency of the gas hob (EE gas hob) is calculated as the average of the energy efficiency of the different gas burners (EE gas burner) of the hob.

4.3.2.1.3 Domestic mixed electric/gas hobs

Domestic mixed electric and gas hobs are treated in the measurements as two separate appliances. Electric cooking zones and cooking areas of the domestic mixed hobs shall follow the provisions of (4.3.2.1.1)and cooking zones heated by gas burners shall follow the provisions of (4.3.2.1.2).

4.3.2 .2 Energy efficiency values

The domestic hobs shall have the energy consumption limits for electric hobs (EC electric hob) and the energy efficiency limits for gas-fired hobs (EE gas hob) as indicated in Table 2.

Table 2
Energy efficiency performance limits for domestic hobs

Stars rating	Energy efficiency for electric hob (EC _{electric hob} in Wh/kg)	Energy efficiency for gas-fired hob (EE _{gas hob} in %)
most efficient 5	$EC \leq 185$	$EE > 59$
4	$185 < EC \leq 190$	$57 < EE \leq 59$
3	$190 < EC \leq 195$	$55 < EE \leq 57$
2	$195 < EC \leq 200$	$53 < EE \leq 55$
lowest efficient 1	$200 < EC \leq 210$	$EE > 53$

5. Energy Efficiency label:

All products in the market must have an energy efficient label according to the design shown in this TR.

The Energy Efficiency Label should place on the display product without exceptions. The energy efficiency label for non-display products could place or supply with the user manual.

For domestic mixed electric and gas hobs are treated in the measurements as two separate appliances, and should have two Energy Efficiency Label.

For domestic mixed oven and hobs appliances should have Energy Efficiency Label for hobs only.

6. Certificate of Conformity:

- The supplier must provide all the technical documents specified in Article (7).

- If the cooking appliance meets the technical requirements mentioned in this standard according to test reports, a Certificate of Conformity (CoC) is issued, in accordance with the UAE Conformity Assessment System (ECAS),

- Each product presented at the point of sale shall carries energy label according the requirements in article (4) displayed on the front or top of the appliance, so as to be clearly visible and identifiable .

7. Product Information documents

The manufacturer or importers must provide technical documents of the product (domestic ovens and hobs), which must contain the following elements:

7.1 Information for domestic ovens

- Model identification
- Type of oven
- Mass of the appliance (M) by kg .
- Number of cavities
- Heat source per cavity (electricity or gas)
- Volume per cavity (V) by L .
- Energy consumption (electricity) required to heat a standardised load in a cavity of an electric heated oven during a cycle in conventional mode per cavity (electric final energy) $EC_{\text{electric cavity}}$ by kWh/cycle (1 kWh/cycle = 3,6 MJ/cycle).
- Energy consumption required to heat a standardised load in a cavity of an electric heated oven during a cycle in fan-forced mode per cavity (electric final energy) $EC_{\text{electric cavity}}$ by kWh/cycle .
- Energy consumption required to heat a standardised load in a gas-fired cavity of an oven during a cycle in conventional mode per cavity (gas final energy) $EC_{\text{gas cavity}}$ by MJ/cycle (kWh/cycle) .
- Energy consumption required to heat a standardised load in a gas-fired cavity of an oven during a cycle in fan-forced mode per cavity (gas final energy) $EC_{\text{gas cavity}}$ by MJ/cycle (kWh/cycle).
- Energy Efficiency Index per cavity EEI_{cavity}

7.2 Information for domestic hobs

7.2.1. Information for domestic electric hobs

- Model identification
- Type of hob
- Number of cooking zones and/or areas
- Heating technology (induction cooking zones and cooking areas, radiant cooking zones, solid plates)
- For circular cooking zones or area: diameter of useful surface area per electric heated cooking zone, rounded to the nearest 5 mm by cm .
- For non-circular cooking zones or areas: length and width of useful surface area per electric heated cooking zone or area, rounded to the nearest 5 mm by cm .
- Energy consumption per cooking zone or area calculated per kg $EC_{\text{electric cooking}}$ by Wh/kg.
- Energy consumption for the hob calculated per kg $EC_{\text{electric hob}}$ by Wh/kg .

7.2.2 Information for domestic gas-fired hobs

- Model identification
- Type of hob
- Number of gas burners
- Energy efficiency per gas burner $EE_{\text{gas burner}}$
- Energy efficiency for the gas hob $EE_{\text{gas hob}}$

7.2.3 Information for domestic mixed hobs

- Model identification
- Type of hob
- Number of electric cooking zones and/or areas
- Heating technology (induction cooking zones and cooking areas, radiant cooking zones, solid plates) per electric cooking zone and/or area
- For circular electric cooking zones: diameter of useful surface area per electric heated cooking zone, rounded to the nearest 5 mm by cm.
- For non-circular electric cooking zones or areas: length and width of useful surface area per electric heated cooking zone or area, rounded to the nearest 5 mm by cm
- Energy consumption per electric cooking zone or area calculated per kg $EC_{\text{electric cooking}}$ by Wh/kg .
- Number of gas fired burners
- Energy efficiency per gas burner $EE_{\text{gas burner}}$

8. Procedure for market surveillance

Market monitoring performance authorities should follow the following procedures when assessing conformity to the rating of cooking appliances in terms of energy efficiency:

- i. One model is tested. The model is considered to comply with the requirements if the values in the technical documents and the test results comply with the requirements mentioned in this standard. In addition, the testing of the relevant model parameters applying the tolerances listed in Table 3 below shows compliance for all of those parameters.
- ii. In the event that the results referred to in Clause (i) are not identical, then three additional units of the same model shall be selected for testing.
- iii. The model is considered to be in compliance with the requirements of this standard if the average result of the tests is for the specified model showing compliance with this standard.
- iv. In the event that the results referred to in clause (iii) are not achieved, then the model and all models similar to this model are considered not to comply with this standard.

The tolerances in the table, should be used only for product evaluation during market severance processes , not for conformity tests by companies.

Table 3

Verification tolerances

requirement	The evaluation
Mass of the domestic oven (M)	The determined value shall not exceed the declared value of M by more than 5 %.
Volume of the cavity of the domestic oven (V)	The determined value shall not be lower than the declared value of V by more than 5 %.
EC electric cavity , EC gas cavity	The determined value shall not exceed the declared value of EC electric cavity, EC gas cavity by more than 5 %.
EC electric hob	The determined value shall not exceed the declared value of EC electric hob by more than 5 %.
EE gas hob	The determined value shall not be lower than the declared value of EE gas hob by more than 5 %.

ANNEX 1

Energy Label