

**Working Document on a Draft**

**COMMISSION REGULATION (EU) No .../..**

**of ...**

**implementing Directive 2009/125/EC of the European Parliament and of the Council  
with regard to ecodesign requirements for ovens, hobs and range hoods**

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products<sup>1</sup>, and in particular Article 15(1) thereof,

After consulting the Ecodesign Consultation Forum,

Whereas:

- (1) Directive 2009/125/EC requires the Commission to set ecodesign requirements for energy-related products representing significant volumes of sales and trade, having significant environmental impact and presenting significant potential for improvement through design in terms of their environmental impact, without entailing excessive costs.
- (2) Article 16(2)(a) of Directive 2009/125/EC provides that in accordance with the procedure referred to in Article 19(3) and the criteria set out in Article 15(2), and after consulting the Ecodesign Consultation Forum, the Commission has to, as appropriate, introduce implementing measures for products offering a high potential for cost-effective reduction of greenhouse gas emissions, such as domestic appliances, including ovens, hobs and range hoods.
- (3) The Commission has carried out preparatory studies to analyse the technical, environmental and economic aspects of cooking appliances such as ovens, hobs and range hoods. The studies have been developed together with stakeholders and interested parties from the EU and third countries, and the results have been made publicly available.
- (4) The main environmental aspect of the products covered that has been identified as significant for the purposes of this Regulation is energy consumption in the use phase.
- (5) Standby and off-mode functions can be responsible for an important part of the total power consumption of cooking appliances. For these appliances, power consumption of these functions is part of the minimum energy performance requirements. Standby and off-mode requirements for ovens and hobs are set on the basis of the ecodesign requirements of Commission Regulation 1275/2008/EC<sup>2</sup>.
- (6) The annual energy consumption of products subject to this Regulation was estimated to be 755 PJ (primary energy consumption) in the EU in 2010. Unless specific

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<sup>1</sup> OJ L 285, 31.10.2009, p. 10.

<sup>2</sup> OJ L 339, 18.12.2008, p. 45.

measures are taken, annual energy consumption is predicted to be 779 PJ in 2020. The preparatory studies show that the energy consumption of products subject to this Regulation can be significantly reduced.

- (7) The combined effect of the ecodesign requirements set out in this Regulation and of Commission Delegated Regulation XXX/2013 [*Numbering of the Commission Delegated Regulation on the energy labelling of ovens and range hoods and OJ reference in footnote to be added before publication in the OJ*], is expected to result in annual primary energy savings of 27 PJ/a in 2020, increasing to 60 PJ/a by 2030.
- (8) The preparatory studies show that requirements regarding other ecodesign parameters referred to in Annex I, Part 1, of Directive 2009/125/EC are not necessary as electricity and gas consumption of the cooking appliances in the use phase is the most significant environmental aspect.
- (9) Products subject to this Regulation should be made more energy efficient by applying existing non-proprietary cost-effective technologies that can reduce the combined costs of purchasing and operating these products.
- (10) The ecodesign requirements should not affect functionality from the end-user's perspective and should not negatively affect health, safety or the environment. In particular, the benefits of reducing energy consumption during the use phase should more than offset any possible additional environmental impact during the production phase and the disposal.
- (11) The ecodesign requirements should be introduced gradually in three tiers in order to provide a sufficient timeframe for manufacturers to re-design products subject to this Regulation. The first tier will be introduced one year after the entry into force of this Regulation, the second tier after three years and the third tier after five years. This timing will avoid negative impacts on the functionalities of equipment on the market and take into account cost impacts for end-users and manufacturers, in particular small and medium-sized enterprises, while ensuring timely achievement of the objectives of this Regulation.
- (12) Measurements of the relevant product parameters should be performed through reliable, accurate and reproducible measurement methods, which take into account the recognised state of the art measurement methods including, where available, harmonised standards adopted by the European standardisation bodies, as listed in Annex I to Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services<sup>3</sup>.
- (13) The Commission will launch, if appropriate, a mandate to the European Standardisation organisations to adopt complementary measurement standards to cover all categories of appliances included in the scope of this Regulation.
- (14) In accordance with Article 8 of Directive 2009/125/EC, this Regulation specifies the conformity assessment procedures applicable.
- (15) In order to facilitate compliance checks, manufacturers should provide information in the technical documentation referred to in Annexes IV and V of Directive 2009/125/EC insofar as this information relates to the requirements laid down in this Regulation.

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<sup>3</sup> OJ L 204, 21.7.1998, p. 37.

- (16) To ensure fair competition, the achievement of potential intended energy savings and accurate information of products' energy performance towards consumers, this Regulation should make clear that the tolerances prescribed for the national market surveillance authorities when conducting physical tests to establish whether a specific model of an energy related product is in compliance with this Regulation should not be used by the manufacturers to provide room for declaring a more favourable performance of the model than measurements and calculations declared in the technical documentation of the product can justify.
- (17) In addition to the legally binding requirements laid down in this Regulation, indicative benchmarks for best-performing appliances available on the market should be identified to ensure the wide availability and easy accessibility of information on the most relevant environmental aspects in the life-cycle environmental performance of products subject to this Regulation.
- (18) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Article 19(1) of Directive 2009/125/EC.

HAS ADOPTED THIS REGULATION:

*Chapter 1*  
***Subject matter and scope***

1. This Regulation establishes eco-design requirements for the placing on the market and putting into service of ovens including when incorporated in cookers, hobs, and electric range hoods.
2. This Regulation shall not apply to:
  - appliances that use energy sources other than electricity or gas;
  - appliances which offer the function 'microwave heating';
  - small ovens;
  - portable ovens;
  - range hoods without motor;
  - covered gas burners in hobs.

*Chapter 2*  
***Definitions***

In addition to the definitions set out in Article 2 of Directive 2009/125/EC, the following definitions shall apply:

1. 'Appliance' means an energy using apparatus with a specific function;
2. 'Oven' means an appliance or part of an appliance which incorporates one or more cavities using electricity with a total nominal power below or equal to 10 kW or gas with a total nominal heat input below or equal to 15 kW to operate;
3. 'Cavity' means the enclosed compartment in which the temperature can be controlled for preparation of food;
4. 'Small oven' means an oven with the following cavity size: width and depth < 250 mm or height < 120 mm;

5. 'Portable oven' means an oven other than fixed 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 by 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 standardised load in a cavity of an oven under defined conditions;
10. 'Cooker' or 'cooking range' 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. 'Hob' means an 'electric hob', a 'gas hob' or a combination of both;
14. 'Mixed hob' means an appliance with one or more electric heated cooking zones or areas and one or more cooking zones heated by gas burners.
15. '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 heated by electricity with a total nominal power below or equal to 15 kW;
16. 'Gas hob' means an appliance or part of an appliance which incorporates one or more cooking zones, heated by gas burners with a total nominal heat input below or equal to 20 kW;
17. 'Cooking zone' means a part of an electric hob where cookware is placed and heated. The area of the cooking zone is visible 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 cookware can be used simultaneously;
19. 'Range hood' means a motor operated appliance with a nominal power below 280 W, intended to collect contaminated air from above a hob or includes a downdraft system intended for installation adjacent to cooking ranges, hobs and similar cooking appliances, that draws vapour down into an internal exhaust duct. The blower of the range hood may be internal or external, provided that is controlled by the range hood. The air may be ducted away or discharged back into the room after filtration;
20. 'Range hood without motor' means an appliance intended to collect contaminated air from above a hob connected to a ventilation appliance not controlled by the range hood;
21. 'Automatic functioning mode during the cooking period' means a condition in which the air flow of the range hood during the cooking period is automatically controlled through sensor(s), such as humidity, temperature, etc.;
22. 'Fully automatic range hood' means a range hood in which the air flow and/or other functions are automatically controlled through sensor(s) during the 24h hours including the cooking period;

23. 'Fluid Dynamic Efficiency' ( $FDE_{hood}$ ) means the fluid dynamic efficiency of the range hood at its best efficiency point (BEP);
24. 'Best efficiency point' (BEP) means the range hood operating point with maximum fluid dynamic efficiency;
25. 'Average illumination' ( $E_{middle}$ ) means the average illumination provided by the lighting system of the range hood on the cooking surface, measured in lux;
26. 'Off mode' is a condition in which the equipment is connected to the mains power source and is not providing any function. Also considered as off mode are conditions providing only an indication of off mode condition, as well as conditions providing only functionalities intended to ensure electromagnetic compatibility pursuant to Directive 2004/108/EC of the European Parliament and of the Council<sup>4</sup>;
27. '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 the following functions, which may persist for an indefinite time: reactivation function, or reactivation function and only an indication of enabled reactivation function, and/or information or status display;
28. 'Reactivation function' means a function facilitating the activation of other modes, including active mode, by remote switch including remote control, internal sensor, timer to a condition providing additional functions, including the main function;
29. 'Information or status display' means a continuous function providing information or indicating the status of the equipment on a display, including clocks;
30. 'End-user' means a consumer buying or expected to buy a product;

### *Chapter 3*

#### ***Ecodesign requirements***

1. The ecodesign requirements for ovens, hobs and range hoods are set out in Annex I.
2. Each ecodesign requirement shall apply in accordance with the following timetable:
  - (a) from 1 July 2014:
    - i) ovens, hobs and range hoods shall correspond to the 'Energy efficiency, fluid dynamic efficiency, air flow, low power mode and illumination' requirements as indicated in point 1(1), 1(2) and 1(3) of Annex I;
    - ii) ovens, hobs and range hoods shall correspond to the 'Product information' requirements as indicated in point 2 of Annex I;
  - (b) from 1 July 2016:
 

ovens, hobs and range hoods shall correspond to the 'Energy efficiency, fluid dynamic efficiency and low power mode' requirements as indicated in point 1(1), 1(2) and 1(3) of Annex I;
  - (c) from 1 July 2018:
 

ovens, hobs and range hoods shall correspond to the 'Energy efficiency and fluid dynamic efficiency' requirements as indicated in point 1(1), 1(2) and 1(3) of Annex I.

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<sup>4</sup> OJ L 390 of 31.12.2004, p. 24.

3. Compliance with ecodesign requirements shall be measured and calculated in accordance with the methods set out in Annex II.

#### *Chapter 4* **Conformity assessment**

1. The conformity assessment procedure referred to in Article 8 of Directive 2009/125/EC shall be the internal design control system set out in Annex IV to that Directive or the management system set out in Annex V to that Directive.
2. For the purposes of conformity assessment pursuant to Article 8 of Directive 2009/125/EC, the technical documentation file shall contain a copy of the calculation set out in Annex II to this Regulation.
3. Where the information included in the technical documentation for a model has been obtained by calculation on the basis of design, or extrapolation from other equivalent appliance, or both, the technical documentation shall include details of such calculations or extrapolations, or both, and of tests undertaken by manufacturers to verify the accuracy of the calculations undertaken. In such cases, the technical documentation shall also include a list of all other equivalent models where the information included in the technical documentation was obtained on the same basis.

#### *Chapter 5* **Verification procedure for market surveillance purposes**

When performing the market surveillance checks referred to in Article 3(2) of Directive 2009/125/EC for compliance with requirements set out in Annex I to this Regulation, the Member States authorities shall apply the verification procedure described in Annex III to this Regulation.

#### *Chapter 6* **Benchmarks**

The indicative benchmarks for best-performing appliances available on the market at the time of entry into force of this Regulation are set out in Annex IV.

#### *Chapter 7* **Revision**

The Commission shall review this Regulation in the light of technological progress no later than 1 July 2020 and present the result of this review to the Ecodesign Consultation Forum.

#### *Chapter 8* **Entry into force**

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

*For the Commission*  
*The President*  
José Manuel BARROSO

## ANNEX I Ecodesign requirements

### 1. ENERGY EFFICIENCY, AIR FLOW AND ILLUMINATION REQUIREMENTS

#### 1.1. For ovens

Cavities of ovens (including when incorporated in cookers) shall have the maximum Energy Efficiency Index as indicated in Table 1.

<b>Table 1 - Energy Efficiency Index limits for cavities of ovens (<math>EEI_{oven\ cavity}</math>)</b>	
Electric & gas oven	
1 July 2014	$EEI_{cavity} < 115$
1 July 2016	$EEI_{cavity} < 95$
1 July 2018	$EEI_{cavity} < 75$

#### 1.2. For hobs

The hobs shall have the maximum energy efficiency performance limits for electric cooking zones or areas ( $EC_{electric\ cooking}$ ) and/or for gas-fired burners ( $EE_{gas\ burner}$ ) as indicated in Table 2.

<b>Table 2 - Energy efficiency performance limits for hobs (<math>EC_{electric\ cooking}</math> and <math>EE_{gas\ burner}</math>)</b>		
	Electric cooking zone or area ( $EC_{electric\ cooking}$ in Wh/kg.)	Gas-fired burner ( $EE_{gas\ burner}$ in %)
1 July 2014	$EC_{electric\ cooking} < 210$	$EE_{gas\ burner} > 53\%$
1 July 2016	$EC_{electric\ cooking} < 200$	$EE_{gas\ burner} > 54\%$
1 July 2018	$EC_{electric\ cooking} < 190$	$EE_{gas\ burner} > 55\%$

#### 1.3. For range hoods

##### 1.3.1. Energy Efficiency Index ( $EEI_{hood}$ ) and Fluid Dynamic Efficiency ( $FDE_{hood}$ )

The range hoods shall have the maximum Energy Efficiency Index ( $EEI_{hood}$ ) and the minimum Fluid Dynamic Efficiency ( $FDE_{hood}$ ) limits as indicated in Table 3.

<b>Table 3 - Energy Efficiency Index (<math>EEI_{hood}</math>) and Fluid Dynamic Efficiency (<math>FDE_{hood}</math>) for range hoods</b>		
	$EEI_{hood}$	$FDE_{hood}$
1 July 2014		$FDE_{hood} > 3$
1 July 2016	$EEI_{hood} < 110$	$FDE_{hood} > 5$
1 July 2018	$EEI_{hood} < 100$	$FDE_{hood} > 8$
1 July 2020	$EEI_{hood} < 85$	

### 1.3.2. Air flow

From 1 July 2014, the range hoods with a maximum air flow in any of the available setting higher than  $650 \text{ m}^3/\text{h}$  shall automatically revert to an air flow lower than or equal to  $650 \text{ m}^3/\text{h}$  in a time  $t$  as defined in Annex II.

### 1.3.3. Low power modes for range hoods

(1) From 1 July 2014:

- Power consumption in ‘off mode’: the power consumption in any off-mode condition shall not exceed 1.00 W.
- Power consumption in ‘standby mode(s)’:  
The power consumption in any condition providing only a reactivation function, or providing only a reactivation function and a mere indication of enabled reactivation function, shall not exceed 1.00 W.  
The power consumption of equipment in any condition providing only information or status display, or providing only a combination of reactivation function and information or status display, shall not exceed 2.00 W.
- Availability of ‘off mode’ and/or ‘standby mode’: range hoods shall, except where this is inappropriate for the intended use (i.e. full automatic range hoods), provide ‘off mode’ and/or ‘standby mode’, and/or another condition which does not exceed the applicable power consumption requirements for off mode and/or standby mode when the equipment is connected to the mains power source.

(2) From 1 July 2016:

- Power consumption in ‘off mode’: the power consumption in any off mode condition shall not exceed 0.50 W.
- Power consumption in ‘standby mode(s)’: the power consumption in any condition providing only a reactivation function, or providing only a reactivation function and a mere indication of enabled reactivation function, shall not exceed 0.50 W.  
The power consumption of equipment in any condition providing only information or status display, or providing only a combination of reactivation function and information or status display shall not exceed 1.00 W.
- Range hoods shall, provide off mode and/or standby mode, and/or another condition which does not exceed the applicable power consumption requirements for off mode and/or standby mode when the equipment is connected to the mains power source.
- Power management: when range hoods are not providing the main function, or when other energy-using product(s) are not dependent on its functions, equipment shall, unless inappropriate for the intended use, offer a power management function, or a similar function, that switches equipment after the shortest possible period of time appropriate for the intended use of the equipment, automatically into:
  - standby mode, or



- off mode, or
- another condition which does not exceed the applicable power consumption requirements for off mode and/or standby mode when the equipment is connected to the mains power source.

The power management function shall be activated before delivery.

#### 1.3.4. *Illumination of the lighting*

From 1 July 2014, the average illumination of the lighting system on the cooking surface ( $E_{\text{middle}}$ ) shall be higher than 40 lux.

## 2. PRODUCT INFORMATION REQUIREMENTS

The information on cooking appliances set out in points above shall be visibly displayed on the technical documentation of the product, on the booklet of instructions and on the free access websites of manufacturers of kitchen appliances, their authorised representatives, or importers. It shall contain the following elements:

- (a) any information required to be published in respect of the cooking appliances under any delegated acts adopted under Directive 2010/30/EU<sup>5</sup>;
- (b) short title or reference to the measurement and calculation methods used to establish compliance with the above requirements;
- (c) information relevant for non-destructive disassembly for maintenance purposes;
- (d) information relevant for dismantling, in particular in relation to the motor and any batteries, recycling, recovery and disposal at end-of-life;

From 1 July 2014, the following product information shall be provided:

### 2.1. For ovens

<b>Table 4 – Information for ovens</b>			
	Symbol	Value	Unit
Model identification			
Type of oven			
Total nominal power for electric oven	P	X.X	kW
Total nominal heat input for gas oven	HI	X.X	kW
Mass of the appliance	M	X.X	kg
Number of cavities		X	
Heat source per cavity			
Volume per cavity	V	X	l
Nominal power for electric cavity	P	X.X	kW
Nominal heat input for gas cavity	P	X.X	kW
Energy consumption (electricity) required to heat a standardised load in a cavity of an electric heated	$EC_{\text{electric cavity}}$	X.XX	kWh/cycle

<sup>5</sup> OJ L 153, 18.6.2010, p. 1.

oven during a cycle in conventional mode per cavity (electric final energy)			
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)	$EC_{\text{electric cavity}}$	X.XX	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)	$EC_{\text{gas cavity}}$	X.XX X.XX	MJ/cycle kWh/cycle <sup>6</sup>
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)	$EC_{\text{gas cavity}}$	X.XX X.XX	MJ/cycle kWh/cycle
Energy Efficiency Index per cavity	$EEL_{\text{cavity}}$	X.X	

## 2.2. For hobs

### 2.2.1. Electric hobs

Table 5a – Information for electric hobs			
	Symbol	Value	Unit
Model identification			
Type of hob			
Total nominal power for electric hob	$P_{\text{tot}}$	X.X	kW
Number of controls of cooking zones and/or areas which can be operated at the same time		X	
Heating technology (induction cooking zones, and cooking areas, radiant cooking zones, solid plates)			
Power per electric heated cooking zone and/or area	P	X	W
For circular cooking zones or area: diameter of useful surface area per electric heated cooking zone, rounded to the nearest 5 mm.	$\varnothing$	X.X	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.	L W	X.X X.X	cm
Energy consumption per cooking zone or area calculated per kg	$EC_{\text{electric cooking}}$	X.X	Wh/kg

### 2.2.2. Gas-fired hobs

Table 5b – Information for gas-fired hobs			
	Symbol	Value	Unit
Model identification			
Type of hob			
Total nominal heat input for gas hob	$HI_{\text{tot}}$	X.X	kW

<sup>6</sup> 1 kWh/cycle = 3.6 MJ/cycle

Number of gas burners		X	
Power per gas burner	P	X	W
Energy efficiency per gasburner	EE <sub>gas burner</sub>	X.X	

### 2.2.3. Mixed gas and electric hobs

<b>Table 5c – Information for mixed hobs</b>			
	Symbol	Value	Unit
Model identification			
Type of hob			
Total nominal power for electric part	P	X.X	kW
Total nominal heat input for gas part	HI	X.X	kW
Number of controls of electric cooking zones and/or areas which can be operated at the same time		X	
Heating technology (induction cooking zones, and cooking areas, radiant cooking zones, solid plates) per electric cooking zone and/or area			
Power per electric heated cooking zone and/or area	P	X	W
For circular electric cooking zones: Diameter of useful surface area per electric heated cooking zone, rounded to the nearest 5 mm.	Ø	X.X	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.	L W	X.X X.X	cm
Energy consumption per electric cooking zone or area calculated per kg	EC <sub>electric cooking</sub>	X	Wh/kg
Number of gas fired burners		X	
Power per gas burner	P	X	W
Energy efficiency per gas burner	EE <sub>gas burner</sub>	X.X	

### 2.3. For range hoods

<b>Table 6 – Information for range hoods</b>			
	Symbol	Value	Unit
Model identification			
Total nominal power	P	X.X	kW
Annual Energy Consumption	AEC <sub>hood</sub>	X.X	kWh/a
Increase factor	f	X.X	
Fluid Dynamic Efficiency	FDE <sub>hood</sub>	X.X	
Energy Efficiency Index	EEI <sub>hood</sub>	X.X	
Measured air flow rate at best efficiency point	Q <sub>BEP</sub>	X.X	m <sup>3</sup> /h

Measured air pressure at best efficiency point	$P_{BEP}$	X	Pa
Maximum air flow	$Q_{max}$	X	$m^3/h$
Measured electric power input at best efficiency point	$W_{BEP}$	X	W
Nominal power of the lighting system	$W_L$	X.X	W
Average illumination of the lighting system on the cooking surface	$E_{middle}$	X	lux
Measured power consumption in standby mode	$P_s$	X.XX	W
Measured power consumption off mode	$P_o$	X.XX	W
Sound power level	$L_{WA}$	X	dB

## ANNEX II

### Measurements and calculations

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using a reliable, accurate and reproducible method that take into account the generally recognised state-of-the-art measurement and calculation methods, including harmonised standards the reference numbers of which have been published for the purpose in the *Official Journal of the European Union*. They shall meet the technical definitions, conditions, equations and parameters set out in this Annex.

#### 1. OVENS

The energy consumption of a cavity of an 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. 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 an electric and gas ovens, the Energy Efficiency Index ( $EEI_{cavity}$ ) shall be calculated according to the following formulas:

for electric ovens:

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

$$SEC_{electric\ cavity} = 0.0042 \times V + 0.55 \text{ (in kWh)}$$

for 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 an oven, rounded to the first decimal place;
- $SEC_{electric\ cavity}$  = Specific Energy Consumption (electricity) required to heat a standardised load in a cavity of an electric heated oven during a cycle, expressed in kWh, rounded to the second decimal place;
- $SEC_{gas\ cavity}$  = Specific Energy Consumption required to heat a standardised load in a cavity of a gas-fired oven during a cycle, expressed in MJ, rounded to the second decimal place;
- $V$  = Volume of the cavity of the 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 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 an oven during a cycle, expressed in MJ, rounded to the second decimal place.

## 2. HOBs

### 2.1. Electric hobs

Measuring the energy consumption of an electric hob shall be done for each cooking zone and cooking area separately. The energy consumption of an electric cooking zone or area in a hob ( $EC_{electric\ cooking}$ ) is measured in Wh per kg of water heated in a normalised measurement (Wh/kg) and rounded to the first decimal place.

### 2.2. Gas hobs

The energy efficiency of gas burners in a 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.

### 2.3. Mixed electric/gas hobs

Mixed electric and gas hobs are treated in the measurements as two separate appliances. Electric cooking zones and cooking areas of the mixed hobs shall follow the provisions of the previous section 2.1 and cooking zones heated by gas burners shall follow the provisions of the previous section 2.2.

## 3. RANGE HOODS

### 3.1. Calculation of the Energy Efficiency Index ( $EEI_{hood}$ )

The Energy Efficiency Index ( $EEI_{hood}$ ) is calculated as:

$$EEI_{hood} = \frac{AEC_{hood}}{SAEC_{hood}} \times 100$$

and is rounded to the first decimal place.

Where:

- $SAEC_{hood}$  = Standard Annual Energy consumption of the range hood in kWh/a, rounded to the first decimal place;
- $AEC_{hood}$  = Annual Energy Consumption of the range hood in kWh/a, rounded to the first decimal place.

The Specific Annual Energy Consumption ( $SAEC_{hood}$ ) of a range hood shall be calculated as:

$$SAEC_{hood} = 0.55 \times (W_{BEP} + W_L) + 15.3$$

Where:

- $W_{BEP}$  is the electric power input of the range hood at the best efficiency point, in Watt and rounded to the first decimal place;
- $W_L$  is the nominal electric power input of the lighting system of the range hood on the cooking surface, in Watt and rounded to the first decimal place.

The Annual Energy Consumption ( $AEC_{hood}$ ) of a range hood is calculated as:

- i) for the fully automatic range hoods:

$$AEC_{hood} = \left[ \frac{(W_{BEP} \times t_H \times f) + (W_L \times t_L)}{t_H \times 1.000} + \frac{P_o \times (1.440 - t_H \times f)}{2 \times t_H \times 1.000} + \frac{P_s \times (1.440 - t_H \times f)}{2 \times t_H \times 1.000} \right] \times 365$$

- ii) for all other range hoods:

$$AEC_{hood} = \frac{[W_{BEP} \times (t_H \times f) + W_L \times t_L]}{60 \times 1000} \times 365$$

Where:

- $t_L$  is the average lighting time per day, in minutes ( $t_L=120$ );
- $t_H$  is the average running time per day for range hoods, in minutes, ( $t_H=60$ );
- $P_o$  is the electric power input in off-mode of the range hood, in Watt and rounded to the second decimal place;
- $P_s$  is the electric power input in standby mode of the range hood, in Watt and rounded to the second decimal place;
- $f$  is the time increase factor, calculated and rounded to the first decimal place, as:

$$f = 2 - (FDE_{hood} \times 3.6) / 100$$

### 3.2. Calculation of the Fluid Dynamic Efficiency ( $FDE_{hood}$ )

The Fluid Dynamic Efficiency ( $FDE_{hood}$ ) at the best efficiency point is calculated by the following formula, and is rounded to the first decimal place:

$$FDE = \frac{Q_{BEP} \times P_{BEP}}{3600 \times W_{BEP}} \times 100$$

Where:

- $Q_{BEP}$  is the flow rate of the range hood at best efficiency point, expressed in  $m^3/h$  and rounded to the first decimal place;
- $P_{BEP}$  is the static pressure difference of the range hood at best efficiency point, expressed in Pa and rounded to the nearest integer;
- $W_{BEP}$  is the electric power input of the range hood at the best efficiency point, expressed in Watt and rounded to the nearest integer.

### 3.3. Calculation on the limitation of the exhaust air

**3.3.1** Range hoods with a maximum air flow in any of the available setting higher than  $650 m^3/h$  shall automatically revert to an air flow lower than or equal to  $650 m^3/h$  in a time  $t_{limit}$ . This is the time limit to extract a volume of air of  $100 m^3$  by the range hood operating with an airflow higher than  $650 m^3/h$ , before automatically switching to an airflow of  $650 m^3/h$  or lower. It is calculated, expressed in minutes and rounded to the nearest integer as:

$$t_{limit} = \frac{6000m^3}{Q_{max}} \quad (7)$$

Where:

$Q_{max}$  is the maximum air flow of the range hood, including intensive/boost mode if present, in  $m^3/h$  and rounded to the first decimal place.

The mere presence of a manual switch or setting decreasing the air flow of the appliance to a value lower than or equal to  $650 m^3/h$  is not considered fulfilling this requirement.

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<sup>7</sup> see  $V = \int_0^t \frac{Q_{max}}{60} \times d(t)$  which can be simplified to  $t_{limit} = \frac{V_{max}}{Q_{max}} \times 60$

Where:

- $V_{max}$  is the maximum volume of air to be extracted, set at  $100 m^3$ ;
- $Q_{max}$  is the maximum air flow of the range hood, including intensive/boost mode if present;
- $t$  is the time expressed in minutes and rounded to the nearest integer;
- $d(t)$  is the total time till the air volume of  $100m^3$  has been reached;
- $t_{limit}$  is the time limit, expressed in minutes and rounded to the nearest integer, needed to extract  $100 m^3$ .



**3.3.2** For range hoods with automatic functioning mode during the cooking period:

- the activation of the automatic functioning mode shall be possible only through a manual operation by the user, either on the hood or elsewhere;
- the automatic functioning mode shall revert to manual control after no more than 10 minutes from the moment the automatic function switches off the motor.

**3.4. Illumination of lighting system ( $E_{middle}$ )**

The average illumination of the lighting system on the cooking surface ( $E_{middle}$ ) is measured in lux and rounded to the nearest integer.

**3.5. Noise**

The Noise Value (in dB) is measured as the airborne acoustical A-weighted sound power emissions (weighted average value -  $L_{WA}$ ) of a range hood at the highest setting for normal use, intensive or boost excluded, and rounded to the nearest integer.

### ANNEX III

#### Verification procedure for market surveillance purposes

When performing the market surveillance checks referred to in Article 3(2) of 2009/125/EC, the authorities of the Member States shall apply the following verification procedure for the requirements set out in Chapter 3 and Annex I, using the measurement and calculation methods set out in Annex II:

1. The Member State authorities shall test one single unit per model.
2. The model shall be considered to comply with the applicable requirements set out in Annex I to this Regulation if the values in the technical documentation comply with the requirements set out in that Annex and if testing of the relevant model parameters listed in Annex I and Table 7 shows compliance for all of those parameters.
3. If the result referred to in point 2 is not achieved, the Member State authorities shall randomly select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more different models which, in accordance with Chapter 4, have been listed as equivalent model in the manufacturer's technical documentation.
4. The model shall be considered to comply with the applicable requirements set out in Annex I to this Regulation if testing of the relevant model parameters listed in Annex I and Table 7 shows compliance for all of those parameters.
5. If the results referred to in point 4 are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.

The verification tolerances defined in this Annex relate only to the verification of the measured parameters by Member State authorities and shall not be used by the manufacturer or the importer as an allowed tolerance to establish the values in the technical documentation.

<b>Table 7: Verification tolerances</b>	
Measured parameters	Verification tolerances
Total nominal power for electric oven (P)	The determined value <sup>(*)</sup> shall not exceed the declared value of P by more than 5%.
Total nominal heat input for gas oven (HI)	The determined value <sup>(*)</sup> shall not exceed the declared value of HI by more than 5%.
Mass of the oven (M)	The determined value <sup>(*)</sup> shall not exceed the declared value of M by more than 5%.
Volume of the cavity of the oven (V)	The determined value <sup>(*)</sup> shall not exceed the declared value of V by more than 5%.
Nominal power for electric cavity (P)	The determined value <sup>(*)</sup> shall not exceed the declared value of P by more than 5%.
Nominal heat input for gas cavity (P)	The determined value <sup>(*)</sup> shall not exceed the declared value of P by more than 5%.
$EEl_{cavity}, EC_{electric\ cavity}, EC_{gas\ cavity}$	The determined value <sup>(*)</sup> shall not exceed the declared value of $EEl_{cavity}, EC_{electric\ cavity}, EC_{gas\ cavity}$ by more than 5%.
Total nominal power for electric hob ( $P_{tot}$ )	The determined value <sup>(*)</sup> shall not exceed the declared value of $P_{tot}$ by more than 5%.
Total nominal heat input for gas hob ( $HI_{tot}$ )	The determined value <sup>(*)</sup> shall not exceed the declared value of $HI_{tot}$ by more than 5%.
Power per electric heated cooking zone and/or area (P)	The determined value <sup>(*)</sup> shall not exceed the declared value of P by more than 5%.

Power per burner (P)	The determined value <sup>(*)</sup> shall not exceed the declared value of P by more than 5%.
EC <sub>electric cooking</sub> , EE <sub>gas burner</sub>	The determined value <sup>(*)</sup> shall not exceed the declared value of EC <sub>electric cooking</sub> , EE <sub>gas burner</sub> by more than 5%.
EEI <sub>hood</sub> , AEC <sub>hood</sub> , W <sub>BEP</sub> , W <sub>L</sub> , P <sub>o</sub> , P <sub>s</sub>	The determined value <sup>(*)</sup> shall not exceed the declared value of EEI <sub>hood</sub> , AEC <sub>hood</sub> , W <sub>BEP</sub> , W <sub>L</sub> , P <sub>o</sub> , P <sub>s</sub> by more than 5%.
FDE <sub>hood</sub> , Q <sub>BEP</sub> , P <sub>BEP</sub>	The determined value <sup>(*)</sup> shall not exceed the declared value of FDE <sub>hood</sub> , Q <sub>BEP</sub> , P <sub>BEP</sub> by more than 5%.
Q <sub>max</sub>	The determined value <sup>(*)</sup> shall not exceed the declared value of Q <sub>max</sub> by more than 8%.
E <sub>middle</sub>	The determined value <sup>(*)</sup> shall not exceed the declared value of E <sub>middle</sub> by more than 5%.
Sound power level L <sub>WA</sub>	The determined value <sup>(*)</sup> shall not exceed the declared value.

(\*) The arithmetic average of the values determined in the case of three additional units tested as prescribed in point 3.

## ANNEX IV Benchmarks

At the time of entry into force of this Regulation, the best-performing ovens hobs and range hoods available on the market in terms of their energy performance were identified as follows:

ovens	Electric	$EEl_{cavity} = 53.8$
	Gas	$EEl_{cavity} = 56.7$
hobs	Electric	$EC_{electric\ cooking} = 169.3$
	Gas	$EE_{gas\ burner} = 66.7\%$
range hoods	Air flow	$FDE_{hood} = 22$
	Noise	51dB at 550 m <sup>3</sup> /h ; 57 dB at 750 m <sup>3</sup> /h
	Grease filtering	$GFE_{hood} = 91\%$
	Lighting efficiency	$LE_{hood} = 29\%$