

Solid Fuel Boilers

Ecodesign and Energy Labelling Guidance Note

November 2020

Introduction

This guidance note is intended to assist suppliers (i.e. manufacturers, importers or authorised representatives¹) of solid fuel boilers in meeting their obligations relating to ecodesign and energy labelling.

It provides a general overview of the current ecodesign and energy labelling requirements for solid fuel boilers and guidance on the measurements and calculations that should be applied in determining the values displayed on the product energy label, the product information sheet, and as required in the technical documentation demonstrating the compliance of the product with the energy labelling and ecodesign requirements.

The relevant legislation

The requirements for ecodesign and energy labelling for products being placed on the market are set out in the following European regulations and discussed further in the following sections.

- Regulation (EU) 2015/1187 with regard to energy labelling of solid fuel boilers and packages of a solid fuel boiler, supplementary heaters, temperature controls and solar devices (in force since 2017 and applicable to products with a nominal heat output of less than or equal to 70 kW) – these regulations can be found here: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02015R1187-20170307&from=EN>
- Regulation (EU) 2015/1189 with regard to the ecodesign requirements for solid fuel boilers (in force since January 2020 and applicable to products with a nominal heat output of less than or equal to 500 kW) – these regulations can be found here: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02015R1189-20170109&from=EN>

It is important for suppliers to be familiar with these regulations, to ensure that products you place on the market are compliant with the regulations.

DISCLAIMER

SEAI has developed this guidance to help relevant entities understand and fulfil their obligations under the ecodesign and energy labelling regulations. The specific requirements for ecodesign and energy labelling are contained in the above-mentioned delegated acts and this guidance document should not be used as a sole resource for demonstrating compliance. It is the individual supplier's responsibility to ensure compliance with the relevant regulatory requirements.

¹ further described in Appendix 1.

ENERGY LABELLING

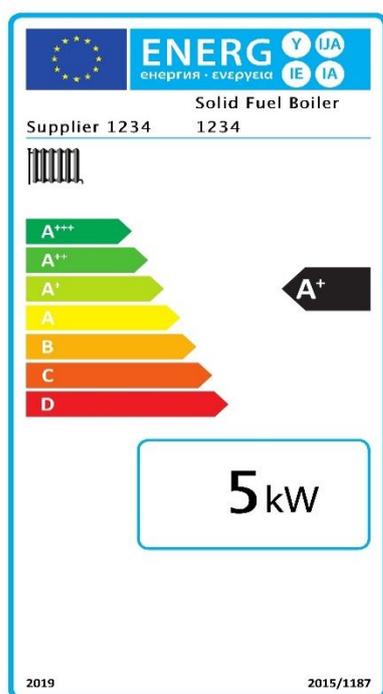
Regulation (EU) 2015/1187 requires that suppliers of solid fuel boilers with a nominal heat output of $\leq 70 \text{ kW}$ provide the following product information.

Energy Label

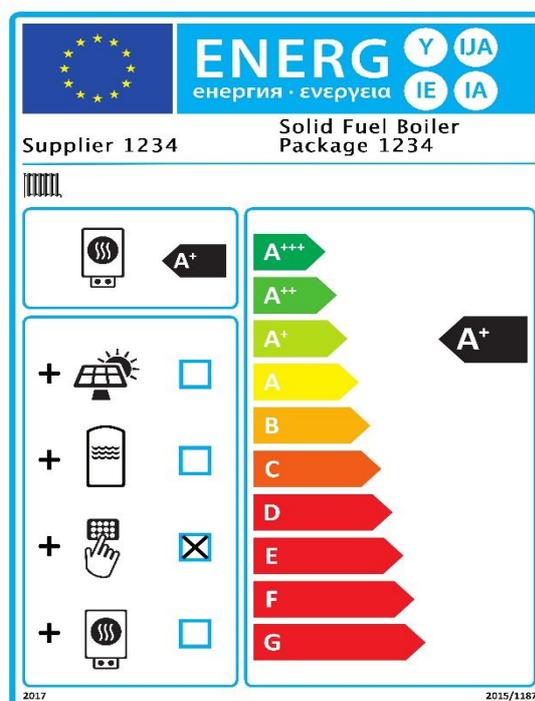
A copy of the energy label in accordance with Section 1 of Annex III of Regulation (EU) 2015/1187 must be provided. The format of the energy label depends on the configuration of the product in question – as supplied by the supplier and after any applicable date.

Some of the current formats for solid fuel boilers and solid fuel boiler packages² are shown in the examples provided below – refer to Annex III of the regulation to confirm which format applies to your specific models.

Solid fuel boiler label



Solid fuel boiler package label



The energy label must be provided with each unit sold. In addition, suppliers must also make an electronic version of the label available to retailers.

A copy of the energy label should also be provided to the market surveillance authority (MSA) when requested.

² a package offered to the end-user containing a solid fuel boiler combined with one or more supplementary heaters, one or more temperature controls or one or more solar devices – therefore a boiler with a temperature control device, for example, is considered a package.

Product Information Sheet

Suppliers must provide a copy of the product information sheet (also referred to as the 'product fiche') with each unit sold, in accordance with Section 1 of Annex IV of Regulation (EU) 2015/1187 and which must contain the information below, in the following order.

- a) supplier's name or trademark
- b) supplier's model identifier
- c) the energy efficiency class of the model
- d) the rated heat output (X,X kW)
- e) the energy efficiency index
- f) the seasonal space heating energy efficiency in (X%)
- g) any specific precautions that shall be taken when the solid fuel boiler is assembled, installed or maintained
- h) in the case of solid fuel cogeneration boilers, the electrical efficiency (%)

The product information sheet must be provided in the product brochure or other product literature. One product information sheet may cover a number of boilers marketed by the same supplier. An example product information sheet is shown below.

Product Information Sheet (Fiche) – Solid fuel boiler

Product Information Sheet

Delegated Regulation (EU) 2015/1187

Supplier name or trademark	Supplier 1234
Model identifier	Solid Fuel Boiler 1234
Energy Efficiency Class	A+
Rated heat output	5 kW
Energy Efficiency Index	110
Seasonal space heating energy efficiency	97 %
Specific precautions	List any specific precautions to be taken when the appliance is assembled, installed or maintained.

In addition, for packages of solid fuel boilers, supplementary heaters, temperature controls and/or solar devices , a product information sheet providing the information listed in Section 2 of Annex IV of Regulation (EU) 2015/1187, is to be provided by the supplier with each package. This information must include the supplementary data as shown in the following figure.

A product information sheet must be provided with each boiler unit or package that is sold. In addition, suppliers must also make an electronic version of the product information sheet available to retailers.

A copy of the product information sheet should also be provided to the Market Surveillance Authority (MSA) when requested.

Product Information Sheet (Fiche) – supplementary information to be provided for packages of a solid fuel boiler, supplementary heater, temperature and/or solar devices

Energy efficiency index of solid fuel boiler 1

Temperature control
 From temperature control fiche

Class I = 1, Class II = 2, Class III = 1.5, Class IV = 2, Class V = 3, Class VI = 4, Class VII = 3.5, Class VIII = 5

2

+

Supplementary boiler
 From boiler fiche

Seasonal space heating energy efficiency (in %) or energy efficiency index

3

(- 'I') x 0.1 =

+

Solar contribution
 From solar device fiche

Collector size (in m²)

Tank volume (in m³)

Collector efficiency (in %)

Tank rating
 A* = 0.95, A = 0.91,
 B = 0.86, C = 0.83,
 D-G = 0.81

4

('III' x + 'IV' x) x 0.9 x (/100) x =

+

Supplementary heat pump
 From heat pump fiche

Seasonal space heating energy efficiency (in %)

5

(- 'I') x 'II' =

+

Solar contribution AND supplementary heat pump
 Select smaller value

6

0.5 x OR 0.5 x =

-

Energy efficiency index of package 7

Energy efficiency class of package

<input type="checkbox"/>									
G	F	E	D	C	B	A	A*	A**	A***
<30	≥30	≥34	≥36	≥75	≥82	≥90	≥98	≥125	≥150

The energy efficiency of the package of products provided for in this fiche may not correspond to its actual energy efficiency once installed in a building, as this efficiency is influenced by further factors such as heat loss in the distribution system and the dimensioning of the products in relation to building size and characteristics.

Technical Documentation

Suppliers of solid fuel boilers must prepare specific technical documentation in accordance with Section 1 of Annex V of Regulation (EU) 2015/1187. This includes the specific information outlined in the Table 4 of Annex V, to be provided in the tabular format specified – Table 4 is shown in Appendix 2.

For packages of solid fuel boilers, supplementary heaters, temperature controls and/or solar devices, the specific technical documentation requirements are outlined in Section 2 of Annex V. Such technical documentation should be accompanied by evidence supporting the information presented in Table 4, such as test reports, calculations etc.

EPREL

The European Product Database for Energy Labelling (EPREL) has been set up under EU Regulation 2017/1369 to provide important energy efficiency information to consumers and to facilitate market surveillance activities and enforcement. Note that, while there is no direct reference to EPREL in Regulation (EU) 2015/1187, it is now a legal requirement for suppliers of products covered by the EU Energy Labelling Regulation and placed on the market since August 2017, to upload information about their products onto the database before placing these products on the market in the EU.

EPREL also has a useful feature allowing the supplier to generate a product energy label and product information sheet once the product information has been populated in the EPREL database. SEAI has prepared a guidance document that provides some further information in relation to EPREL which can be found at the following link: https://www.seai.ie/publications/EPREL-Supplier-Guidance_Final-5.pdf

Other Energy Labelling Requirements

There are a number of further requirements that also apply to suppliers of solid fuel boilers and/or packages of solid fuel boilers, supplementary heaters, temperature controls and/or solar devices:

- any visual advertisement or technical promotional material relating to a specific model or package (which may be, for example, online or in hard copy) must make reference to the energy efficiency class and the applicable range of energy efficiency classes
- if a supplier also offers solid fuel boilers or packages for sale either online or in a physical sales outlet (therefore also acting as a retailer), then the specific energy labelling requirements as per Annex VII of Regulation (EU) 2015/1187 must be followed.

More detailed descriptions of supplier obligations are outlined in Articles 3, 4 and 6 of the Energy Labelling Regulation (EU) 2017/1369³.

³ available here: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R1369&from=EN>

ECODESIGN

Regulation (EU) 2015/1189 requires suppliers of solid fuel boilers with a nominal heat output of $\leq 500 \text{ kW}$ to ensure the products they supply meet minimum ecodesign requirements in terms of seasonal space heating efficiency (η_s) and emissions (PM, OGC, CO, NO_x), and requires suppliers to provide specific ecodesign product information. The minimum ecodesign requirements are outlined in Annex II of Regulation (EU) 2015/1189.

The ecodesign requirements, while related to those of energy labelling in terms of energy efficiency performance, are separate and distinct aspects that must be addressed by manufacturers.

In ensuring that products are compliant, suppliers must undertake a conformity assessment process to demonstrate that the specific ecodesign requirements have been fulfilled.

When this process is complete, suppliers⁴ must prepare a Declaration of Conformity (DoC), in accordance with Article 5 and Annex VI of the Ecodesign Directive 2009/125/EC and then affix the CE mark to the product.

Technical Documentation

When requested by a market surveillance authority (MSA), suppliers should provide the following documentation, related to the conformity assessment process, to demonstrate product compliance:

- the Declaration of Conformity
- the information required by Section 2 (c) of Annex II of Regulation (EU) 2015/1189, including the Table 1 information as shown in Appendix 2 - note that this information can be combined with the information required in Table 4 relating to energy labelling, outlined previously
- evidence supporting the information presented in Table 1 such as test reports, calculations, etc.
- evidence of the information required by Section 2 (a) and (b) of Annex II of Regulation (EU) 2015/1189 being presented on free access websites and in instruction manuals.

Note also that it is a requirement that suppliers retain all documentation related to the conformity assessment process of a product so that it is available for inspection by an MSA for a period of 10 years after it was last placed on the market.

⁴ Note that importers do not need to undertake the conformity assessment process or prepare a Declaration of Conformity – rather they need to be able to provide a copy of the Declaration of Conformity prepared by the manufacturing company and the relevant conformity assessment documentation.

Measurements and Calculations for Ecodesign and Energy Labelling

The parameters laid down in both Regulation (EU) 2015/1187 and Regulation (EU) 2015/1189 and their means of calculation are similar, given that they are interrelated.

Regulation (EU) 2015/1187 requires the determination of the energy efficiency index (EEI), in order to identify the relevant energy efficiency class, which is informed by the seasonal space heating efficiency.

Regulation (EU) 2015/1189 requires the determination of the seasonal space heating efficiency, while also requiring the determination of the seasonal space heating emissions.

Methodologies related to the calculation of these parameters are outlined in the 'Measurements and Calculation' annexes of both regulations, as summarised in the following:

The **energy efficiency index** (EEI) is calculated as:

$$EEI = \eta_{son} \times 100 \times BLF - F(1) - F(2) \times 100 + F(3) \times 100$$

The **seasonal space heating energy efficiency** (η_s) is calculated as:

$$\eta_s = \eta_{son} - F(1) - F(2) + F(3)$$

where (in both calculations):

η_{son} is the seasonal space heating energy efficiency in active mode (%), calculated as set out in each regulation

F(1) accounts for a negative contribution due to adjusted contributions of temperature controls: F(1) = 3%

F(2) accounts for a contribution by auxiliary electricity consumption, calculated as set out in each regulation

F(3) accounts for a contribution by the electrical efficiency of solid fuel cogeneration boilers, calculated as set out in each regulation

Seasonal space heating emissions (E_s) are calculated as:

$$E_s = 0.85 \times E_{s,p} + 0.15 \times E_{s,n}$$

(for manually stoked solid fuel boilers that can be operated at 50 % of the rated heat output in continuous mode, and for automatically stoked solid fuel boiler)

or

$$E_s = E_{s,n}$$

(for manually stoked solid fuel boilers that cannot be operated at 50 % or less of the rated heat output in continuous mode, and for solid fuel cogeneration boilers)

where:

$E_{s,p}$ are the emissions of respectively particulate matter, organic gaseous compounds, carbon monoxide and nitrogen oxides, measured at 30 % or 50 % of the rated heat output, as applicable

$E_{s,n}$ are the emissions of respectively particulate matter, organic gaseous compounds, carbon monoxide and nitrogen oxides, measured at the rated heat output

Energy Efficiency Classes

The energy efficiency classes for a given EEI are specified in Table 1, Annex II of Regulation (EU) 2015/1187 and shown in the following.

Energy Efficiency classes of solid fuel boilers

Table 1

Energy efficiency classes of solid fuel boilers

Energy efficiency class	Energy efficiency index (EEI)
A ⁺⁺⁺	$EEI \geq 150$
A ⁺⁺	$125 \leq EEI < 150$
A ⁺	$98 \leq EEI < 125$
A	$90 \leq EEI < 98$
B	$82 \leq EEI < 90$
C	$75 \leq EEI < 82$
D	$36 \leq EEI < 75$
E	$34 \leq EEI < 36$
F	$30 \leq EEI < 34$
G	$EEI < 30$

Standards

The following standards/test methods are identified by the European Commission for use in determining the parameters outlined above, as per Commission Communication 2017/C 076/01 and are available here⁵:

Commission Communication 2017/C 076/01

Parameter	Reference/title	Notes
General conditions for testing	EN303-5:2012 Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW — Terminology, requirements and marking, 5.7 Conducting the boiler performance test	Condensing boilers are to be tested in condensing mode. The applicable part load (30 % or 50 %) is to be used instead of the minimum heat output.
Useful efficiency at rated heat output η_n	EN303-5:2012, 3.15 boiler efficiency, 5.10.3.1 Direct method	Corresponds to η_k measured at rated heat output P_r , but with Q and Q_B expressed in gross calorific value.
Useful efficiency at applicable part load η_p	EN303-5:2012, 3.15, 5.10.3.1	Corresponds to η_k measured at applicable part load (30 % or 50 %), but with Q and Q_B expressed in gross calorific value.
Useful heat output at rated heat output P_n	EN303-5:2012, 3.6 heat output	Corresponds to heat output Q measured at rated heat output P_r , but expressed in gross calorific value.
Useful heat output at applicable part load P_p	EN303-5:2012, 3.6	Corresponds heat output Q measured at applicable part load (30 % or 50 %), but expressed in gross calorific value.
Rated heat output P_r	EN303-5:2012, 3.7 nominal heat output, 5.8.2 Determining the nominal heat output	Corresponds to nominal heat output Q_N (when measured with the preferred fuel), but expressed in gross calorific value.
Electrical power requirement at maximum heat output e_{lmax}	EN303-5:2012, 5.8.5 Electrical consumption EN15456:2008, Heating boilers — Electrical power consumption for heat generators — System boundaries — Measurements	Corresponds to P_{aux} 100 in clause 3.4.1 of EN15456:2008, but any electricity consumption from a back-up heater and from incorporated secondary emission abatement equipment is not taken into account.

⁵ [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017XC0310\(03\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017XC0310(03)&from=EN)

Electrical power requirement at minimum heat output e_{min}	EN303-5:2012, 5.8.5 EN15456:2008	Corresponds to P_{aux} , g in clause 3.4.1 of EN15456:2008 measured at applicable part load operation (30 % or 50 %), but any electricity consumption from a back-up heater and from incorporated secondary emission abatement equipment is not taken into account.
Standby mode power consumption P_{SB}	EN303-5:2012, 5.8.5 EN15456:2008	Corresponds to $P_{aux, sb}$, but any electricity consumption from incorporated secondary emission abatement equipment is not taken into account.
Gross calorific value moisture free GCV_{mf}	EN 14918:2009 Solid biofuels — Determination of calorific value, 10.4 Expression of results	Corresponds to $q_{v, gr, d}$
Moisture content of the fuel M	EN 14918:2009, 10.4	Corresponds to M_{ar} , but expressed as fraction instead of as percentage
Characteristics for [fuel type]	EN303-5:2012, Table 7 — test fuels, water content and ash content for [fuel type]	Refer to 'Notes' for blended fossil fuel/biomass briquettes

Technical documentation (such as laboratory test reports) provided to the MSA to demonstrate the energy labelling and ecodesign compliance of a relevant product, should be conducted in accordance with the above standards.

Appendix 1:

Definition of a supplier

A 'supplier' is defined as "a manufacturer established in the Union, the authorised representative of a manufacturer who is not established in the Union, or an importer, who places a product on the Union market".

These entities are further defined as follows:

A 'manufacturer' is "a natural or legal person who manufactures a product or has a product designed or manufactured and markets that product under its name or trademark".

An 'importer' is "a natural or legal person established in the Union who places a product from a third country on the EU market".

An 'authorised representative' is "a natural or legal person established in the Union who has received a written mandate from the manufacturer to act on its behalf in relation to specified tasks".

Appendix 2:

Energy Labelling - 'Table 4' Technical parameters for solid fuel boilers and solid fuel cogeneration boilers

Table 4

Technical parameters for solid fuel boilers and solid fuel cogeneration boilers

Model identifier							
Stoking mode: [Manual: the boiler should be operated with a hot water storage tank of a volume of at least x (*) litre/Automatic: it is recommended that the boiler be operated with a hot water storage tank of a volume of at least x (**) litre]							
Condensing boiler: [yes/no]							
Solid fuel cogeneration boiler: [yes/no]				Combination boiler: [yes/no]			
Fuel		Preferred fuel (only one):		Other suitable fuel(s):			
Log wood, moisture content \leq 25 %		[yes/no]		[yes/no]			
Chipped wood, moisture content 15-35 %		[yes/no]		[yes/no]			
Chipped wood, moisture content $>$ 35 %		[yes/no]		[yes/no]			
Compressed wood in the form of pellets or briquettes		[yes/no]		[yes/no]			
Sawdust, moisture content \leq 50 %		[yes/no]		[yes/no]			
Other woody biomass		[yes/no]		[yes/no]			
Non-woody biomass		[yes/no]		[yes/no]			
Bituminous coal		[yes/no]		[yes/no]			
Brown coal (including briquettes)		[yes/no]		[yes/no]			
Coke		[yes/no]		[yes/no]			
Anthracite		[yes/no]		[yes/no]			
Blended fossil fuel briquettes		[yes/no]		[yes/no]			
Other fossil fuel		[yes/no]		[yes/no]			
Blended biomass (30-70 %) and fossil fuel briquettes		[yes/no]		[yes/no]			
Other blend of biomass and fossil fuel		[yes/no]		[yes/no]			
Characteristics when operating with the preferred fuel:							
Seasonal space heating energy efficiency η_s [%]:							
Energy efficiency index <i>EEI</i> :							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Useful heat output				Useful efficiency			
At rated heat output	P_n (***)	x.x	kW	At rated heat output	η_u	x.x	%
At [30 %/50 %] of rated heat output, if applicable	P_p	[x.x/ N.A.]	kW	At [30 %/50 %] of rated heat output, if applicable	η_p	[x.x/ N.A.]	%
For solid fuel cogeneration boilers: Electrical efficiency				Auxiliary electricity consumption			
				At rated heat output	e_{aux}	x.xxx	kW
				At [30 %/50 %] of rated heat output, if applicable	e_{aux}	[x.xxx/ N.A.]	kW
At rated heat output	η_{el}	x.x	%	Of incorporated secondary emission abatement equipment, if applicable		[x.xxx/ N.A.]	kW
				In standby mode	P_{sb}	x.xxx	kW
Contact details		Name and address of the supplier					

'Table 1' Information for solid fuel boilers

Table 1

Information requirements for solid fuel boilers

Model identifier(s)							
Stoking mode: [Manual: the boiler should be operated with a hot water storage tank of a volume of at least x (*) litre/Automatic: it is recommended that the boiler be operated with a hot water storage tank of a volume of at least x (**) litre]							
Condensing boiler: [yes/no]							
Solid fuel cogeneration boiler: [yes/no]				Combination boiler: [yes/no]			
Fuel	Preferred fuel (only one):	Other suitable fuel(s):	η , [%]:	Seasonal space heating emissions (***)			
				PM	OGC	CO	NO _x
				[x] mg/m ³			
Log wood, moisture content ≤ 25 %	[yes/no]	[yes/no]					
Chipped wood, moisture content 15-35 %	[yes/no]	[yes/no]					
Chipped wood, moisture content > 35 %	[yes/no]	[yes/no]					
Compressed wood in the form of pellets or briquettes	[yes/no]	[yes/no]					
Sawdust, moisture content ≤ 50 %	[yes/no]	[yes/no]					
Other woody biomass	[yes/no]	[yes/no]					
Non-woody biomass	[yes/no]	[yes/no]					
Bituminous coal	[yes/no]	[yes/no]					
Brown coal (including briquettes)	[yes/no]	[yes/no]					
Coke	[yes/no]	[yes/no]					
Anthracite	[yes/no]	[yes/no]					
Blended fossil fuel briquettes	[yes/no]	[yes/no]					
Other fossil fuel	[yes/no]	[yes/no]					
Blended biomass (30-70 %)/fossil fuel briquettes	[yes/no]	[yes/no]					
Other blend of biomass and fossil fuel	[yes/no]	[yes/no]					
Characteristics when operating with the preferred fuel only:							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Useful heat output				Useful efficiency			
At rated heat output	P_r (***)	x,x	kW	At rated heat output	η_r	x,x	%
At [30 %/50 %] of rated heat output, if applicable	P_p	[x,x/N.A.]	kW	At [30 %/50 %] of rated heat output, if applicable	η_p	[x,x/N.A.]	%
For solid fuel cogeneration boilers: Electrical efficiency				Auxiliary electricity consumption			
				At rated heat output	eI_{max}	x,xxx	kW
At rated heat output	$\eta_{el,n}$	x,x	%	At [30 %/50 %] of rated heat output, if applicable	eI_{min}	[x,xxx/N.A.]	kW
				Of incorporated secondary emission abatement equipment, if applicable		[x,xxx/N.A.]	kW
				In standby mode	P_{SB}	x,xxx	kW
Contact details	Name and address of the manufacturer or its authorised representative.						