

## Guide to ecodesign and energy labelling requirements for vacuum cleaners

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### Are you a manufacturer or importer of vacuum cleaners?

#### **Please be aware. There are requirements for energy efficiency and energy labelling of vacuum cleaners.**

Vacuum cleaners must meet ecodesign requirements. This means that the products must be designed in order to meet e.g. requirements for energy efficiency, cleaning performance, and maximum permissible sound power levels.

Vacuum cleaners must also be energy labelled.

#### **Which products?**

The requirements cover all electric operated vacuum cleaners and hybrid vacuum cleaners both for use in households and for professional use.

The requirements do not cover battery operated and wet vacuum cleaners, floor polishers, outdoor vacuum cleaners, or industrial vacuum cleaners.

#### **When?**

The requirements for energy labelling and ecodesign both apply from 1<sup>st</sup> September 2014.

The energy labelling requirements for vacuum cleaners include:

- Provision of printed EU energy label and product fiche from 1<sup>st</sup> September 2014.
- Information about energy efficiency class in advertisements and in technical promotion material from 1<sup>st</sup> September 2014.
- Making electronic versions of the energy label and product fiche available to dealers from 1<sup>st</sup> January 2015 for products placed on the market with a new model identifier.
- Display of the energy label and product fiche when vacuum cleaners are offered for sale through the internet (for products where electronic versions are made available). **(Check if published in O.J. before release of the fact sheet).**

The ecodesign requirements for vacuum cleaners include:

- Maximum allowed annual energy consumption from 1<sup>st</sup> September 2014. The requirements are tightened from 1<sup>st</sup> September 2017.
- Maximum allowed rated input power from 1<sup>st</sup> September 2014. The requirements are tightened from 1<sup>st</sup> September 2017.
- Minimum requirements for the dust pick-up performance on hard floor and carpets from 1<sup>st</sup> September 2014. The requirements are tightened from 1<sup>st</sup> September 2017.
- Maximum allowed dust re-emission percentage from 1<sup>st</sup> September 2017.
- Maximum allowed sound power level from 1<sup>st</sup> September 2017.
- Requirements regarding durability of the hose and motor life time from 1<sup>st</sup> September 2017.

## Who?

You have the responsibility of ensuring and documenting compliance with the requirements, if you are:

- a manufacturer in the EEA, that produces vacuum cleaners to be placed on the market in the EEA.
- an importer of vacuum cleaners from a country outside of EEA to be placed on the market in the EEA.
- an authorised representative in the EEA for a manufacturer that is situated in a country outside of EEA.

The above mentioned responsible parties are hereafter referred to as suppliers.

The EEA (European Economic Area) includes the EU member states and the EFTA countries.

## Why?

Vacuum cleaners account for a large share of the energy consumption in European households, public institutions and offices. The energy consumption of vacuum cleaners is estimated to be about 18 TWh in 2005 and is expected to increase to 34 TWh in 2020 if no energy savings measures are implemented.

Consequently, EU has decided to establish ecodesign and energy labelling requirements for vacuum cleaners.

### Where can I find more information?

Find relevant regulations on the last page of this guide, or read more about ecodesign and energy labelling on {insert national webpage}.

### Disclaimer

This guide presents the contents of the Regulations and is addressed to manufacturers, importers and others interested. The guide is not a substitution for the Regulations, in any case of doubt, the Regulations are applicable. This guide is not legally binding as a binding interpretation can only be made by the EU court.

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## Which products shall comply with the requirements?

The energy labeling and ecodesign requirements apply to electric mains operated vacuum cleaners including vacuum cleaners using both electricity and batteries. Table 1 shows vacuum cleaners which are covered by the requirements and to avoid doubt, vacuum cleaners that are exempted.

The requirements cover both household vacuum cleaners intended for domestic use and commercial vacuum cleaners for professional housekeeping purposes. Commercial vacuum cleaners are intended to be used by for instance cleaning staff and contracting cleaners in office, shop, hospital and hotel environments.

Household vacuum cleaners must be declared as such in the technical documentation pertaining to directive 2006/95/EC (Low Voltage Directive).

Commercial vacuum cleaners must be declared as such in the technical documentation pertaining to directive 2006/42/EC (Directive on Machinery).

**Table 1 Vacuum cleaners covered and exempted from the requirements**

The requirements apply to:	The requirements do <b>NOT</b> apply to:
<ul style="list-style-type: none"> <li>✓ Electric mains-operated vacuum cleaners for household and commercial use</li> <li>✓ Hybrid vacuum cleaners</li> <li>✓ General purpose vacuum cleaners (for both carpets and hard floors)</li> <li>✓ Vacuum cleaners for carpets only</li> <li>✓ Vacuum cleaners for hard floors only</li> <li>✓ Water filter vacuum cleaners</li> </ul>	<ul style="list-style-type: none"> <li>✗ Wet vacuum cleaners</li> <li>✗ Wet and dry vacuum cleaners</li> <li>✗ Solely battery operated vacuum cleaners</li> <li>✗ Robot vacuum cleaners</li> <li>✗ Industrial vacuum cleaners</li> <li>✗ Central vacuum cleaners</li> <li>✗ Floor polishers</li> <li>✗ Outdoor vacuum cleaners</li> </ul>

The requirements for energy labelling and ecodesign are based on the same principles and calculation methods. The Regulations cover the same products and the same set of definitions and standard conditions apply.

### **Definitions**

*Please see more detailed definitions in Article 2 of Regulation 665/2013/2013/EU or 666/2013/EU.*

**Vacuum cleaner:** An appliance that removes soil from a surface to be cleaned by means of an airflow created by underpressure developed within the unit

**Hybrid vacuum cleaner:** A vacuum cleaner that can be powered by both electric mains and batteries

**Battery operated vacuum cleaner:** A vacuum cleaner powered only by batteries

**Robot vacuum cleaner:** A battery operated vacuum cleaner, consisting of a mobile part and a docking station and/or other accessories to assist its operation

**Wet vacuum cleaner:** A vacuum cleaner that removes dry and/or wet material (soil) from the surface by applying water-based detergent or steam to the surface to be cleaned, including types commonly known as spray-extraction vacuum cleaners

**Dry vacuum cleaner:** A vacuum cleaner designed to remove soil that is principally dry (dust, fibre, threads), including types equipped with a battery operated active nozzle

**Battery operated active nozzle:** A cleaning head provided with an agitation device powered by batteries to assist dirt removal

**Wet and dry vacuum cleaner:** A vacuum cleaner designed to remove a volume of more than 2.5 litres, of liquid, in combination with the functionality of a dry vacuum cleaner

**Central vacuum cleaner:** A vacuum cleaner with a fixed underpressure source location and the hose connections located at fixed positions in the building

**Floor polisher:** An electrical appliance that is designed to protect, smoothen and/or render shiny certain types of floors, commonly also equipped with the auxiliary functionality of a vacuum cleaner

**Industrial vacuum cleaner:** A vacuum cleaner designed to be part of a production process, designed for removing hazardous material, heavy dust from building, foundry, mining or food industry, part of an industrial machine or tool and/or a commercial vacuum cleaner with a head width exceeding 0.50 m

**Outdoor vacuum:** An appliance that is designed for use outdoors to collect debris such as grass clippings and leaves into a collector by means of an airflow

### **Water filter vacuum cleaner**

A dry vacuum cleaner that uses more than 0.5 litre of water as the main filter medium, whereby the suction air is forced through the water entrapping the removed dry material as it passes through

## What are requirements for energy labelling?

From 1<sup>st</sup> September 2014 vacuum cleaners must be supplied with the EU energy label and a product fiche (data sheet).

The energy label includes the energy efficiency classes from A – G and the recognizable red and green arrows known from labelling of other household appliances. The label is identical in all EEA countries and includes pictograms instead of text in order to make the label easily understandable in all countries.

It is the responsibility of the manufacturer to provide the energy label and the product fiche with each individual vacuum cleaner model.

### Information on the label

The energy label must include the following information:

1. Energy efficiency class
2. Annual energy consumption in kWh per year
3. Dust re-emission class
4. Carpet cleaning performance class
5. Hard floor cleaning performance class
6. Sound power level (in dB)

### Energy efficiency classes on the label

From the 1<sup>st</sup> September 2014 the label must include the energy efficiency classes from A- G. From 1<sup>st</sup> September 2017 the energy efficiency classes A<sup>+</sup>, A<sup>++</sup> and A<sup>+++</sup> should be added on top of the labelling scale.

**Table 2 Energy efficiency classes on the label**

Energy efficiency classes	Date of application
A - G	1 <sup>st</sup> September 2014
A+++ - D	1 <sup>st</sup> September 2017

Figure 1 Energy label for general purpose vacuum cleaner from 1<sup>st</sup> September 2014

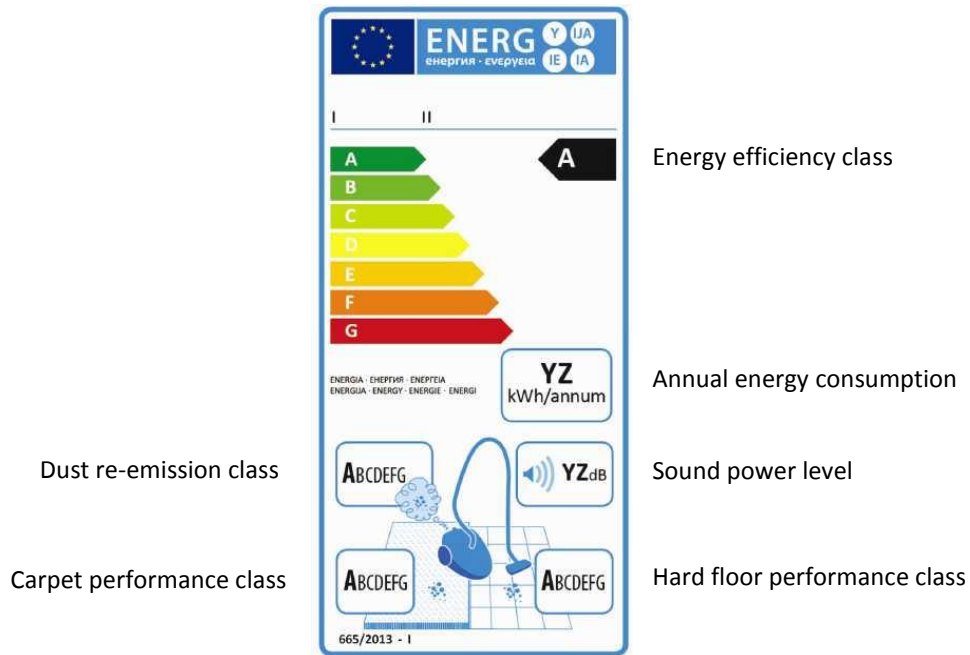
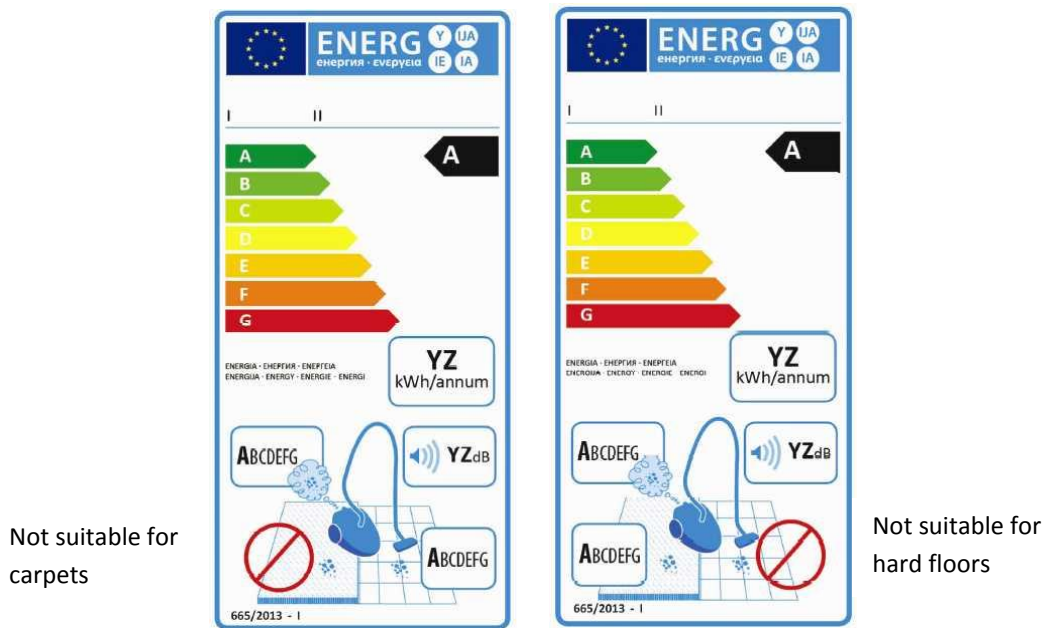


Figure 2 Energy label for vacuum cleaner solely for carpets or solely for hard floors from 1<sup>st</sup> September 2014



### Determination of energy efficiency classes

The energy efficiency class of the vacuum cleaner is determined by its annual energy consumption. The annual energy consumption is calculated on the basis of measured values of its power consumption and dust pick-up on carpets and/or hard floors depending on the vacuum cleaner type.

In the calculation it is assumed that the vacuum cleaner is performing 50 cleaning task per year of a standard dwelling surface of 87 m<sup>2</sup>.

For general purpose vacuum cleaners the annual energy consumption is calculated as an average of the values found for carpets and hard floors.

Please see more details about calculation and measurements in Annex VI point 3 of Regulation 665/2013/EU.

The correlation between the energy efficiency class and the annual energy consumption (AE) is shown in table 3.

**Table 3 Energy efficiency classes for vacuum cleaners**

Energy efficiency class	Annual energy consumption (AE) kWh/year	
	From 1 <sup>st</sup> September 2014	From 1 <sup>st</sup> September 2017
A+++	n/a	AE ≤ 10.0
A++	n/a	10.0 < AE ≤ 16.0
A+	n/a	16.0 < AE ≤ 22.0
A	AE ≤ 28.0	22.0 < AE ≤ 28.0
B	28.0 < AE ≤ 34.0	28.0 < AE ≤ 34.0
C	34.0 < AE ≤ 40.0	34.0 < AE ≤ 40.0
D	40.0 < AE ≤ 46.0	AE > 40.0
E	46.0 < AE ≤ 52.0	n/a
F	52.0 < AE ≤ 58.0	n/a
G	AE > 58.0	n/a

### Determination of cleaning performance classes

The cleaning performance class is based on the dust pick-up (*dpu*) of the vacuum cleaner on respectively hard floors and carpets. It is defined as the ratio of the mass of dust removed and applied to a test area.

The correlations between the cleaning performance class and the dust pick-up on carpets (*dpu<sub>c</sub>*) and the dust pick-up on hard floors (*dpu<sub>hf</sub>*) are shown in table 4.

Please see more details in Annex VI point 4 of Regulation 665/2013/EU.

**Table 4 Cleaning performance classes for vacuum cleaners**

Cleaning performance class	From 1 <sup>st</sup> September 2014	
	Dust pick up on carpets ( <i>dpu<sub>c</sub></i> )	Dust pick up on hard floor ( <i>dpu<sub>hf</sub></i> )
A	$dpu_c \geq 0.91$	$dpu_{hf} \geq 1.11$
B	$0.87 \leq dpu_c < 0.91$	$1.08 \leq dpu_{hf} < 1.11$
C	$0.83 \leq dpu_c < 0.87$	$1.05 \leq dpu_{hf} < 1.08$
D	$0.79 \leq dpu_c < 0.83$	$1.02 \leq dpu_{hf} < 1.05$
E	$0.73 \leq dpu_c < 0.79$	$0.99 \leq dpu_{hf} < 1.02$
F	$0.71 \leq dpu_c < 0.73$	$0.90 \leq dpu_{hf} < 0.99$
G	$dpu_c < 0.71$	$dpu_{hf} < 0.90$

### Determination of dust re-emission class

Dust re-emission is defined as the ration of the number of dust particles emitted by the vacuum cleaner to the number of the particles entering the suction inlet when feed with a specific amount of dust. The value includes not only dust measured at the vacuum cleaner outlet, but also dust emitted elsewhere either from leaks, or generated by the vacuum cleaner.

The dust re-emission must be determined while the vacuum cleaner is operating, at its maximum airflow.

The correlation between the dust re-emission class and the dust re-emission (*dre*) is shown in table 5.

**Table 5 Dust re-emission classes for vacuum cleaners**

Dust re-emission class	From 1 <sup>st</sup> September 2014
	Dust re-emission ( <i>dre</i> )
A	$dre \leq 0.02\%$
B	$0.02\% < dre \leq 0.08\%$
C	$0.08\% < dre \leq 0.20\%$
D	$0.20\% < dre \leq 0.35\%$
E	$0.35\% < dre \leq 0.60\%$
F	$0.60\% < dre \leq 1.00\%$
G	$dre > 1.00\%$

**Be aware:**

It is the actual measurement results without addition of tolerances that must be used for declaration of the energy efficiency class, cleaning performance class and dust re-emission class of the vacuum cleaner.

**Information on the product fiche**

The product fiche must include the information displayed on the label and in addition information on the rated input power.

**What are the ecodesign requirements?**

From 1<sup>st</sup> September 2014 vacuum cleaners are covered by ecodesign requirements. The requirements are implemented in two tiers and cover energy and power consumption, performance and functionality, and information.

The requirements are based on the same calculations and measurement methods as in the case of energy labelling.

**From 1<sup>st</sup> September 2014**

The ecodesign requirements include:

- Maximum allowed annual energy consumption. The requirement is tightened from 1<sup>st</sup> September 2017
- Maximum allowed rated input power. The requirement is tightened from 1<sup>st</sup> September 2017.
- Minimum requirements for dust pick-up on carpets and hard floors. The requirements are tightened from 1<sup>st</sup> September 2017.
- Information in booklet of instruction and on website of manufacturer (please see text box).

Water filter vacuum cleaners are exempted from the requirements until 1<sup>st</sup> September 2017.

**From 1<sup>st</sup> September 2017**

In addition to the ecodesign requirements mentioned above the requirements include:



- Maximum allowed dust re-emission
- Maximum allowed sound power level
- Minimum durability of the hose
- Minimum operational lifetime of the motor

Please see more details in Annex II of Regulation 666/2013/EU.

Please see overview of ecodesign requirements in table 6.

**Table 6 Ecodesign requirements for vacuum cleaners**

Type	Ecodesign requirement	
	From 1 <sup>st</sup> September 2014*	From 1 <sup>st</sup> September 2017
Annual energy consumption (AE)	Less than 62.0 kWh/year	Less than 43.0 kWh/year
Rated input power	Less than 1 600 W	Less than 900 W
Dust pick up on carpets	Greater or equal to 0.70	Greater or equal to 0.75
Dust pick up on hard floors	Greater or equal to 0.95	Greater or equal to 0.98
Dust re-emission	-	No more than 1.00 %
Sound power level	-	Less than or equal to 80 dB(A)
Durability of hose (if any)	-	Usable after more than 40 000 oscillations under strain
Operational motor lifetime	-	Greater than or equal to 500 hours

*\*The requirements do not apply to water filter vacuum cleaners*

**Information requirements:**

Information in booklet of instructions and on websites of the suppliers:

- short title or reference to the measurement and calculation methods used
- for hard floor vacuum cleaners, mention that they are not suitable for use on carpets with the delivered nozzle
- for carpet vacuum cleaners, mention that they are not suitable for use on hard floors with the delivered nozzle
- for appliances that are enabled to function also for other purposes than vacuum cleaning, the electric input power relevant to vacuum cleaning if this is lower than the rated input power of the appliance
- as which of the following three groups the vacuum cleaner should be tested: general purpose, hard floor or carpet vacuum cleaner

Information in part for professionals of the websites of the suppliers:

- information relevant for non-destructive disassembly for maintenance purposes, in particular in relation to the hose, suction inlet, motor, casing and cable
- information relevant for dismantling, in particular in relation to the motor and any batteries, recycling, recovery and disposal at end-of-life

## What are the requirements for information and documentation?

### Energy labelling

#### Energy label and product fiche

Vacuum cleaners placed on the market from 1<sup>st</sup> September 2014 must be provided with a printed energy label and product fiche. The product fiche must be included in the product brochure and other material provided with the vacuum cleaner, and it may cover a number of vacuum cleaner models from the same supplier. The products fiche must include the information displayed on the label and in addition information on the rated input power. There are requirements for the order of the informations.

From 1<sup>st</sup> January 2015 electronic versions of the energy label and product fiche must be made available to dealers for each vacuum cleaner placed on the market with a new model identifier. The layout of the electronic energy label must be identical with the printed label and the electronic versions of the label and the fiche must include the same information as the printed versions.

Please see requirements for the energy label and content of the product fiche in respectively Annex II and III of Regulation 665/2013/EU.

#### Informations in advertisements and promotional material

Any advertisement for a specific model vacuum cleaner must include the energy efficiency class of the model if it discloses price or energy-related informations. Also promotional material which describes the technical parameters of the vacuum cleaner must include the energy efficiency class. These responsibilities apply to both suppliers and dealers. Please see more in Article 3 and 4 of Regulation 665/2013/EU.

#### Labelling on the internet

The electronic energy label and product fiche must be shown on the display in proximity to the price when vacuum cleaners are offered for sale or hire through the internet. The label and the product fiche may be shown using a "nested display".

### Ecodesign

#### CE marking and EC declaration of conformity

Vacuum cleaners covered by ecodesign requirements must be CE marked when they are placed on the EEA market.

Furthermore an EC declaration of conformity must be made available by the supplier. In the EC declaration of conformity, the manufacturer or its authorised representative in the EEA must document and guarantee that their vacuum cleaner complies with all relevant EU regulations. Consequently, the reference number of the Ecodesign Regulation (EU) No 666/2013 must be mentioned in the declaration of conformity.

Find requirement for the contents of EC declaration of conformity in the Ecodesign Directive 2009/125/EC Annex VI.

## **Ecodesign and energy labelling**

### **Technical documentation**

The supplier is responsible for making sure that the vacuum cleaner has a technical documentation when placing it on the EEA market. The technical documentation must show that the vacuum cleaner is constructed in conformity with the ecodesign requirements and that the energy labelling of the vacuum cleaner is correct. The technical documentation must be compiled by the manufacturer.

The technical documentation must include:

- A copy of the calculations of the annual energy consumption and dust pick-up according to Annex II of Regulation 666/2013/EU.
- A copy of the information in the booklet of instructions
- The information listed in Annex IV point 1 of Regulation 665/2013/EU
- The information listed in Annex I point 2 of Regulation 666/2013/EU (the information is similar to the information that must be provided in the booklet of instructions and on the website of the supplier)

The technical information must include results from the test carried out. The information in the documentation might be based on calculations, extrapolated figures etc. based on measurements on similar models. In this case the technical documentation should include detailed information on how this has been done. Furthermore the technical documentation should include a list of all vacuum cleaners, where the information is based on the same basis – also referred to as equivalent models.

The technical documentation must also indicate applied harmonised standards and/or other applied technical standards or specifications.

The market surveillance authorities of EEA countries may request the technical documentation, and the supplier must provide it within a maximum of ten days after receiving the request.

The documentation relating to ecodesign requirements must be stored for a period of ten years after the last model of that product has been manufactured. In the case of energy labelling requirements the documentation must be stored in five years.

### **Measurement and calculation methods**

The power consumption of vacuum cleaners must be measured by a reliable, accurate and reproducible measurement procedure, which takes into account the generally recognised state of the art. A reproducible measurement procedure means that the measurement can be repeated and produce the same results.

Measurements must always be carried out in accordance with guidelines of the Regulations.

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## Where can I find information?

{Insert name of national authority} {Insert national authority's homepage} contains more information about policies, new requirements in regulations, guidance, contact information and links to relevant legislation.

### Legislations

Commission Regulation (EU) No 666/2013 with regard to ecodesign requirements for vacuum cleaners:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:192:0024:0034:EN:PDF>

Commission Delegated Regulation (EU) No 665/2013 with regard to energy labelling of vacuum cleaners

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:192:0001:0023:EN:PDF>

Directive 2009/125/EC of the European Parliament and of the Council establishing a framework for the setting of ecodesign requirements for energy-related products:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:285:0010:0035:en:PDF>

Directive 2010/30/EU of the European Parliament and of the Council on indication by labelling and standard product information of the consumption of energy and other resources by energy-related products

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:153:0001:0012:en:PDF>

{Insert national legislations here}

{Insert name of national authority}

Contact information, homepage, email etc.

### Where can I find help and guidance?

You can have your questions answered and help to comply with the requirements by contacting the

{Insert Contact informations etc.}