

Nordsyn – energy labelling requirements for packages of space heaters/combination heaters, temperature controls and solar devices



Nordsyn - surveillance co-operation for green products



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Preface

The European Commission published four regulations concerning ecodesign and energy labelling requirements of appliances for space heating and water heating (Regulations: 811/2013, 812/2013, 813/2013 and 814/2013) in the Official Journal 6th of September 2013. The first requirements will apply from 26 September 2015.

In January 2015, the Commission published a guideline on these regulations that contains a section with frequently asked questions (FAQ). Only the regulations are legally binding – the guideline itself is not. However, it is helpful for better understanding the regulations. It is available here: https://ec.europa.eu/energy/ sites/ener/files/documents/ GuidelinesSpaceWaterHeaters_ FINAL.pdf

The Nordic market surveillance authorities have issued a series of fact sheets/guides to help manufacturers and importers of appliances prepare for the new requirements. Four of these fact sheets have been developed by Nordsyn, which is a Nordic cooperation aiming for more efficient market surveillance of ecodesign and energy labelling. Nordsyn's partners are the Swedish Energy Agency/Energimyndigheten, the Danish Energy Agency/ Energistyrelsen, the Finnish Safety and Chemicals Agency/Tukes, the Norwegian Water Resources and Energy Directorate/Norges vassdrags- og Energidirektorat, and the Iceland Construction Authority/Mannvirkjastofnun.

- "Fact sheet on ecodesign and energy labelling requirements for electric heat pumps and electric boilers".
- "Fact sheet on ecodesign and energy labelling requirements for electric heat pump water heaters and electric conventional water heaters".
- "Fact sheet on ecodesign and energy labelling requirements for hot water storage tanks".
- "Fact sheet on energy labelling requirements for packages of water heaters and solar devices".

The Norwegian Water Resources and Energy Directorate (NVE) has

also developed two additional fact sheets:

- "Fact sheet on ecodesign and energy labelling requirements for oil- and gas-fired boilers".
- "Fact sheet on energy labelling requirements for packages of space heaters/ combination heaters, temperature controls and solar devices".

Together, these fact sheets cover the most common space and water heating appliances on the Nordic market. However, some appliances are not covered by these regulations, e.g. micro CHP appliances and gas-fired water heaters. The individual fact sheets refer to one another when relevant and it is therefore recommended to have them all in order to gain their full benefit.

The fact sheets summarise the contents of the Regulations and are addressed to manufacturers, importers and other interested parties. The fact sheets are not legally binding and they do not substitute the Regulations and, in the event of doubt, the Regulations are applicable (any binding interpretation can only be made by the EU court).

The fact sheets have been developed by Viegand Maagøe A/S, Denmark, as part of Nordsyn and of the Nordic Prime Ministers' overall green growth initiative: The Nordic Region – leading in green growth under the Nordic Council of Ministers – read more at www.nordicway.org or at www.norden.org/greengrowth

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Summary

Are you a manufacturer or importer of space heaters, combination heaters, temperature controls or solar devices or packages of these products?

Please be aware that there are product information requirements of temperature controls and solar devices and energy labelling requirements of packages consisting of space heaters/ combination heaters, temperature controls and solar devices.

Packages of space heaters for water-based central heating systems, temperature controls and solar devices must meet the new energy labelling requirements. Space heating systems cover boiler space heaters, heat pump space heaters and combination heaters that produce heat by means of electricity, gaseous or liquid fuels.

Which products?

The Energy Labelling Regulation applies to:

 Packages of space heaters with a rated output (heating capacity) up to and including 70 kW, temperature controls and/or solar devices.

 Packages of combination heaters with a rated output (heating capacity) up to and including 70 kW, temperature controls and/ or solar devices.

A space heater/combination heater must always be labelled with a product energy label, even if it is included in a package that is correctly labelled with a package label.

When?

The energy labelling regulations for packages of space heaters/ combination heaters, temperature controls and solar devices applicable from 26 September 2015 introduce requirements for:

- The provision of a printed EU energy label and a product fiche.
- Information on the energy class in advertisements and in technical promotion material.
- The provision of electronic versions of the EU energy label and product fiche to dealers for products placed on the market with a new model identifier.

• The display of the energy label and product fiche when the package is offered for sale through the internet.

In addition, product fiches for temperature controls and solar devices must be provided with each package from 26 September 2015.

What?

Energy labelling requirements for packages of space heaters/ combination heaters, temperature controls and solar devices include:

- Use of an energy label with energy classes for packages of products.
- Information about the energy class in printed advertisements and printed technical promotion material.
- Requirements for internet advertising.

Who?

You are responsible for ensuring and documenting compliance with the requirements if you are:

• A manufacturer in the EEA producing packages of space

heaters, temperature controls and/or solar devices to be placed on the market in the EEA.

- An importer of packages of space heaters, temperature controls and/or solar devices 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 the EEA.

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

households. The scope for reducing their energy consumption is significant and includes combining them with appropriate temperature controls and solar devices. Moreover, the end user must have easy access to information about the energy efficiency of packages consisting of space heaters/ combination heaters combined with solar devices and temperature controls. Consequently, the EU has decided to introduce energy labelling of such packages using the same energy labelling scale used for individual space heaters/ combination heaters.

Dealers of packages of space heaters, temperature controls and/ or solar devices are responsible for ensuring that each offer of a package contains information on the package's energy efficiency and energy class.

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

Why?

Space heaters and combination heaters account for a large share of energy consumption in European

Where can I find more information?

You can find the relevant regulations on the last page of this fact sheet, or read more about ecodesign and energy labelling on the webpages of your market surveillance authorities and the Commission (https://ec.europa.eu/energy/en/topics/energyefficient-products/heaters).

Disclaimer

This fact sheet presents the contents of the Regulations and is addressed to manufacturers, importers and other interested parties. This fact sheet is not legally binding and does not substitute the Regulations. In the event of doubt, the Regulations are applicable, and any binding interpretation can only be made by the EU court.



Which products must comply with the requirements?

Packages with space heaters/ combination heaters, temperature controls and/or solar devices

From 26 September 2015, the ecodesign requirements will apply to individual space heaters/combination heaters with a rated output (heat capacity) ≤ 400 kW, and energy labelling requirements will apply to individual space heaters/ combination heaters with a rated output (heat capacity) ≤ 70 kW.

A distinction is made between space heaters and combination heaters. Besides the supply of space heating, the latter must also be designed to supply domestic hot water and to be able to connect to an external water supply. Additional requirements concerning ecodesign and energy labelling apply to combination heaters. The requirements for space heaters and combination heater products are described in the fact sheets "Fact sheet on ecodesign and energy labelling requirements for electric heat pump water heaters and electric conventional water heaters" and "Fact sheet on ecodesign and energy labelling

requirements for oil- and gas-fired boilers".

In addition to the energy labelling requirements for individual space heater/combination heater products, packages consisting of space heaters/combination heaters with a rated output (heating capacity) ≤ 70 kW, temperature controls and/or solar devices are also subject to energy labelling requirements covering the entire package.

Temperature controls

The most basic package consists of a space heater/combination heater with a temperature control. The temperature control communicates with the space heater/combination heater and helps to regulate the indoor temperature based on outdoor temperature measurements, room temperature measurements, or a combination of the two. Typically, heat pumps and boilers come with a temperature control from the manufacturer. However, the temperature control and the space heater/combination heater can also be supplied separately by

a different supplier. A distinction is made between eight different classes of temperature controls, which are categorised according to different degrees of efficiency improvement (see Table 1):

- Class I On/off Room Thermostat
- Class II Weather compensator control for use with modulating heaters
- Class III Weather compensator control for use with on/ off output heaters
- Class IV TPI room thermostat for use with on/off output heaters
- Class V Modulating room thermostat for use with modulating heaters
- Class VI Weather compensator and room sensor for use with modulating heaters
- Class VII Weather compensator and room sensor for use with on/off output heaters
- Class VIII Multi-sensor room temperature control for use with modulating heaters

Class no.	I	П	III	IV	V	VI	VII	VIII
Value (%)	1	2	1,5	2	3	4	3,5	5

Table 1: Efficiency improvements of different classes of temperature controls

Solar devices

Solar devices cover both entire solar heating systems sold as a combined entity, solar collectors, solar hot water storage tanks, and pumps in the solar collector loop sold as individual entities.

A hot water storage tank is defined as a vessel for storing hot water for water and/or space heating purposes, including potential additives. The definition of a hot water storage tank is thus broader than the common Northern European perception of a hot water storage tank, i.e. a vessel used only for domestic hot water. Hot water storage tanks are covered by the energy labelling and ecodesign requirements described in the fact sheet "Fact sheet on ecodesign and energy labelling requirements for hot water storage tanks".

A solar collector is defined as a device designed to absorb global solar irradiance and transfer the heat energy so produced to a liquid that passes through it. Pumps in a solar collector loop are covered by the ecodesign requirements (from 1 August 2015), cf. COMMISSION REGULATION (EC) No 641/2009 of 22 July 2009 implementing Directive 2005/32/ EC of the European Parliament and of the Council with regard to ecodesign requirements for glandless standalone circulators and glandless circulators integrated in products.

Packages containing space heaters

Figure 1 illustrates some examples of packages containing space heaters. The examples are: a) Basic package consisting of a boiler/heat pump space heater and a temperature control.
b) Package consisting of a space heater, temperature control and supplementary heater, e.g. a hybrid space heater with a gas-fired boiler and a heat pump. The hot water storage tank is not a part of the package, because the package is only for a space heating system.



Figure 1: Examples of packages containing space heaters

c) Package consisting of temperature control and solar devices (storage tank, solar collectors, pumps etc.) used only for space heating.

Packages containing combination heaters

Figure 2 illustrates examples of packages containing combination heaters. The examples are:

 d) Package consisting of boiler/ heat pump combination heater, temperature control and solar devices used only for water heating.



Figure 2: Examples of packages containing combination heaters

e) Package consisting of boiler/ heat pump combination heater with control, solar devices (storage tank, solar collectors, pumps, etc.) used for hot water, and a supplementary heater and solar devices (storage tank, solar collectors, pumps, etc.) used for space heating.

Space heaters with solar devices which are not part of the package

Figure 3 shows an example of a package containing a space heater with a solar heating system that is not a part of the package:

f) This package contains a space heater. However, neither a hot

water storage tank nor any solar device (storage tank, solar collectors, pumps, etc.) used for domestic hot water can be included in the package. The package's energy label therefore covers the space heater with a temperature control – see also example b) in Figure 1.



Figure 3: Example of package containing space heaters, where the solar devices are not part of the package



What are the requirements for energy labelling?

The new EU energy labelling regulations cover packages of space heaters/combination heaters, temperature controls and solar devices. The energy label is identical in all the EU countries and includes pictograms instead of text, so that the label can be easily understood in all countries.

The label has the recognisable red and green arrows, and the A-Gscale is expanded with the new energy classes A^+ , A^{++} and A^{+++} .

The supplier of the entire package is responsible for providing the printed energy label together with each package.

Energy efficiency classes on the label

The label for packages containing space heaters includes a single scale and energy classes will be introduced in one stage. From 26 September 2015, an energy label with the energy classes from A⁺⁺⁺ to G is required – the energy classes E, F and G can be omitted from the scale. The label for packages containing combination heaters includes two scales. One of the scales is identical to the scale for packages containing space heaters, while the other scale covers water heating. From 26 September 2015 an energy label with energy classes A⁺⁺⁺ to G is required for water heating – the energy classes E, F and G can be omitted from the scale.

Determination of the energy classes

The determination of the energy class for a package is based on the seasonal space heating energy efficiency (η_{1}) of the primary space heater. When calculating the package's energy class, the efficiency improvements produced by the temperature control, solar devices and potential supplementary heaters are added to the seasonal space heating energy efficiency of the primary space heater. The resulting (improved) seasonal space heating energy efficiency of the package is assessed using the same scale as used for the individual heaters.

The efficiency improvements of temperature controls are shown in Table 1. The efficiency improvements of solar devices are calculated on the basis of the information in the product fiches for the solar devices, provided by the supplier of the solar devices.

For packages where the primary heater is a combination heater and where the heater is combined with a solar heating system for domestic hot water, the energy label for water heating is based on the water heating energy efficiency (η_{WH}) of the primary combination heater. The solar heating system's efficiency improvements are added and the package's resulting (improved) water heating energy efficiency is assessed using the same scale as used for the individual combination heaters.

The method used to calculate the energy class of packages is described in the Regulation. Figures 4 and 5 show the information and the method to be used when labelling a package. Figure 4 illustrates calculating the energy class for a package with a boiler. The Regulation contains similar illustrations for packages with heat pumps and boiler combination heaters. Figure 5 illustrates a package with a combination heater and covers water heating energy efficiency – it is of general application for all types of combination heaters.

Be aware:

The actual measurement results without addition of tolerances must be used for declaration of the energy efficiency class and other required declarable values.



Figure 4: Information and calculation sheet for seasonal energy efficiency for a package with a boiler



Figure 5: Information and calculation sheet for water efficiency for a combination heater

Information on the energy label

Labels for packages must include the energy class of the primary space heater and information on whether solar devices, a temperature control and supplementary heaters can be included in the package. The labels must also describe the entire package's space heating energy class. In addition, packages with combination heaters must specify the water heating energy class and load profile for the package.



Figure 6 Space heater package label



Figure 7 Combination heater package label

Energy classes

Tables 2 and 3 show the relationship between energy classes and seasonal space heating energy efficiency. Table 3 covers low temperature heat pumps.

Table 4 shows the relationship between energy classes for a given load profile and energy efficiency for water heating.

Table 2: Energy classes for space heating

Seasonal space heating energy efficiency class	Seasonal space heating energy efficiency $\eta_{\rm f}$ in %
A***	$\eta_s \ge 150$
A**	$125 \le \eta_{s} \le 150$
A ⁺	$98 \le \eta_z \le 125$
A	$90 \le \eta_s \le 98$
В	$82 \le \eta_s \le 90$
с	$75 \le \eta_z \le 82$
D	$36 \le \eta_z \le 75$
E	$34 \le \eta_s \le 36$
F	$30 \le \eta_s \le 34$
G	$\eta_s < 30$

Seasonal space heating energy efficiency class	Seasonal space heating energy efficiency η_5 in %
A***	$\eta_z \ge 175$
A**	$150 \le \eta_{\rm S} \le 175$
A*	$123 \le \eta_{\pm} \le 150$
А	$115 \le \eta_{5} \le 123$
В	$107 \le \eta_{\rm s} \le 115$
c	$100 \le \eta_{\pm} \le 107$
D	$61 \le \eta_z \le 100$
E	$59 \le \eta_5 \le 61$
F	$55 \le \eta_{\pm} < 59$
G	η ₂ < 55

Table 3: Energy classes for space heating with low temperature heat pumps

Table 4: Energy classes for water heating

	3XS	XXS	XS	S	М	L	XL	XXL
A+++	$\eta_{wh} \ge 62$	$\eta_{wh} \ge 62$	$\eta_{wh} \ge 69$	$\eta_{wh} \ge 90$	$\eta_{wh} \ge 163$	$\eta_{wh} \ge 188$	$\eta_{wh} \ge 200$	$\eta_{wh} \ge 213$
A++	$53 \le \eta_{wh}$ < 62	$53 \le \eta_{wh} < 62$	$61 \le \eta_{wh} \\ < 69$	72 ≤ η _{wh} < 90	$\begin{array}{l} 130 \leq \eta_{wh} \\ < 163 \end{array}$	150 ≤ η _{wh} < 188	$160 \le \eta_{wh} \\ < 200$	$\begin{array}{l} 170 \leq \eta_{wh} \\ < 213 \end{array}$
A*	$\begin{array}{l} 44 \leq \eta_{wh} \\ < 53 \end{array}$	44 ≤ η _{wh} < 53	$53 \le \eta_{wh}$ < 61	55 ≤ η _{wh} < 72	$\frac{100 \le \eta_{wh}}{< 130}$	115 ≤ η _{wh} < 150	123 ≤ η _{wh} < 160	$\begin{array}{l} 131 \leq \eta_{wh} \\ < 170 \end{array}$
A	$\begin{array}{l} 35 \leq \eta_{wh} \\ < 44 \end{array}$	$35 \le \eta_{wh}$ < 44	$38 \le \eta_{wh} \\ < 53$	38 ≤ η _{wh} < 55	$65 \le \eta_{wh}$ < 100	75 ≤ η _{wh} < 115	$80 \le \eta_{wh} \\ < 123$	$85 \le \eta_{wh} \\ < 131$
В	$\begin{array}{l} 32 \leq \eta_{wh} \\ < 35 \end{array}$	32 ≤ η _{wh} < 35	$35 \le \eta_{wh}$ < 38	35 ≤ η _{wh} < 38	39 ≤ η _{wh} < 65	$50 \le \eta_{wh} \\ < 75$	55 ≤ η _{wh} < 80	$60 \le \eta_{wh} < 85$
С	29 ≤ η _{wh} < 32	29 ≤ η _{wh} < 32	32 ≤ η _{wh} < 35	32 ≤ η _{wh} < 35	36 ≤ η _{wh} < 39	$\begin{array}{l} 37 \leq \eta_{wh} \\ < 50 \end{array}$	38 ≤ η _{wh} < 55	$\begin{array}{r} 40 \leq \eta_{wh} \\ < 60 \end{array}$
D	$26 \le \eta_{wh} \\ < 29$	26 ≤ η _{wh} < 29	$\begin{array}{l} 29 \leq \eta_{wh} \\ < 32 \end{array}$	29 ≤ η _{wh} < 32	$33 \le \eta_{wh}$ < 36	$\begin{array}{l} 34 \leq \eta_{wh} \\ < 37 \end{array}$	$35 \le \eta_{wh}$ < 38	$\begin{array}{r} 36 \leq \eta_{wh} \\ < 40 \end{array}$
E	$22 \le \eta_{wh} < 26$	$\begin{array}{l} 23 \leq \eta_{wh} \\ < 26 \end{array}$	26 ≤ η _{wh} < 29	26 ≤ η _{wh} < 29	$\begin{array}{l} 30 \leq \eta_{wh} \\ < 33 \end{array}$	$\begin{array}{l} 30 \leq \eta_{wh} \\ < 34 \end{array}$	$\begin{array}{l} 30 \leq \eta_{wh} \\ < 35 \end{array}$	$\begin{array}{l} 32 \leq \eta_{wh} \\ < 36 \end{array}$
F	19 ≤ η _{wh} < 22	$20 \le \eta_{wh} \\ < 23$	$23 \le \eta_{wh} \\ < 26$	23 ≤ η _{wh} < 26	$27 \le \eta_{wh} \\ < 30$	$27 \le \eta_{wh} \\ < 30$	$27 \le \eta_{wh} \\ < 30$	$28 \le \eta_{wh} \\ < 32$
G	$\eta_{wh} < 19$	$\eta_{wh} < 20$	$\eta_{wh} < 23$	$\eta_{wh} < 23$	$\eta_{wh} < 27$	$\eta_{wh} < 27$	$\eta_{wh} < 27$	$\eta_{wh} < 28$

What are the requirements for information and documentation?

Energy label and product fiche

Product fiche of temperature controls and solar devices

All temperature controls and solar devices (entire solar heating systems) placed on the market from 26 September 2015 must be provided with a printed product fiche. A product fiche can include several models of space heating systems from the same supplier. See the guidelines for product fiches in the Regulation on Energy Labelling, Annex IV.

Energy label and product fiche for packages containing space heaters/combination heaters, temperature controls and solar devices

All packages for space heating or combined space heating and heating of domestic hot water placed on the market from 26 September 2015 must be provided with a printed energy label and product fiche. A product fiche can include several models of space heating systems from the same supplier. See the guidelines for product fiches in the Regulation on Energy Labelling, Annex IV.

The energy label and product fiche for packages must also be made available if the unit is sold via the internet. The manufacturer must therefore provide the label and product fiche electronically to retailers, etc., who sell online. The layout of the electronic energy label must be identical with the printed label and it must include the same information as the printed label. The electronic product fiche must also include information identical with the printed version.

Information in technical promotional material and in advertisements

Relevant promotional material and advertisements for packages shall include information on the energy class of the package. Further information is available in the Regulation on Energy Labelling, Article 3 and 4.

Labelling on the internet

The electronic energy label and product fiche must be shown on

the display in proximity to the price when heat pumps and electric boilers are offered for sale or hire through the internet. If price is given both for a heat pump/boiler and for a package, labels need to be shown both for the individual products and for the package. The label and the product fiche may be shown using a "nested display".

Technical documentation

The supplier is responsible for making sure that the temperature controls and solar devices as well as packages of space heaters/ combination heaters, have technical documentation when they are placed on the EEA market. The technical documentation must show that the energy labelling of the temperature controls and solar devices, as well as packages of space heaters/combination heaters, is correct. The technical documentation must be compiled by the manufacturer.

You can see the requirements for the content of the technical documentation in for temperature controls, solar devices, and packages of space heaters/ combination heaters, temperature controls and solar devices in the Regulation on Energy Labelling, Annex V.

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

The documentation must be stored for a period of five years after the last model of that product has been manufactured.

Measurement and calculation methods

Reliable, accurate and reproducible measurement methods based on generally accepted measurement techniques must be used. A reproducible measurement method means that the measurements can be repeated with the same result.

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

Where can I find information?

The webpages of the national market surveillance authorities and the Commission (https://ec.europa.

eu/energy/en/topics/energyefficient-products/heaters) contain more information about policies, new regulatory requirements, guidance, contact information, and links to relevant legislation.

Legislation

COMMISSION REGULATION (EU) No 811/2013 of 18 February 2013 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to the energy labelling of space heaters, combination heaters, packages of space heater, temperature control and solar device and packages of combination heater, temperature control and solar devices.

COMMISSION DELEGATED

REGULATION (EU) No518/2014 of 5 March 2014 amending Commission Delegated Regulations (EU) No 1059/2010, (EU) No 1060/2010, (EU) No 1061/2010, (EU) No 1062/2010, (EU) No 626/2011, (EU) No 392/2012, (EU) No 874/2012, (EU) No 665/2013, (EU) No 811/2013 and (EU) No 812/2013 with regard to labelling of energyrelated products on the internet. These regulations cover electric water heaters and heat pump water heaters, as well as oil- and gasfired water heaters and hot water storage tanks.

Where can I find help and guidance?

You can get help to understand the requirements and answers to your questions by contacting your national market surveillance authority for ecodesign and energy labelling.





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