

Nordsyn – energy labelling
requirements for packages of
water heaters and solar devices



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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 the Danish Technological Institute and 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

October 2015



Summary

Are you a manufacturer or importer of packages of water heaters and solar devices?

Please be aware that there are energy labelling requirements and information requirements for packages of water heaters and solar devices and information requirements for solar devices.

Which products?

The Energy Labelling Regulation applies to:

- Packages containing a water heater with a rated output up to and including 70 kW and solar devices.

Even if a water heater is included in a package and the package is energy labelled, the water heater must also be provided with an energy label as an individual product.

When?

The requirements for energy labelling and ecodesign both apply from 26 September 2015.

The energy labelling requirements for packages of water heaters and solar devices 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 products are offered for sale through the internet.

The ecodesign requirements for solar devices and temperature control include:

- Provision of product fiche.

Who?

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

- A manufacturer in the EEA producing solar devices or packages of water heaters and solar devices to be placed on the market in the EEA.
- An importer of solar devices or packages of water heaters and solar devices from a country outside the 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.

Dealers of packages of water heaters and solar devices are responsible for ensuring that each offer of a package contains information on the energy efficiency of water heating and the package's energy class.

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

Why?

Water heaters account for a large share of energy consumption in European households. Consequently, the EU has

decided to reduce the energy consumption of water heaters by introducing requirements for energy labelling with energy classes.

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 the national market surveillance authorities and the Commission, (<https://ec.europa.eu/energy/en/topics/energy-efficient-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 water heater and solar devices

From 26 September 2015, there will be ecodesign requirements for individual water heaters with a rated output (heat capacity) ≤ 400 kW and energy labelling requirements for individual water heaters with a rated output (heat capacity) ≤ 70 kW. The requirements for individual water heater products are described in the fact sheet “Fact sheet – ecodesign and energy labelling requirements for electric heat pump water heaters and electric conventional water heaters”.

Besides the energy labelling requirements of individual water heaters, packages consisting of water heaters with a rated output (heating capacity) ≤ 70 kW and solar devices are also subject to energy labelling requirements covering the entire package.

Solar devices

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

“solar-only” system is also used for the combined entity.

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

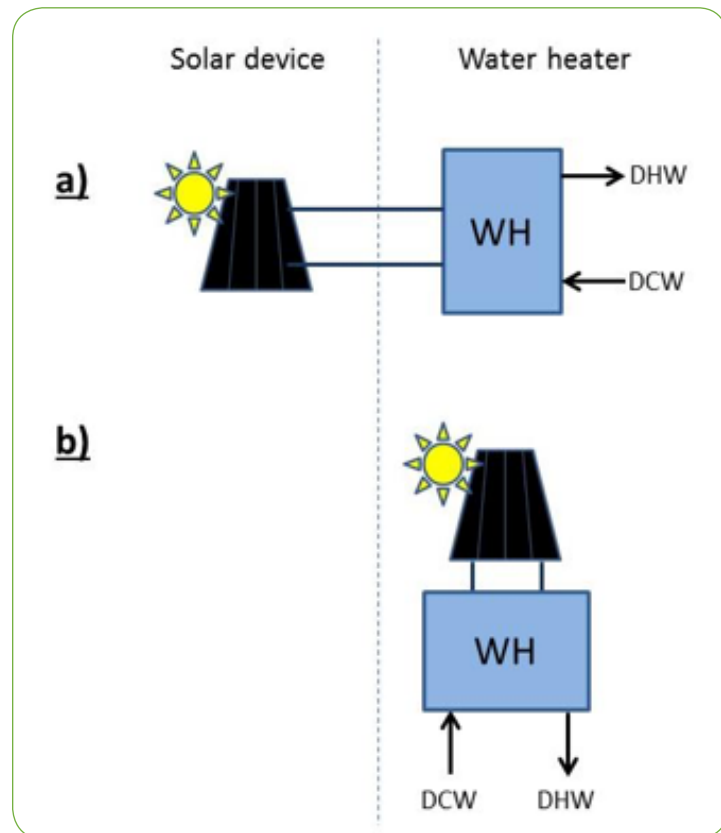


Figure 1: Examples of a) package of water heater and solar device and b) a solar water heater

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 on ecodesign and energy labelling requirements for hot water storage tanks”.

Solar collectors are 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 the solar collector loop are covered by the requirements of ecodesign (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 of water heater and solar device or solar water heaters

Figure 1 shows a package of a water heater and a solar device, as well as a so-called solar water heater:

- a) Package of water heater and solar device.
- b) Solar water heater: a water heater equipped with one or

more solar collectors, solar hot water storage tanks, heat generators and possibly pumps in the collector loop and other parts; a solar water heater is placed on the market as one unit.

Solar water heaters typically have about two collectors and are widely used in southern Europe. Solar water heaters are considered an individual product, not a package, and must fulfill the ecodesign water heating efficiency and labelling requirements in line with other water heaters. Solar water heaters will not be described further in this fact sheet.

What are the requirements for energy labelling?

From 26 September 2015, packages of water heaters and solar devices must be labelled with the EU energy label. The label is identical in all EU/EEA 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–G scale is expanded with the new energy classes A⁺, A⁺⁺ and A⁺⁺⁺.

Any economic actor that is placing a package on the market has to fulfil the obligations set out by the Regulation and needs to provide the package label together with the package.

Energy efficiency classes on the label

The label for packages containing water heaters includes a single scale and the energy classes will be introduced in one stage.

From 26 September 2015, an energy label with the energy classes A⁺⁺⁺ to G is required – the energy classes E, F and G can be omitted from the scale.

Determination of the energy classes

The energy label for packages of water heaters and solar devices is based on the water heating energy efficiency (η_{WH}) of the individual water heater. The efficiency

improvements produced by the solar devices are added and the resulting (improved) water heating energy efficiency of the package is assessed according to the same scale as the one for the individual water heaters.

The calculation method of the labelling of packages is described in the Regulation. Figure 2 shows the information and the method which are to be used when labelling a package.

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.

Water heating energy efficiency of water heater ① %

Declared load profile:

Solar contribution
From fiche of solar device

Auxiliary electricity

$(1,1 \times \text{I} - 10\%) \times \text{II} - \text{III} - \text{I} = + \text{ } \text{ } \%$ ② %

Water heating energy efficiency of package under average climate ③ %

Figure 2: Information and calculation sheet for water heating efficiency for a water heater

Water heating energy efficiency class of package under average climate

| | G | F | E | D | C | B | A | A* | A** | A*** |
|-----|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| M | < 27 % | ≥ 27 % | ≥ 30 % | ≥ 33 % | ≥ 36 % | ≥ 39 % | ≥ 65 % | ≥ 100 % | ≥ 130 % | ≥ 163 % |
| L | < 27 % | ≥ 27 % | ≥ 30 % | ≥ 34 % | ≥ 37 % | ≥ 50 % | ≥ 75 % | ≥ 115 % | ≥ 150 % | ≥ 188 % |
| XL | < 27 % | ≥ 27 % | ≥ 30 % | ≥ 35 % | ≥ 38 % | ≥ 55 % | ≥ 80 % | ≥ 123 % | ≥ 160 % | ≥ 200 % |
| XXL | < 28 % | ≥ 28 % | ≥ 32 % | ≥ 36 % | ≥ 40 % | ≥ 60 % | ≥ 85 % | ≥ 131 % | ≥ 170 % | ≥ 213 % |

Water heating energy efficiency under colder and warmer climate conditions

Colder: $\text{ } \text{ } - 0,2 \times \text{ } \text{ } = \text{ } \%$

Warmer: $\text{ } \text{ } + 0,4 \times \text{ } \text{ } = \text{ } \%$

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.

Information on the energy label

Labels for packages must include information on the water heating energy class and load profile of the water heater product alone, as well as the energy class of the combined package of water heater and solar device. Further, indication of whether a solar collector and hot water storage tank may be included in the package of water heater and solar device shall be included, see Figure 3.

Energy classes

Table 1 describes the relationship between energy class for a given load profile and energy efficiency.

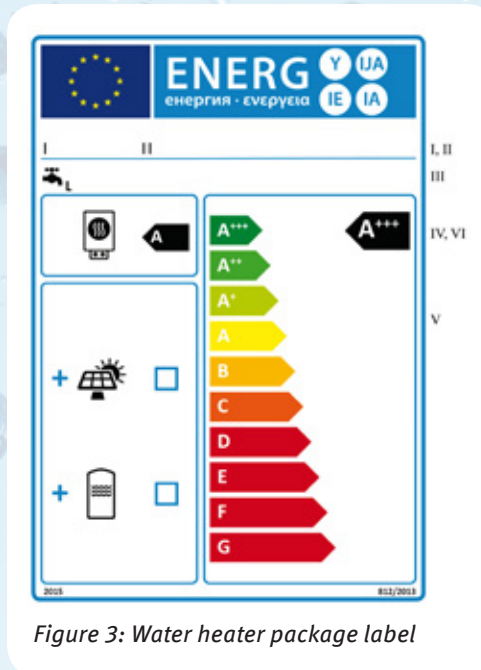


Figure 3: Water heater package label

Table 1: Energy classes for water heating

| | 3XS | XXS | XS | S | M | L | XL | XXL |
|------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| A ⁺⁺⁺ | $\eta_{wh} \geq 62$ | $\eta_{wh} \geq 62$ | $\eta_{wh} \geq 69$ | $\eta_{wh} \geq 90$ | $\eta_{wh} \geq 163$ | $\eta_{wh} \geq 188$ | $\eta_{wh} \geq 200$ | $\eta_{wh} \geq 213$ |
| A ⁺⁺ | $53 \leq \eta_{wh} < 62$ | $53 \leq \eta_{wh} < 62$ | $61 \leq \eta_{wh} < 69$ | $72 \leq \eta_{wh} < 90$ | $130 \leq \eta_{wh} < 163$ | $150 \leq \eta_{wh} < 188$ | $160 \leq \eta_{wh} < 200$ | $170 \leq \eta_{wh} < 213$ |
| A ⁺ | $44 \leq \eta_{wh} < 53$ | $44 \leq \eta_{wh} < 53$ | $53 \leq \eta_{wh} < 61$ | $55 \leq \eta_{wh} < 72$ | $100 \leq \eta_{wh} < 130$ | $115 \leq \eta_{wh} < 150$ | $123 \leq \eta_{wh} < 160$ | $131 \leq \eta_{wh} < 170$ |
| A | $35 \leq \eta_{wh} < 44$ | $35 \leq \eta_{wh} < 44$ | $38 \leq \eta_{wh} < 53$ | $38 \leq \eta_{wh} < 55$ | $65 \leq \eta_{wh} < 100$ | $75 \leq \eta_{wh} < 115$ | $80 \leq \eta_{wh} < 123$ | $85 \leq \eta_{wh} < 131$ |
| B | $32 \leq \eta_{wh} < 35$ | $32 \leq \eta_{wh} < 35$ | $35 \leq \eta_{wh} < 38$ | $35 \leq \eta_{wh} < 38$ | $39 \leq \eta_{wh} < 65$ | $50 \leq \eta_{wh} < 75$ | $55 \leq \eta_{wh} < 80$ | $60 \leq \eta_{wh} < 85$ |
| C | $29 \leq \eta_{wh} < 32$ | $29 \leq \eta_{wh} < 32$ | $32 \leq \eta_{wh} < 35$ | $32 \leq \eta_{wh} < 35$ | $36 \leq \eta_{wh} < 39$ | $37 \leq \eta_{wh} < 50$ | $38 \leq \eta_{wh} < 55$ | $40 \leq \eta_{wh} < 60$ |
| D | $26 \leq \eta_{wh} < 29$ | $26 \leq \eta_{wh} < 29$ | $29 \leq \eta_{wh} < 32$ | $29 \leq \eta_{wh} < 32$ | $33 \leq \eta_{wh} < 36$ | $34 \leq \eta_{wh} < 37$ | $35 \leq \eta_{wh} < 38$ | $36 \leq \eta_{wh} < 40$ |
| E | $22 \leq \eta_{wh} < 26$ | $23 \leq \eta_{wh} < 26$ | $26 \leq \eta_{wh} < 29$ | $26 \leq \eta_{wh} < 29$ | $30 \leq \eta_{wh} < 33$ | $30 \leq \eta_{wh} < 34$ | $30 \leq \eta_{wh} < 35$ | $32 \leq \eta_{wh} < 36$ |
| F | $19 \leq \eta_{wh} < 22$ | $20 \leq \eta_{wh} < 23$ | $23 \leq \eta_{wh} < 26$ | $23 \leq \eta_{wh} < 26$ | $27 \leq \eta_{wh} < 30$ | $27 \leq \eta_{wh} < 30$ | $27 \leq \eta_{wh} < 30$ | $28 \leq \eta_{wh} < 32$ |
| 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

Solar devices

Solar devices placed on the market from 26 September 2015 must be provided with a printed product fiche. A product fiche can include several models from the same supplier. See the guidelines for product fiches in the Regulation on Energy Labelling, 812/2013, Annex IV.

Energy label and product fiche for packages containing water heaters and solar devices

All packages of water heaters and solar devices 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, 812/2013, Annex IV.

The energy label and product fiche for packages must also be presented 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 promotion 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, 812/2013, 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 packages are offered for sale or hire through the internet. If price is given both for

a water heater and for a package, labels need to be shown both for the individual product 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 both the solar devices and packages of water heaters and solar device have technical documentation when it is placed on the EEA market. The technical documentation must show that the energy labelling of the solar devices and packages is correct. The technical documentation must be compiled by the manufacturer.

For solar devices as well as packages of water heaters and solar devices, you can see the requirements for the content of the technical documentation in the Regulation on Energy Labelling, 812/2013, 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/energy-efficient-products/heaters](https://ec.europa.eu/energy/en/topics/energy-efficient-products/heaters)) contain more information about policies,

new regulatory requirements, guidance, contact information, and links to relevant legislation.

Legislation

COMMISSION REGULATION (EU) No 814/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for water heaters and hot water storage tanks.

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 (recast).

COMMISSION DELEGATED REGULATION (EU) No 812/2013 of 18 February 2013 supplementing Directive 2010/30/EU of the European

Parliament and of the Council with regard to the energy labelling of water heaters, hot water storage tanks and packages of water heater and solar device.

DIRECTIVE 2010/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products (recast).

COMMISSION DELEGATED REGULATION (EU) No 518/2014 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 energy-related products on the internet.

These regulations cover electric water heaters and heat pump water heaters as well as oil- and gas-fired water heaters, hot water storage tanks and packages of water heaters and solar devices.

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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