MINISTRY OF REGIONAL DEVELOPMENT, CONSTRUCTION, AND PUBLIC HOUSING AND UTILITIES OF UKRAINE

ORDER

19.04.2019 No. 100

Registered with the Ministry of Justice of Ukraine on 21 June 2019 under No. 647/33618

On Approval of the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device

In accordance with the second part of Article 8 of the Law of Ukraine 'On Technical Regulations and Conformity Assessment', the Resolution of the Cabinet of Ministers of Ukraine No. 1057 of 16 December 2015 'On the definition of areas in which central executive bodies implement functions of technical regulation', the Regulation on the Ministry of Regional Development, Construction, and Public Housing and Utilities of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine No. 197 of 30 April 2014, I hereby **ORDER:**

1. To approve the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device, as attached.

2. To establish that water heaters, hot water storage tanks and packages of water heater and solar device placed on the market before this Order has entered into force, and which do not comply with all or some of the requirements of the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device, approved by this Order, may be made available on the market within six months from the date of entry into force of this Order.

3. The Department for Life-Support Systems and Housing Policy (V.V. Tokarenko) jointly with the Legal Department (O.V. Chepeliuk) shall ensure the submission of this Order, in accordance with the procedure established by the legislation, for state registration with the Ministry of Justice of Ukraine.

4. This Order shall enter into force after six months following its official publication.

5. Deputy Minister E.B. Kruhliak shall be put in charge of controlling the execution of this Order.

Deputy Prime Minister of Ukraine - Minister of regional development, construction and public housing and utilities of Ukraine **H. Zubko**

AGREED BY:

Head of the State Service of Ukraine
on Food Safety
and Consumer Protection V. Lapa

Acting Minister
of Economic Development and Trade of Ukraine M. Titarchuk

Chairperson of the Antimonopoly Committee of Ukraine Yu. Terentiev

Chairperson of the State Regulatory Service of Ukraine K. Liapina

APPROVED
Order
of the Ministry of Regional Development, Construction, And Public Housing And Utilities Of Ukraine
No. 100 of 19 April 2019

Registered with the Ministry of Justice of Ukraine on 21 June 2019 under No. 647/33618

TECHNICAL REGULATION on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device

I. General provisions

1. This Technical Regulation establishes basic requirements for the energy labelling of, and the provision of supplementary product information on, water heaters, hot water storage tanks and packages of water heater and solar device.

This Technical Regulation is based on the 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.

2. This Technical Regulation shall apply to:

water heaters with a rated heat output ≤70 kW;

hot water storage tanks with a storage volume ≤500 litres;

packages of water heater ≤70 kW and solar device.

3. This Technical Regulation shall not apply to water heaters:

specifically designed for using gaseous or liquid fuels predominantly produced from biomass;

using solid fuels;

which do not meet at least the load profile 3XS, as specified in Table 1 of Annex 7 to this Technical Regulation;

designed for making hot drinks and/or food only.

4. For the purposes of this Technical Regulation, the terms used herein shall have the following meanings:

‘hot water storage tank’ means a vessel for storing hot water for water and/or space heating purposes, including any additives, which is not equipped with any heat generator except possibly one or more back-up immersion heaters;

‘biomass’ means the biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste;

‘biomass fuel’ means a gaseous or liquid fuel produced from biomass;

‘water heater’ means a device that:

is connected to an external supply of drinking or sanitary water;

generates and transfers heat to deliver drinking or sanitary hot water at given temperature levels, quantities and flow rates during given intervals;

is equipped with one or more heat generators;

‘fossil fuel’ means a gaseous or liquid fuel of fossil origin;

‘gross calorific value’ (GCV) means the total amount of heat released by a unit quantity of fuel when it is burned completely with oxygen and when the products of combustion are returned to ambient temperature. This quantity includes the condensation heat of any water vapour contained in the fuel and of the water vapour formed by the combustion of any hydrogen contained in the fuel;

‘water heating energy efficiency’ (η_{wh}) means the ratio between the useful energy provided by a water heater or a package of water heater and solar device and the energy required for its generation, expressed in %;

‘package of water heater and solar device’ means a package offered to the end-user containing one or more water heaters and one or more solar devices;

‘rated heat output’ means the declared heat output of the water heater when providing water heating at standard rating conditions, expressed in kW;

‘storage volume’ (V) means the rated volume of a hot water storage tank, expressed in litres;

‘standing loss’ (S) means the heating power dissipated from a hot water storage tank at given water and ambient temperatures, expressed in W;

‘sound power level’ (L_{WA}) means the A-weighted sound power level, indoors and/or outdoors, expressed in dB;

‘annual electricity consumption’ (AEC) means the annual electricity consumption of a water heater under the declared load profile and under given climate conditions, expressed in kW·h in terms of final energy;

‘annual fuel consumption’ (AFC) means the annual fossil and/or biomass fuel consumption of a water heater under the declared load profile and under given climate conditions, expressed in GJ in terms of gross calorific value;

‘back-up immersion heater’ means a Joule effect electric resistance heater that is part of a hot water storage tank and generates heat only when the external heat source is disrupted (including during maintenance periods), or that is part of a solar hot water storage tank and provides heat when the solar heat source is not sufficient to satisfy required comfort levels;

‘solar-only system’ means equipment that is equipped with one or more solar collectors and solar hot water storage tanks (in some cases, with pumps in the collector loop and other parts), which is placed on the market as one unit and is not equipped with any heat generator except possibly one or more back-up immersion heaters;

‘solar device’ means a solar-only system, a solar collector, a solar hot water storage tank or a pump in the collector loop, which are placed on the market separately;

‘standard rating conditions’ means the operating conditions of water heaters for establishing the rated heat output, water heating energy efficiency and sound power level, and of hot water storage tanks for establishing the standing loss;

‘heat generator’ means the part of a water heater that generates the heat using one or more of the following processes, namely:

combustion of fossil fuels and/or biomass fuels;

use of the Joule effect in electric resistance heating elements;

capture of ambient heat from an air source, water source or ground source, and/or waste heat;

‘heat pump water heater’ means a water heater that uses ambient heat from an air source, water source or ground source, and/or waste heat for heat generation.

The definitions that apply in annexes to this Technical Regulation shall be have the meanings set out in Annex 1 to this Technical Regulation.

Other terms used herein shall have the meanings set out in the Laws of Ukraine ‘On Technical Regulations and Conformity Assessment’, ‘On State Market Surveillance and Control of Non-Food Products’, ‘On General Safety of Non-Food Products’ and in the Technical Regulation on Energy Labelling of Energy-Related Products, approved by the Resolution of the Cabinet of Ministers of Ukraine No. 702 of 7 August 2013.

II. Responsibilities of suppliers

1. Suppliers placing water heaters (conventional water heaters, solar water heaters an heat pump water heaters) on the market and/or putting them into service, including those integrated in hot water storage tanks and packages of water heater and solar device, shall ensure that a distributor is provided with both printed and electronic energy label, product fiche, including an electronic product fiche, in accordance with this Technical Regulation.

The content of a printed and electronic energy label shall comply with the requirements set out in points 2 to 4 of this section.

The form (sample) of an energy label (both printed and electronic ones), as well as their description, are set out in Annex 3 to this Technical Regulation.

2. The energy label for water heaters, including those integrated in hot water storage tanks and packages of water heater and solar device, shall contain the following information:

1) for conventional water heaters:

name or trade mark of the supplier of conventional water heater;

model identifier for conventional water heater (the code which distinguishes a specific model of conventional water heater from other models with the same trade mark of from the same supplier);

the water heating function, including the declared load profile expressed as the appropriate letter in accordance with Table 1 of Annex 7 to this Technical Regulation;

the water heating energy efficiency class of the conventional water heater, determined in accordance with Table 1 of Annex 2 to this Technical Regulation. The letter representing the energy efficiency class shall be placed at the same height as the relevant arrow;

the annual electricity consumption, in kW·h, taking into account final energy and/or the annual fuel consumption, in GJ, taking into account the GCV, rounded to the nearest integer and calculated in accordance with point 3 of Annex 8 to this Technical Regulation;

the sound power level L_{WA}, indoors, in dB, rounded to the nearest integer;

for conventional water heaters able to work only during off-peak hours, the pictogram pursuant to subpoint 10 of point 1 of Annex 3 to this Technical Regulation;

2) for solar water heaters:

name or trade mark of the supplier of solar water heater;

model identifier for solar water heater (the code which distinguishes a specific model of solar water heater from other models with the same trade mark of from the same supplier);

the water heating function, including the declared load profile expressed as the appropriate letter in accordance with Table 1 of Annex 7 to this Technical Regulation;

the water heating energy efficiency class under warmer climate conditions, determined in accordance with Table 1 of Annex 2 to this Technical Regulation. The letter representing the energy efficiency class shall be placed at the same height as the relevant arrow;

the annual electricity consumption, in kW·h, in terms of final energy and/or the annual fuel consumption, in GJ, in terms of gross calorific value, rounded to the nearest integer and calculated in accordance with point 3 of Annex 8 to this Technical Regulation;

the pictogram pursuant to subpoint 10 of point 2 of Annex 3 to this Technical Regulation;

the sound power level L_{WA}, indoors, in dB, rounded to the nearest integer;

3) for heat pump water heaters:

name or trade mark of the supplier of heat pump water heater;

model identifier for heat pump water heater (the code which distinguishes a specific model of heat pump water heater from other models with the same trade mark of from the same supplier);

the water heating function, including the declared load profile expressed as the appropriate letter in accordance with Table 1 of Annex 7 to this Technical Regulation;

the water heating energy efficiency class under warmer climate conditions, determined in accordance with Table 1 of Annex 2 to this Technical Regulation. The letter representing the energy efficiency class shall be placed at the same height as the relevant arrow.

the annual electricity consumption, in kW·h, in terms of final energy and/or the annual fuel consumption, in GJ, in terms of gross calorific value, rounded to the nearest integer and calculated in accordance with point 3 of Annex 8 to this Technical Regulation;

the pictogram pursuant to subpoint 10 of point 3 of Annex 3 to this Technical Regulation;

the sound power level L_{WA}, indoors (if available) and outdoors, in dB, rounded to the nearest integer;

for heat pump water heaters able to work only during off-peak hours, the pictogram pursuant to subpoint 11 of point 3 of Annex 3 to this Technical Regulation.

3. The energy label for hot water storage tanks shall contain the following information:

name or trade mark of the supplier of hot water storage tank;

model identifier for hot water storage tank (the code which distinguishes a specific model of hot water storage tank from other models with the same trade mark of from the same supplier);

the water storage function;

the energy efficiency class, determined in accordance with Table 2 of Annex 2 to this Technical Regulation. The letter representing the energy efficiency class shall be placed at the same height as the relevant arrow;

the standing loss, in W, rounded to the nearest integer;

the hot water storage tank volume, in litres, rounded to the nearest integer.

4. The energy label for packages of water heater and solar device shall contain the following information:

name or trade mark of the supplier of package of water heater and solar device;

model identifier for package of water heater and solar device (the code which distinguishes a specific model of package of water heater and solar device from other models with the same trade mark of from the same supplier);

the water heating function, including the declared load profile expressed as the appropriate letter in accordance with Table 1 of Annex 7 to this Technical Regulation;

the water heating energy efficiency class of the water heater, determined in accordance with Table 1 of Annex 2 to this Technical Regulation;

indication of whether a solar collector and hot water storage tank may be included in the package of water heater and solar device;

the water heating energy efficiency class of the package of water heater and solar device, determined in accordance with point 4 of Annex 4 to this Technical Regulation. The letter representing the energy efficiency class shall be placed at the same height as the relevant arrow.

For packages of water heater and solar device in water heating energy efficiency classes A^{+++} to D, the last classes E to G in the A^{+++} to G scale may be omitted.

5. For heat pump water heaters, a printed energy label is provided in the packaging of the heat generator; for water heaters intended for use in packages of water heater and solar device, a second printed energy label complying with the requirements laid down in point 4 of this section, as well as with the form (sample) and technical description set out in point 5 of Annex 3 to this Technical Regulation, is provided for each water heater.

6. The content and form of a product fiche, including an electronic product fiche, is set out in Annex 4 to this Technical Regulation.

For heat pump water heaters, a product fiche, including an electronic product fiche, is provided at least for the heat generator; for water heaters intended for use in packages of water heater and solar device, a second product fiche complying with the form and content set out in point 4 of Annex 4 to this Technical Regulation, is provided.

Suppliers placing solar devices on the market and/or putting them into service, shall ensure that a product fiche, including an electronic product fiche, complying with the form and content set out in point 3 of Annex 4 to this Technical Regulation, is provided.

7. Suppliers placing water heaters, hot water storage tanks and packages of water heater and solar device on the market and/or putting them into service, shall have the technical documentation, allowing to verify the accuracy of the information contained in the energy label and the product fiche. The content of the technical documentation is set out in Annex 5 to this Technical Regulation.

Suppliers placing solar devices on the market and/or putting them into service, shall have the technical documentation, drawn up in accordance with point 3 of Annex 5 to this Technical Regulation.

8. Suppliers placing water heaters and packages of water heater and solar device on the market and/or putting them into service, shall indicate in any advertisement of a specific water heater model or a package of water heater and solar device model the information on the water heating energy efficiency class under warmer climate conditions for that model, where such advertisement contains energy-related or price information.

Suppliers placing hot water storage tanks on the market and/or putting them into service, shall indicate in any advertisement of a specific hot water storage tank model the information on the energy efficiency class for that model, where such advertisement contains energy-related or price information.

9. Suppliers placing water heaters and packages of water heater and solar device on the market and/or putting them into service, shall indicate in any technical promotional material for a specific water heater model or a package of water heater and solar device model the information on the specific technical parameters and water heating energy efficiency class under warmer climate conditions for that model.

Suppliers placing hot water storage tanks on the market and/or putting them into service, shall indicate in any technical promotional material for a specific hot water storage tank model the information on the specific technical parameters and on the energy efficiency class for that model.

10. Suppliers of water heaters, hot water storage tanks and packages of water heater and solar device shall make available to a distributor the information in accordance with Annex 6 to this Technical Regulation.

III. Obligations of distributors

1. Distributors of hot water storage tanks, water heaters (conventional water heaters, solar water heaters and heat pump water heaters), including those integrated in hot water storage tanks and packages of water heater and solar device, shall ensure that:

1) each hot water storage tank model, each water heater model, at the point of sale, bears the energy label provided by suppliers in accordance with points 1 to 3 and 5 of section II of this Technical Regulation, attached on the front of the hot water storage tank, water heater (it shall be clearly visible), and the product fiche provided by the supplier in accordance with points 1 and 6 of section II of this Technical Regulation;

2) consumers are supplied with the information provided by the suppliers in accordance with point 10 of section II of this Technical Regulation, where hot water storage tank, water heater is offered for sale, hire or hire-purchase by mail order, catalogue, or by any other method (except where they are marketed by means of distance selling through the Internet) by which the customer cannot be expected to see the hot water storage tank, water heater displayed. The above information shall be provided to the consumer before he purchases, hires or hire-purchases the hot water storage tank, water heater concerned;

3) consumers are supplied with the information in accordance with Annex 10 to this Technical Regulation, where hot water storage tank, water heater is offered for sale, hire or hire-purchase by means of distance selling through the Internet. The above information shall be provided to the consumer before he purchases, hires or hire-purchases the hot water storage tank, water heater concerned;

4) any advertisement of a specific hot water storage tank model contains the information on the water heating energy efficiency class under warmer climate conditions for that model, where such advertisement contains energy-related or price information;

5) any advertisement of a specific hot water storage tank model contains the information on the energy efficiency class for that model, where such advertisement contains energy-related or price information;

6) any technical promotional material for a specific hot water storage tank model contains the information on the specific technical parameters and on the water heating energy efficiency class under warmer climate conditions for that model;

7) any technical promotional material for a specific hot water storage tank model contains the information on the specific technical parameters and on the energy efficiency class for that model.

2. Distributors of packages of water heater and solar device shall ensure that:

1) each package of water heater and solar device model, at the point of sale, bears the energy label provided by suppliers in accordance with points 1, 4 and 5 of section II of this Technical Regulation, attached to the package of water heater and solar device (it shall be clearly visible), and the product fiche provided by suppliers in accordance with points 1 and 6 of section II of this Technical Regulation;

2) any offer for a specific package of water heater and solar device model includes the information on water heating energy efficiency and the water heating energy efficiency class for that package under warmer or colder climate conditions by displaying the energy label provided by suppliers in accordance with points 1, 4 and 5 of section II of this Technical Regulation, and the product fiche provided by suppliers in accordance with points 1 and 6 of section II of this Technical Regulation;

3) consumers are supplied with the information in accordance with Annex 10 to this Technical Regulation, where the package of water heater and solar device is offered for sale, hire or hire-purchase by means of distance selling through the Internet. The above information shall be provided to the consumer before he purchases, hires or hire-purchases the package of water heater and solar device concerned;

4) any advertisement of a specific package of water heater and solar device model contains the information on the water heating energy efficiency class under warmer climate conditions for that model, where such advertisement contains energy-related or price information;

5) any technical promotional material for a specific package of water heater and solar device model contains the information on the specific technical parameters and on the water heating energy efficiency class under warmer climate conditions for that model.

IV. Measurement and calculation methods

1. Suppliers placing water heaters, hot water storage tanks and packages of water heater and solar device on the market and/or putting them into service, when testing them to verify the energy performance characteristics indicated on the energy label and the product fiche, shall use reliable, accurate and reproducible measurement and calculation methods, which take into account the generally recognised state of the art measurement and calculation methods.

2. The measurements referred to in point 1 of this section shall be made using national standards, that are identical to the harmonised European standards, or using any other measurement method. Those methods shall comply with the conditions and technical parameters set out in Annex 7 to this Technical Regulation.

3. The calculation of the water heating energy efficiency shall be made using national standards, that are identical to the harmonised European standards, or using other appropriate calculation methods that take into account the generally recognised state-of-the-art measurement methods. Those calculation methods shall comply with the technical parameters and calculations set out in Annex 8 to this Technical Regulation.

4. Technical parameters used for the calculations referred to in Annex 8 to this Technical Regulation shall be measured in accordance with Annex 7 to this Technical Regulation.

V. Requirements to verification during state market surveillance

1. The state market surveillance with regard to conformity of water heaters, hot water storage tanks and packages of water heater and solar device with the requirements of this Technical Regulation shall be carried out by the state market surveillance authorities within their areas of responsibility, and shall provide for checking the availability of the energy label and product fiche, their compliance with the requirements referred to in points 1 to 6 of section II of this Technical Regulation, as well as for verifying conformity of actual technical characteristics of water heaters, hot water storage tanks and packages of water heater and solar device with the requirements of this Technical Regulation.

2. When the state market surveillance authorities verify the conformity of a water heater, hot water storage tank and package of water heater and solar device with the requirements of this Technical Regulation, they shall apply the procedure set out in Annex 9 to this Technical Regulation.

3. The state market surveillance authorities shall use the measurement and calculation methods in accordance with section IV of this Technical Regulation.

4. For the verification, the state market surveillance authorities shall only apply the verification tolerances that are set out in Annex 9 to this Technical Regulation.

5. The state market surveillance authorities shall only apply the verification tolerances and shall use the procedure that are set out in this section. No other tolerances (such as those set out in the national standards that are identical to the harmonised European standards or in any other measurement method) shall be applied.

Deputy
Director of the Department
for Life-Support Systems
and Housing Policy **V. Tokarenko**

Annex 1
to the Technical Regulation
on Energy Labelling
of Water Heaters, Hot Water Storage Tanks
and Packages of Water Heater
and Solar Device
(point 4 of section I)

DEFINITIONS
applicable to the Annexes to the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device

For the purposes of Annexes to the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device (hereinafter referred to as the 'Technical Regulation'), the terms used herein shall have the following meanings:

'alternative text' means text provided as an alternative to a graphic allowing information to be presented in non-graphical form where display devices cannot render the graphic or as an aid to accessibility such as input to voice synthesis applications;

'nested display' means visual interface where an image or data set is accessed using mouse or tactile screen expansion of image;

'water draw-off' means a given combination of useful water flow rate, useful water temperature, useful energy content and peak temperature, as specified in Table 1 of Annex 7 to the Technical Regulation;

'reference energy' (Q_{ref}) means the sum of the useful energy content of water draw-offs, expressed in kWh, in a particular load profile, as specified in Table 1 of Annex 7 to the Technical Regulation;

'smart control compliance' (smart) means the measure of whether a water heater equipped with smart controls fulfils the criterion set out in point 4 of Annex 8 to the Technical Regulation;

'standby heat loss' (P_{stby}) means the heat loss of a heat pump water heater, expressed in kW, in operating modes without heat demand;

'daily electricity consumption' (Q_{elec}) means the consumption of electricity for water heating over 24 consecutive hours under the declared load profile, expressed in kWh;

'daily fuel consumption' (Q_{fuel}) means the consumption of fuels over 24 consecutive hours under the declared load profile and under given climate conditions, expressed in kWh in terms of gross calorific value, and for the purposes of point 3 of Annex 8 to the Technical Regulation, expressed in GJ in terms of gross calorific value;

'auxiliary electricity consumption' (Q_{aux}) (as depicted in Figure 1 in Annex 4 referred to as 'auxiliary electricity') means the annual electricity consumption of a solar water heater that is due to the pump power consumption and the standby power consumption, expressed in kWh;

'heat generator water heating energy efficiency' ($\eta_{wh,\ nonsol}$) means the water heating energy efficiency of a heat generator which is part of a solar water heater, expressed in %, established under warmer climate conditions and without using solar heat input;

'energy content of hot water' means the product of the specific heat capacity of water, the average temperature difference between the hot water output and cold water input, and the total mass of the hot water delivered;

'standby power consumption' (solstandby) means the rated electrical power consumption of a solar water heater or solar-only system, expressed in W, when the pump and the heat generator are inactive;

‘pump power consumption’ (solpump) means the rated electrical power consumption of the pump in the collector loop of a solar water heater or solar-only system, expressed in W;

‘zero-loss efficiency’ (η_0) means the efficiency of the solar collector, when the solar collector mean fluid temperature is equal to the ambient temperature;

‘declared load profile’ means the load profile applied when determining water heating energy efficiency in accordance with Table 1 of Annex 7 to the Technical Regulation;

‘conventional water heater’ means a water heater that generates heat using the combustion of fossil and/or biomass fuels and/or the Joule effect in electric resistance heating elements;

‘model identifier’ means the code (usually alphanumeric), which distinguishes a specific water heater, hot water storage tank, solar device or package of water heater and solar device model from other models with the same trade mark, from the same supplier or dealer;

‘smart control’ means a device that automatically adapts the water heating process to individual usage conditions with the aim of reducing energy consumption;

‘second-order coefficient’ (a_2) means the coefficient measuring the temperature dependence of the first order coefficient, expressed in $W/(m^2K^2)$;

‘conversion coefficient’ (CC) means a coefficient reflecting the estimated 40 % average generation efficiency, the value of the conversion coefficient is CC = 2,5;

‘first-order coefficient’ (a_1) means the heat loss coefficient of a solar collector, expressed in $W/(m^2K)$;

‘ambient correction term’ (Q_{cor}) means a coefficient, expressed in kWh, which takes into account the fact that the temperature in the place where the water heater is installed is not constant;

‘useful water flow rate’ (f) means the minimum flow rate, expressed in litres per minute, for which hot water is contributing to the reference energy, as specified in Table 1 in Annex 7 to the Technical Regulation;

‘useful energy content’ (Q_{tap}) means the energy content of hot water, expressed in kWh, provided at a temperature equal to, or above, the useful water temperature, and at water flow rates equal to, or above, the useful water flow rate, as specified in Table 1 in Annex 7 to the Technical Regulation;

‘useful water temperature’ (T_m) means the water temperature, expressed in degrees Celsius, at which hot water starts contributing to the reference energy, as specified in Table 1 in Annex 7 to the Technical Regulation;

‘incidence angle’ means the angle between the direction to the sun and the direction perpendicular to the solar collector aperture;

‘maximum load profile’ means the load profile with the greatest reference energy that a water heater is able to provide while fulfilling the temperature and flow rate conditions of that load profile;

‘display mechanism’ means any screen, including tactile screen, or other visual technology used for displaying Internet content;

‘incidence angle modifier’ (IAM) means the ratio of the useful heat output of the solar collector at a given incidence angle and its useful heat output at an incidence angle of 0 degrees;

‘peak temperature’ (T_p) means the minimum water temperature, expressed in degrees Celsius, to be achieved during water draw-off, as specified in Table 1 in Annex 7 to the Technical Regulation;

‘collector aperture area’ (A_{sol}) means the maximum projected area through which unconcentrated solar radiation enters the collector, expressed in m^2;

‘smart control factor’ (SCF) means the water heating energy efficiency gain level due to smart control under the conditions set out in point 2 of Annex 7 to the Technical Regulation;

‘load profile’ means a given sequence of water draw-offs, as specified in Table 1 of Annex 7 to the Technical Regulation; Each water heater meets at least one load profile;

‘annual non-solar heat contribution’ (Q_{nonsol}) means the annual contribution of electricity (expressed in kWh in terms of primary energy) and/or fuels (expressed in kWh in terms of GCV) to the useful heat output of a solar water heater or a package of water heater and solar device, taking into account the annual amount of heat captured by the solar collector and the heat losses of the solar hot water storage tank;

‘annual energy consumption’ (Q_{tota}) means the annual energy consumption of a solar water heater, expressed in kWh, in terms of primary energy and/or in terms of gross calorific value;

‘tactile screen’ means a screen responding to touch;

‘solar hot water storage tank’ means a hot water storage tank storing heat energy produced by one or more solar collectors;

‘solar water heater’ means a water heater equipped with one or more solar collectors, solar hot water storage tanks, heat generator and pumps in the collector loop and other parts. A solar water heater is placed on the market as a single product;

‘solar collector’ means a device designed to absorb global solar irradiance and to transfer the heat energy so produced to a fluid passing through it; it is characterised by the collector aperture area, the zero-loss efficiency, the first order coefficient, the second-order coefficient and the incidence angle modifier;

‘global solar irradiance’ means the rate of total incoming solar energy (both direct and diffuse) on a collector plane with an inclination of 45 degrees and southward orientation at the Earth’s surface, expressed in W/m^2;

‘weekly electricity consumption without smart controls’ ($Q_{elec,\ week}$) means the weekly electricity consumption of a water heater with the smart control function disabled, expressed in kWh in terms of final energy;

‘weekly electricity consumption with smart controls’ ($Q_{elec,\ week,\ smart}$) means the weekly electricity consumption of a water heater with the smart control function enabled, expressed in kWh in terms of final energy;

‘weekly fuel consumption without smart controls’ ($Q_{fuel,\ week}$) means the weekly fuel consumption of a water heater with the smart control function disabled, expressed in kWh in terms of gross calorific value GCV;

‘weekly fuel consumption with smart controls’ ($Q_{fuel,\ week,\ smart}$) means the weekly fuel consumption of a water heater with the smart control function enabled, expressed in kWh in terms of gross calorific value GCV;

‘colder climate conditions’, ‘warmer climate conditions’ mean the temperatures ranges and global solar irradiance conditions. Warmer climate conditions are typical for the Autonomous Republic of Crimea, and colder climate conditions are typical for the other part of Ukraine.

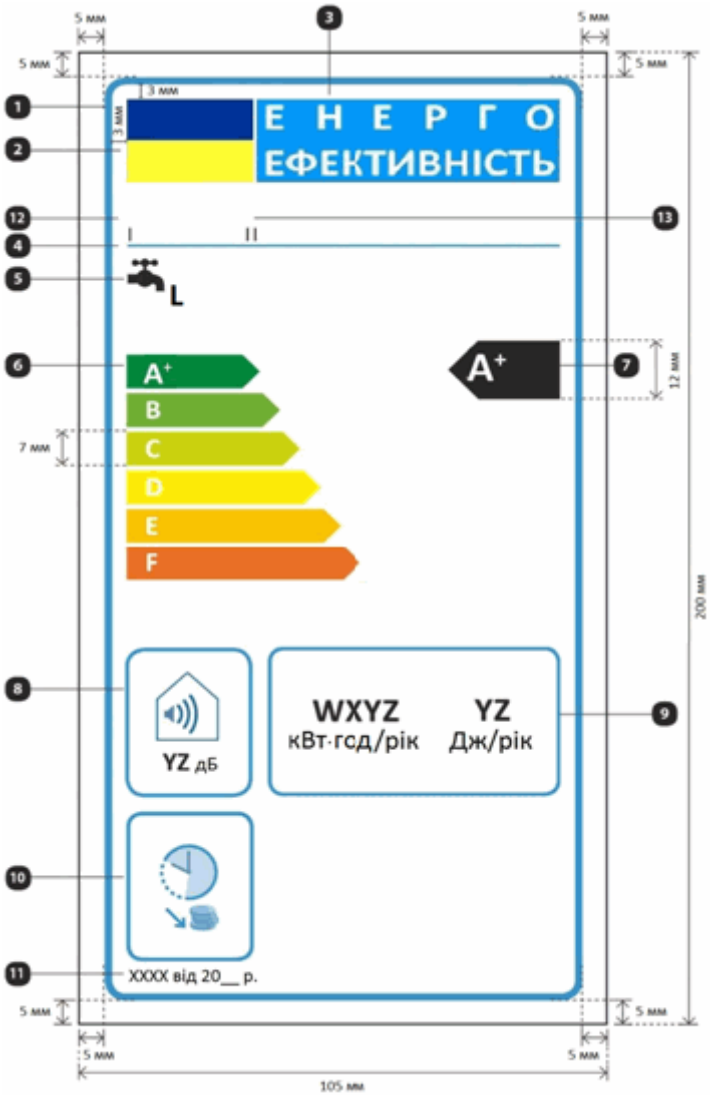
Annex 2
to the Technical Regulation
on Energy Labelling
of Water Heaters, Hot Water Storage Tanks
and Packages of Water Heater
and Solar Device
(point 2 of section II)

ENERGY EFFICIENCY CLASSES

Annex 3
to the Technical Regulation
on Energy Labelling
of Water Heaters, Hot Water Storage Tanks
and Packages of Water Heater
and Solar Device
(point 1 of section II)

FORM (SAMPLE)
of the energy label

1. The energy label for conventional water heaters in water heating energy efficiency classes A^+ to F shall be drawn up according to the following sample.



The energy label for conventional water heaters in water heating energy efficiency classes A^+ to F shall have the dimensions of at least 105 x 200 mm. Where the energy label is printed in a larger format, its dimensions shall remain proportionate.

When a colour energy label is produced, cyan, magenta, yellow and black colours shall be used on a white background.

The colour of any element in the energy label shall be formed by a combination of the above colours as a percentage of each of them.

As a designation of the colour of an element, a combination of four signs (figures) shall be used, indicating the percentage composition of the colours, in the following order: cyan, magenta, yellow and black.

For example, the designation of the colour of an energy label element as ‘00-70-X-00’ indicates that it consists of 0 % of cyan colour, 70 % of magenta, 100 % of yellow, and 0 % of black.

The energy label for conventional water heaters in water heating energy efficiency classes A^+ to F shall fulfil the following requirements (numbers refer to the figure on the sample):

1) border:

strokes - 4 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

2) colour panel:

colours - X-80-00-00 and 00-00-X-00;

3) energy logo:

colours - X-00-00-00;

pictogram of the colour panel and energy logo in accordance with the sample;

width - 86 mm;

height - 17 mm;

4) border:

stroke - 1 pt in width;

colour: cyan - 100 %;

length - 86 mm;

5) water heating function:

pictogram in accordance with the sample, including the declared load profile expressed as the appropriate letter in accordance with Table 1 of Annex 7 to the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device (hereinafter referred to as the ‘Technical Regulation’):

text:

Calibri bold - 16 pt;

colour: black - 100 %;

6) A^+ to F scale:

arrow:

height - 7 mm;

gap - 1 mm;

colours:

highest class - X-00-X-00;

second class - 70-00-X-00;

third class - 30-00-X-00;

fourth class - 00-00-X-00;

fifth class - 00-30-X-00;

sixth class - 00-70-X-00;

last class - 00-X-X-00;

text:

Calibri bold - 16 pt;

capitals, white;

‘+’ symbol - superscript;

7) water heating energy efficiency:

arrow:

width - 22 mm;

height - 12 mm;

colour: black - 100 %;

text:

Calibri bold - 24 pt;

capitals, white;

‘+’ symbol - superscript;

8) sound power level, indoors:

pictogram in accordance with the sample;

border:

stroke - 2 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

value ‘YZ’:

Calibri bold - 15 pt;

colour: black - 100 %;

text ‘dB’:

Calibri regular - 10 pt;

colour: black - 100 %;

9) annual electricity consumption in kWh/annum or GJ/annum:

border:

stroke - 2 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

value ‘WXYZ’ or ‘YZ’:

Calibri bold - at least 20 pt;

colour: black - 100 %;

text ‘kWh/annum’ or ‘GJ/annum’:

Calibri regular - 15 pt;

colour: black - 100 %;

10) off-peak fitness:

pictogram in accordance with the sample;

border:

stroke - 2 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

11) details on the legal and normative act that approved the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device;

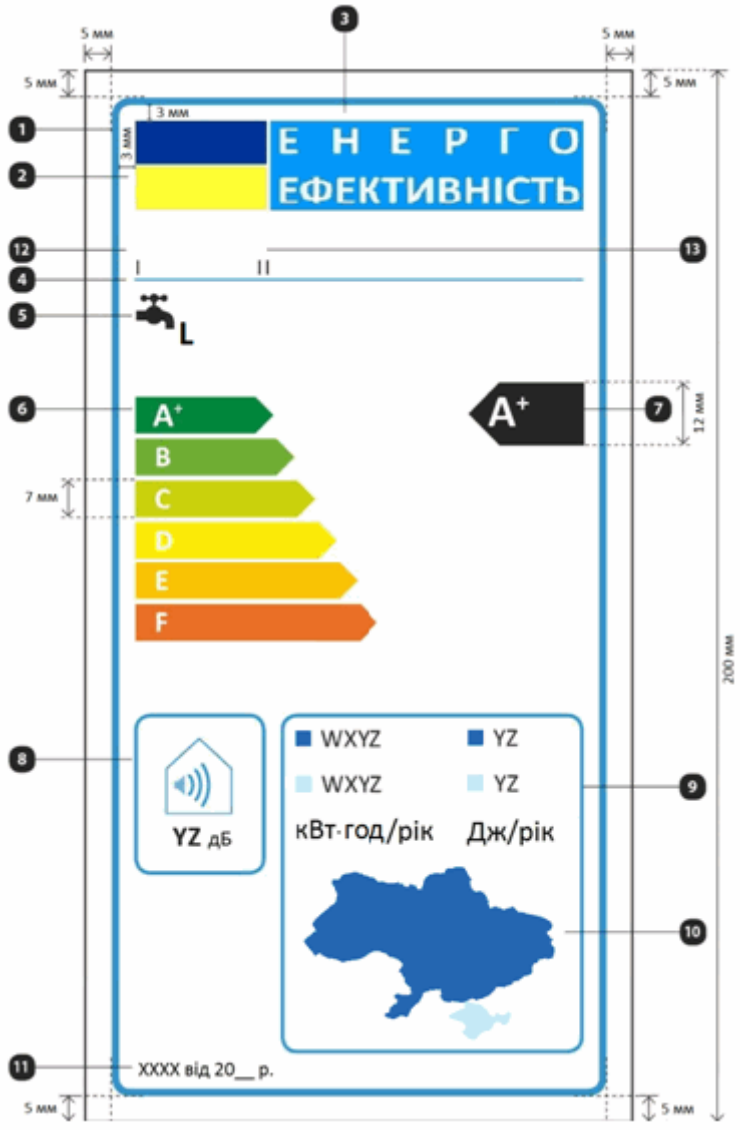
text:

Calibri regular - 10 pt;

12) supplier's name or trade mark;

13) conventional water heater model: the space to indicate the supplier's name or trade mark and model identifier of the conventional water heater, with the dimensions of 86 × 12 mm.

2. The energy label for solar water heaters in water heating energy efficiency classes A^+ to F shall be drawn up according to the following sample.



The energy label for solar water heaters in water heating energy efficiency classes A^+ to F shall have the dimensions of at least 105 x 200 mm. Where the energy label is printed in a larger format, its dimensions shall remain proportionate.

When a colour energy label is produced, cyan, magenta, yellow and black colours shall be used on a white background.

The colour of any element in the energy label shall be formed by a combination of the above colours as a percentage of each of them.

As a designation of the colour of an element, a combination of four signs (figures) shall be used, indicating the percentage composition of the colours, in the following order: cyan, magenta, yellow and black.

For example, the designation of the colour of an energy label element as '00-70-X-00' indicates that it consists of 0 % of cyan colour, 70 % of magenta, 100 % of yellow, and 0 % of black.

The energy label for solar water heaters in water heating energy efficiency classes A^+ to F shall fulfil the following requirements (numbers refer to the figure on the sample):

1) border:

stroke - 4 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

2) colour panel:

colours - X-80-00-00 and 00-00-X-00;

energy logo:

colours - X-00-00-00;

pictogram of the colour panel and energy logo in accordance with the sample:

width - 86 mm;

height - 17 mm;

4) border:

stroke - 1 pt in width;

colour: cyan - 100 %;

length - 86 mm;

5) water heating function:

pictogram in accordance with the sample, including the declared load profile expressed as the appropriate letter in accordance with Table 1 of Annex 7 to the Technical Regulation:

Calibri bold - 16 pt;

colour: black - 100 %;

6) A^+ to F scale:

arrow:

height - 7 mm;

gap - 1 mm;

colours:

highest class - X-00-X-00;

second class - 70-00-X-00;

third class - 30-00-X-00;

fourth class - 00-00-X-00;

fifth class - 00-30-X-00;

sixth class - 00-70-X-00;

last class - 00-X-X-00;

text:

Calibri bold - 16 pt;

capitals, white;

‘+’ symbol - superscript;

7) water heating energy efficiency:

arrow:

width - 22 mm;

height - 12 mm;

colour: black - 100 %;

text:

Calibri bold - 24 pt;

capitals, white;

‘+’ symbol - superscript;

8) sound power level, indoors:

pictogram in accordance with the sample;

border:

stroke - 2 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

value ‘YZ’:

Calibri bold - 15 pt;

colour: black - 100 %;

text ‘dB’:

Calibri regular - 10 pt;

colour: black - 100 %;

9) annual electricity consumption in kWh/annum or GJ/annum:

border:

stroke - 2 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

value ‘WXYZ’ or ‘YZ’:

Calibri - at least 13 pt;

colour: black - 100 %;

text ‘kWh/annum’ or ‘GJ/annum’:

Calibri regular - at least 11 pt;

colour: black - 100 %;

10) solar map of Ukraine and colour squares:

pictogram in accordance with the sample;

colours:

dark blue - 86-51-00-00;

light blue - 25-00-02-00;

11) details on the legal and normative act that approved the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device;

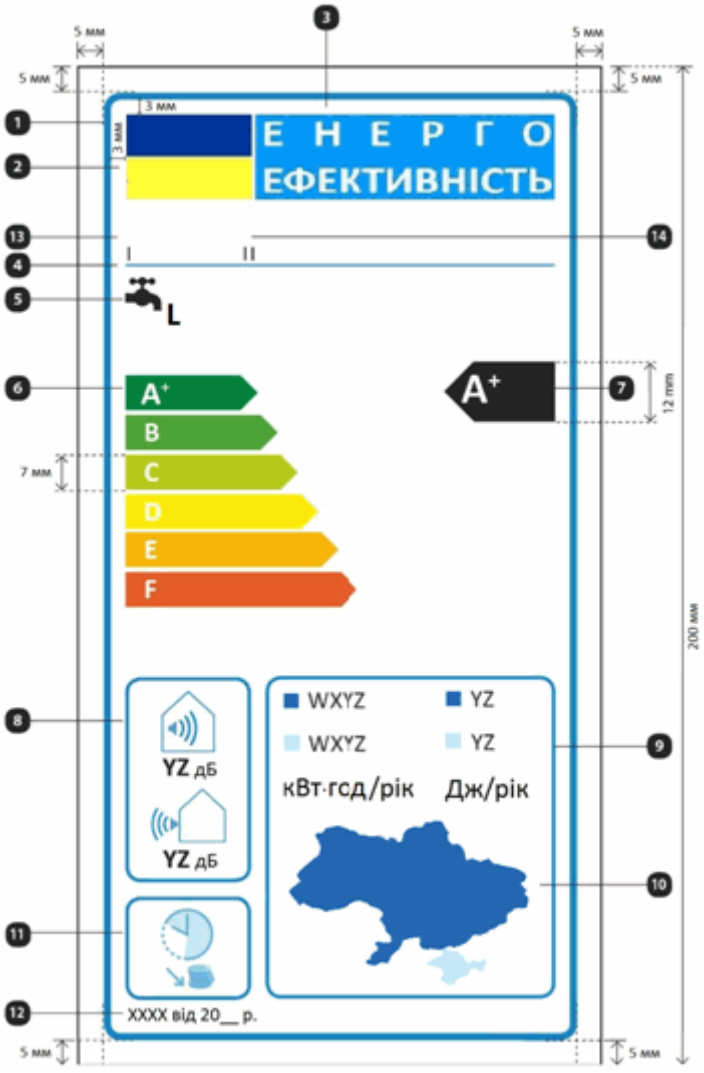
text:

Calibri bold - 10 pt;

12) name or trade mark of the supplier of solar water heaters;

13) solar water heater model: the space to indicate the supplier's name or trade mark and model identifier of the solar water heater, with the dimensions of 86 × 12 mm.

3. The energy label for heat pump water heaters in water heating energy efficiency classes A^+ to F shall be drawn up according to the following sample.



The energy label for heat pump water heaters in water heating energy efficiency classes A^+ to F shall have the dimensions of at least 105 x 200 mm. Where the energy label is printed in a larger format, its dimensions shall remain proportionate.

When a colour energy label is produced, cyan, magenta, yellow and black colours shall be used on a white background.

The colour of any element in the energy label shall be formed by a combination of the above colours as a percentage of each of them.

As a designation of the colour of an element, a combination of four signs (figures) shall be used, indicating the percentage composition of the colours, in the following order: cyan, magenta, yellow and black.

For example, the designation of the colour of an energy label element as '00-70-X-00' indicates that it consists of 0 % of cyan colour, 70 % of magenta, 100 % of yellow, and 0 % of black.

The energy label for heat pump water heaters in water heating energy efficiency classes A^+ to F shall fulfil the following requirements (numbers refer to the figure on the sample):

1) border:

stroke - 4 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

2) colour panel:

colours - X-80-00-00 and 00-00-X-00;

3) energy logo:

colours - X-00-00-00;

pictogram of the colour panel and energy logo in accordance with the sample:

width - 86 mm;

height - 17 mm;

4) border:

stroke - 1 pt in width;

colour: cyan - 100 %;

length - 86 mm;

5) water heating function:

pictogram in accordance with the sample, including the declared load profile expressed as the appropriate letter in accordance with Table 1 of Annex 7 to the Technical Regulation:

Calibri bold - 16 pt;

colour: black - 100 %;

6) A^+ to F scale:

arrow:

height - 7 mm;

gap - 1 mm;

colours:

highest class - X-00-X-00;

second class - 70-00-X-00;

third class - 30-00-X-00;

fourth class - 00-00-X-00;

fifth class - 00-30-X-00;

sixth class - 00-70-X-00;

last class - 00-X-X-00;

text:

Calibri bold - 16 pt;

capitals, white;

‘+’ symbol - superscript;

7) water heating energy efficiency:

arrow:

width - 22 mm;

height - 12 mm;

colour: black - 100 %;

text:

Calibri bold - 24 pt;

capitals, white;

‘+’ symbol - superscript;

8) sound power level, indoors (if applicable) and outdoors:

pictogram in accordance with the sample;

border:

stroke - 2 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

value ‘YZ’:

Calibri bold - 15 pt;

colour: black - 100 %;

text ‘dB’:

Calibri regular - 10 pt;

colour: black - 100 %;

9) annual electricity consumption in kWh/annum or GJ/annum:

border:

stroke - 2 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

value ‘WXYZ’ or ‘YZ’:

Calibri - at least 13 pt;

colour: black - 100 %;

text ‘kWh/annum’ or ‘GJ/annum’:

Calibri regular - at least 11 pt;

colour: black - 100 %;

10) temperature map of Ukraine and colour squares:

pictogram in accordance with the sample;

colours:

dark blue - 86-51-00-00;

light blue - 25-00-02-00;

11) off-peak fitness:

pictogram in accordance with the sample;

border:

stroke - 2 pt in width;

colour: cyan - 100 %;

round corners: 3,5 mm;

12) details on the legal and normative act that approved the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device;

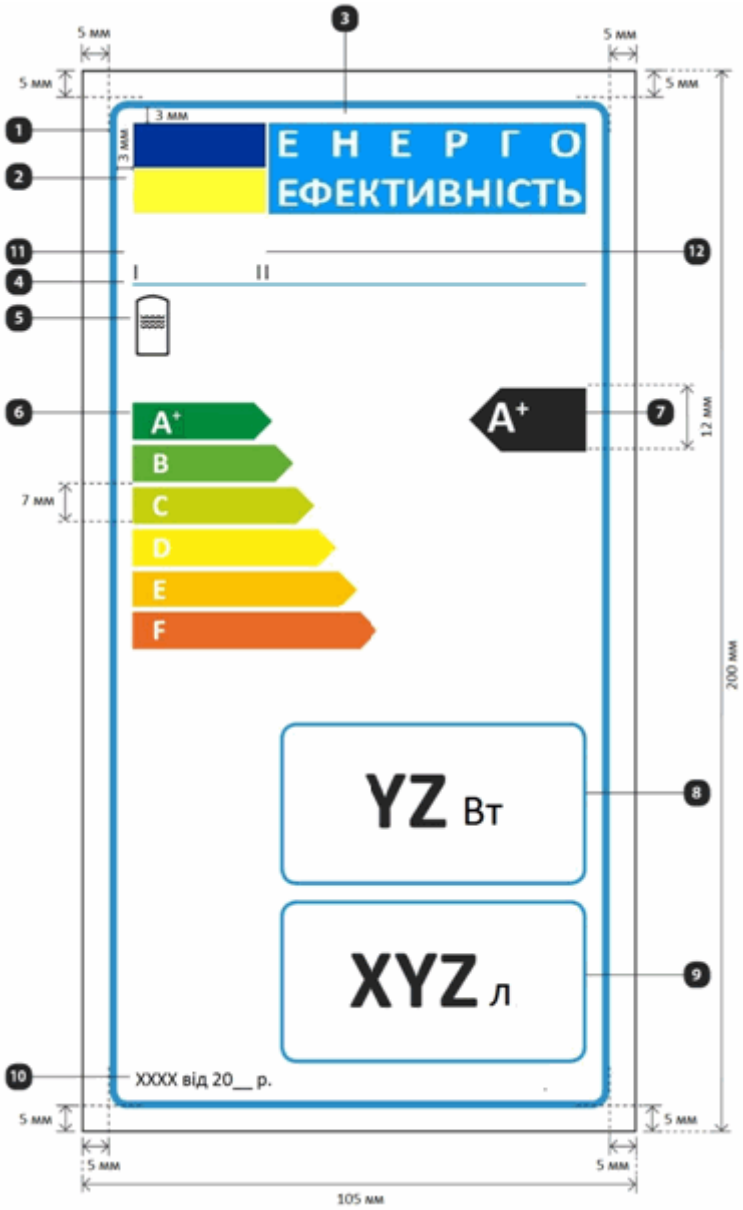
text:

Calibri bold - 10 pt;

13) name or trade mark of the supplier of solar water heaters;

14) heat pump water heater model: the space to indicate the supplier’s name or trade mark and model identifier of the heat pump water heater, with the dimensions of 86 × 12 mm.

4. The energy label for hot water storage tanks in water heating energy efficiency classes A^+ to F shall be drawn up according to the following sample.



The energy label for hot water storage tanks in water heating energy efficiency classes A^+ to F shall have the dimensions of at least 105 x 200 mm. Where the energy label is printed in a larger format, its dimensions shall remain proportionate.

When a colour energy label is produced, cyan, magenta, yellow and black colours shall be used on a white background.

The colour of any element in the energy label shall be formed by a combination of the above colours as a percentage of each of them.

As a designation of the colour of an element, a combination of four signs (figures) shall be used, indicating the percentage composition of the colours, in the following order: cyan, magenta, yellow and black.

For example, the designation of the colour of an energy label element as ‘00-70-X-00’ indicates that it consists of 0 % of cyan colour, 70 % of magenta, 100 % of yellow, and 0 % of black.

The energy label for hot water storage tanks in water heating energy efficiency classes A^+ to F shall fulfil the following requirements (numbers refer to the figure on the sample):

1) border:

stroke - 4 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

2) colour panel:

colours - X-80-00-00 and 00-00-X-00;

3) energy logo:

colours - X-00-00-00;

pictogram of the colour panel and energy logo in accordance with the sample;

width - 86 mm;

height - 17 mm;

4) border:

stroke - 1 pt in width;

colour: cyan - 100 %;

length - 86 mm;

5) storage function:

pictogram in accordance with the sample;

6) A^+ to F scale:

arrow:

height - 7 mm;

gap - 1 mm;

colours:

highest class - X-00-X-00;

second class - 70-00-X-00;

third class - 30-00-X-00;

fourth class - 00-00-X-00;

fifth class - 00-30-X-00;

sixth class - 00-70-X-00;

last class - 00-X-X-00;

text:

Calibri bold - 16 pt;

capitals, white;

‘+’ symbol - superscript;

7) energy efficiency class:

arrow:

width - 22 mm;

height - 12 mm;

colour: black - 100 %;

text:

Calibri bold - 24 pt;

capitals, white;

‘+’ symbol - superscript;

8) standing loss:

border:

stroke - 2 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

value ‘YZ’:

Calibri bold - 45 pt;

colour: black - 100 %;

text ‘W’:

Calibri regular - 30 pt;

colour: black - 100 %;

9) storage volume of hot water storage tank:

border:

stroke - 2 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

value ‘XYZ’:

Calibri bold - 45 pt;

colour: black - 100 %;

text ‘l’:

Calibri regular - 30 pt;

colour: black - 100 %;

10) details on the legal and normative act that approved the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device;

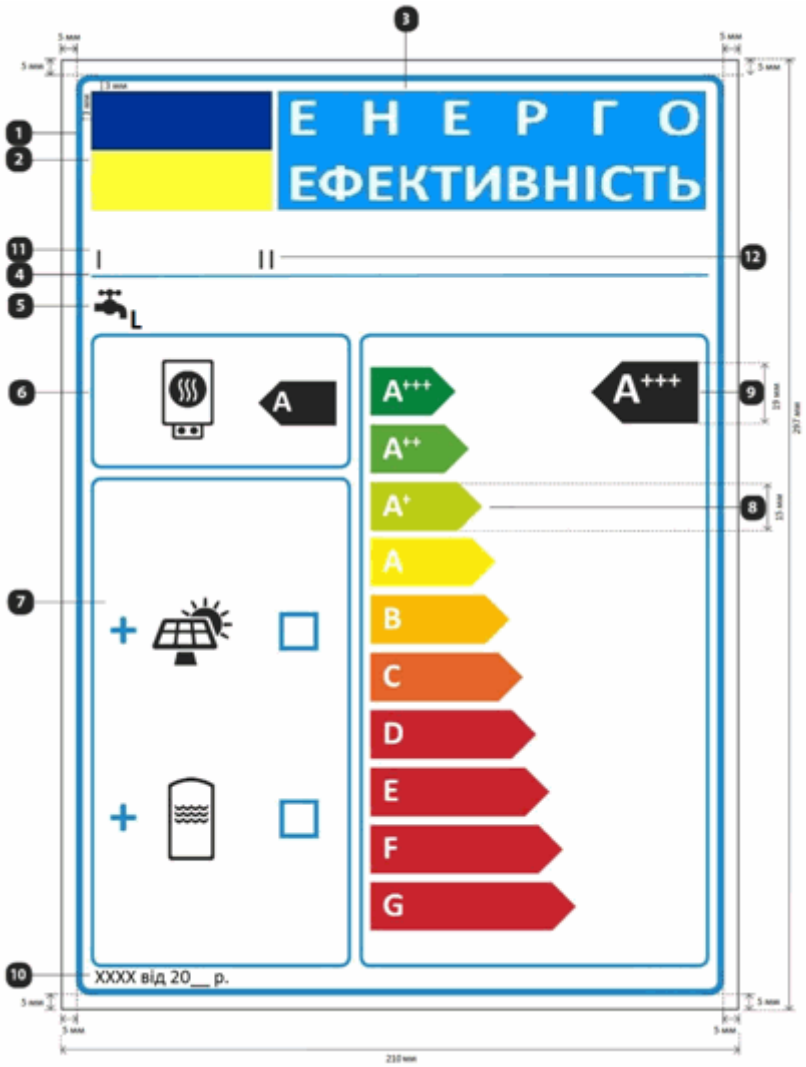
text:

Calibri bold - 10 pt;

11) name or trade mark of the supplier of hot water storage tank;

12) hot water storage tank model: the space to indicate the supplier’s name or trade mark and model identifier of the heat pump water heater, with the dimensions of 86 × 12 mm.

5. The energy label for packages of water heater and solar device in water heating energy efficiency classes A^{+++} to G shall be drawn up according to the following sample.



The energy label for packages of water heater and solar device in water heating energy efficiency classes A^{+++} to G shall have the dimensions of at least 210 x 297 mm. Where the energy label is printed in a larger format, its dimensions shall remain proportionate.

When a colour energy label is produced, cyan, magenta, yellow and black colours shall be used on a white background.

The colour of any element in the energy label shall be formed by a combination of the above colours as a percentage of each of them.

As a designation of the colour of an element, a combination of four signs (figures) shall be used, indicating the percentage composition of the colours, in the following order: cyan, magenta, yellow and black.

For example, the designation of the colour of an energy label element as ‘00-70-X-00’ indicates that it consists of 0 % of cyan colour, 70 % of magenta, 100 % of yellow, and 0 % of black.

The energy label for packages of water heater and solar device in water heating energy efficiency classes A^{+++} to G shall fulfil the following requirements (numbers refer to the figure on the sample):

1) border:

stroke - 6 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

2) colour panel:

colours - X-80-00-00 and 00-00-X-00;

3) energy logo:

colours - X-00-00-00;

pictogram of the colour panel and energy logo in accordance with the sample;

width - 191 mm;

height - 37 mm;

4) border:

stroke - 2 pt in width;

colour: cyan - 100 %;

length - 191 mm;

5) water heating function:

pictogram in accordance with the sample, including the declared load profile expressed as the appropriate letter in accordance with Table 1 of Annex 7 to the Technical Regulation:

Calibri bold - 22 pt;

colour: black - 100 %;

6) water heater:

pictogram in accordance with the sample;

water heating energy efficiency class of water heater:

arrow:

width - 24 mm;

height - 14 mm;

colour: black - 100 %;

text:

Calibri bold - 28 pt;

capitals, white;

border:

stroke - 3 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

7) package with solar collector and/or hot water storage tank:

pictogram in accordance with the sample;

‘+’ symbol:

Calibri bold - 50 pt;

colour: cyan - 100 %;

boxes:

width - 12 mm;

height - 12 mm;

border - 4 pt;

colour: cyan - 100 %;

border:

stroke - 3 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

8) A^{+++} to G scale with border:

arrow:

height - 15 mm;

gap - 3 mm;

colours:

highest class - X-00-X-00;

second class - 70-00-X-00;

third class - 30-00-X-00;

fourth class - 00-00-X-00;

fifth class - 00-30-X-00;

sixth class - 00-70-X-00;

seventh class 00-X-X-00;

if applicable, last classes: 00-X-X-00;

text:

Calibri bold - 30 pt;

capitals, white;

‘+’ symbols: superscript, aligned on a single row;

border:

stroke - 3 pt in width;

colour: cyan - 100 %;

round corners - 3,5 mm;

9) water heating energy efficiency class for package of water heater and solar device:

arrow:

width - 33 mm;

height - 19 mm;

colour: black - 100 %;

text:

Calibri bold - 40 pt;

capitals, white;

‘+’ symbols: superscript, aligned on a single row;

10) details on the legal and normative act that approved the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device;

text:

Calibri bold - 12 pt;

11) name or trade mark of the supplier and/or distributor of package of water heater and solar device;

12) model of package of water heater and solar device: the space to indicate the supplier’s name or trade mark and model identifier of the package of water heater and solar device, with the dimensions of 191 × 19 mm.

Annex 4
to the Technical Regulation
on Energy Labelling
of Water Heaters, Hot Water Storage Tanks
and Packages of Water Heater
and Solar Device
(point 4 of section II)

REQUIREMENTS
to product fiche

1. The product fiche, including the instructions and the product brochure, to be provided together with water heaters, shall contain the following information:

1) supplier's name or trade mark;

2) water heater model;

3) the declared load profile, expressed by the appropriate letter in accordance with Table 1 of Annex 7 to the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device (hereinafter referred to as the 'Technical Regulation');

4) the water heating energy efficiency class of the model, determined in accordance with points 1, 2 of Annex 2 to the Technical Regulation (for solar water heaters and heat pump water heaters, under warmer climate conditions);

5) the water heating energy efficiency, in %, rounded to the nearest integer and calculated in accordance with point 2 of Annex 8 to the Technical Regulation (for solar water heaters and heat pump water heaters, under warmer climate conditions);

6) the annual electricity consumption in kWh in terms of final energy and/or the annual fuel consumption in GJ in terms of gross calorific value, rounded to the nearest integer and calculated in accordance with point 3 of Annex 8 to the Technical Regulation (for solar water heaters, under warmer climate conditions);

7) if applicable, other load profiles for which the water heater is suitable to use and the corresponding water heating energy efficiency and annual electricity consumption as set out in subpoints 5, 6 of this point;

8) the thermostat temperature settings of the water heater, as placed on the market by the supplier;

9) the sound power level L_{WA}, indoors, rounded to the nearest integer (for heat pump water heaters if applicable), in dB;

10) if applicable, an indication that the water heater is able to work only during off-peak hours;

11) any specific safeguards that shall be taken when the water heater is assembled, installed or maintained;

12) where the value of smart is declared as being equal to '1', the information on water heating energy efficiency, annual electricity and fuel consumption, as applicable, relates to enabled smart control settings only;

in addition, for solar water heaters and heat pump water heaters:

13) the water heating energy efficiency, under colder climate conditions, rounded to the nearest integer and calculated in accordance with point 2 of Annex 8 to the Technical Regulation, in %;

14) the annual electricity consumption in terms of final energy and/or the annual fuel consumption in GJ in terms of gross calorific value, under colder climate conditions, rounded to the nearest integer and calculated in accordance with point 3 of Annex 8 to the Technical Regulation, in kWh;

in addition, for solar water heaters:

15) the collector aperture area (to two decimal places), in m^2;

16) the zero-loss efficiency (to three decimal places);

17) the first-order coefficient (to two decimal places), in $W/(m^2 K)$;

18) the second-order coefficient (to three decimal places), in $W/(m^2 K^{2)})$;

19) the incidence angle modifier (to two decimal places);

20) the storage volume, rounded to the nearest integer, in l;

21) the pump power consumption, rounded to the nearest integer, in W;

22) the standby power consumption (to two decimal places), in W;

in addition, for heat pump water heaters:

23) the sound power level L_{WA}, outdoors, rounded to the nearest integer, in dB.

One product fiche may cover a number of water heater models supplied by the same supplier.

The information contained in the product fiche may be given in the form of a copy of the energy label, either in colour or in black and white. Where this is the case, the information listed in points 1 to 23 of this point, not already displayed on the energy label, shall also be provided to the end-user.

2. The product fiche, including the instructions and the product brochure, to be provided together with hot water storage tanks, shall contain the following information:

1) supplier’s name or trade mark;

2) hot water storage tank model;

3) the energy efficiency class of the hot water storage tank in accordance with point 3 of Annex 2 to the Technical Regulation;

4) the standing loss, rounded to the nearest integer, in W;

5) the storage volume, rounded to the nearest integer, in l.

One product fiche may cover a number of hot water storage tank models supplied by the same supplier.

The information contained in the product fiche may be given in the form of a copy of the energy label, either in colour or in black and white. Where this is the case, the information listed in points 1 to 5 of this point, not already displayed on the energy label, shall also be provided to the end-user.

3. Product fiches, including the instructions and the product brochures, to be provided together with solar devices (for pumps in the collector loop if applicable), shall contain the following information:

1) supplier’s name or trade mark;

2) solar device model;

3) the collector aperture area (to two decimal places), in m^2;

4) the zero-loss efficiency (to three decimal places);

5) the first-order coefficient (to two decimal places), in $W/(m^2K)$;

6) the second-order coefficient (to three decimal places), in $W/(m^2 K^2)$;

7) the storage volume, rounded to the nearest integer, in l;

8) the annual non-solar heat contribution Q_{nonsol} in terms of primary energy for electricity and/or in terms of gross calorific value for fuels (for the load profiles M, L, XL and XXL under warmer climate conditions, rounded to the nearest integer), in kWh;

9) the pump power consumption, rounded to the nearest integer, in W;

10) the standby power consumption (to two decimal places), in W;

11) the annual auxiliary electricity consumption Q_{aux} in terms of final energy, rounded to the nearest integer, in kWh.

One product fiche may cover a number of solar device models supplied by the same supplier.

4. The product fiche to be supplied together with a package of water heater and solar device shall contain the elements set out in Figure 1 of this Annex for evaluating the water heating energy efficiency of the package of water heater and solar device.

I is the value of the water heating energy efficiency of the water heater, expressed in %;

II is the value of the mathematical expression $(220\ Q_{ref})/Q_{nonsol}$, where Q_{ref} is taken from Table 1 in Annex 7 to the Technical Regulation and Q_{nonsol} from the product fiche of the solar device for the declared load profile M, L, XL or XXL of the water heater;

III is the value of the mathematical expression $(Q_{aux}\ 2{,}5)/(220\ Q_{ref})$, expressed in %, where Q_{aux} is taken from the product fiche of the solar device and Q_{ref} from Table 1 in Annex 7 to the Technical Regulation for the declared load profile M, L, XL or XXL.

The energy efficiency of the package of water heater and solar device, specified in the product fiche, may not correspond to its actual energy efficiency once installed in a building, as its efficiency may be influenced by other factors (such as, hear loss in the distribution system and the dimensioning of the equipment in relation to building size and characteristics).

Figure 1

The product fiche for a package of water heater and solar device indicating the water heating energy efficiency of the package offered

Енергоефективність нагрівання води водонагрівача ❶ "I" %

Заявлений профіль навантаження ☐

Внесок сонячної енергії
з мікрофіші сонячного обладнання

(1,1 x "I" 10 %) x "II" "III" - "I" + ❷ %

(електроенергія для власних потреб)

Енергоефективність нагрівання води комплекта за тепліших кліматичних умов ❸ %

Клас енергоефективності нагрівання води комплекта за тепліших кліматичних умов

	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 %

Енергоефективність нагрівання води комплекта за холодніших кліматичних умов

❸ – 0,2 × ❷ = %

Annex 5
to the Technical Regulation
on Energy Labelling
of Water Heaters, Hot Water Storage Tanks
and Packages of Water Heater
and Solar Device
(point 7 of section II)

REQUIREMENTS
to technical documentation

1. The technical documentation for water heaters referred to in section II of the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device (hereinafter referred to as the 'Technical Regulation') shall contain the following information:

1) the full name and the registered office of the supplier;

2) a description of the water heater model sufficient for its unambiguous identification;

3) the references to the national standards, in particular those aligned with the harmonised European standards, and other standards and technical specifications applied (where appropriate);

4) the signature of the supplier's representative;

5) the results of the measurements for the technical parameters specified in point 6 of Annex 7 to the Technical Regulation;

6) the results of the calculations for the technical parameters specified in point 1 of Annex 8 to the Technical Regulation;

7) any specific safeguards that shall be taken when the water heater is assembled, installed or maintained.

2. The technical documentation for hot water storage tanks referred to in section II of the Technical Regulation shall contain the following information:

1) the full name and the registered office of the supplier;

2) a description of the hot water storage tank model sufficient for its unambiguous identification;

3) the references to the national standards, in particular those aligned with the harmonised European standards, and other standards and technical specifications applied (where appropriate);

4) the signature of the supplier's representative;

5) the results of the measurements for the technical parameters specified in point 7 of Annex 7 to the Technical Regulation;

6) any specific safeguards that shall be taken when the hot water storage tank is assembled, installed or maintained.

3. The technical documentation for solar devices referred to in section II of the Technical Regulation shall contain the following information:

1) the full name and the registered office of the supplier;

2) a description of the solar device model sufficient for its unambiguous identification;

3) the references to the national standards, in particular those aligned with the harmonised European standards, and other standards and technical specifications applied (where appropriate);

4) the signature of the supplier's representative;

5) the results of the measurements for the technical parameters specified in point 8 of Annex 7 to the Technical Regulation;

6) any specific safeguards that shall be taken when the solar device is assembled, installed or maintained.

4. The technical documentation for packages of water heater and solar device referred to in section II of the Technical Regulation shall contain the following information:

1) the full name and the registered office of the supplier;

2) a description of the package of water heater and solar device model sufficient for its unambiguous identification;

3) the references to the national standards, in particular those aligned with the harmonised European standards, and other standards and technical specifications applied (where appropriate);

4) the signature of the supplier’s representative;

5) technical parameters:

the water heating energy efficiency, rounded to the nearest integer, in %;

the technical parameters set out in points 1 to 3 of this Annex;

6) any specific safeguards that shall be taken when the package of water heater and solar device is assembled, installed or maintained.

Annex 6
to the Technical Regulation
on Energy Labelling
of Water Heaters, Hot Water Storage Tanks
and Packages of Water Heater
and Solar Device
(point 10 of section II)

INFORMATION
to be provided in the cases where end-users cannot be expected to see the water heater, hot water storage tank and package of water heater and solar device displayed, except where they are marketed by means of distance selling (through the Internet)

1. Where end-users cannot be expected to see the water heater displayed, they shall be provided with the information referred to in section II of the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device (hereinafter referred to as the 'Technical Regulation'), in the following order:

1) the declared load profile, expressed by the appropriate letter and in accordance with Table 1 of Annex 7 to the Technical Regulation;

2) the water heating energy efficiency class, under warmer climate conditions, in accordance with points 1, 2 of Annex 2 to the Technical Regulation;

3) the water heating energy efficiency, in %, under warmer climate conditions, rounded to the nearest integer and calculated in accordance with point 2 of Annex 8 to the Technical Regulation;

4) the annual electricity consumption, in kWh, in terms of final energy and/or the annual fuel consumption, in GJ, in terms of gross calorific value, under warmer climate conditions, rounded to the nearest integer and calculated in accordance with point 3 of Annex 8 to the Technical Regulation;

5) the sound power level, indoors, in dB, rounded to the nearest integer (for heat pump water heaters, if applicable);

in addition, for solar water heaters and heat pump water heaters:

6) the water heating energy efficiency, in %, rounded to the nearest integer and calculated in accordance with point 2 of Annex 8 to the Technical Regulation;

7) the annual electricity consumption, in kWh, in terms of final energy and/or the annual fuel consumption, in GJ, in terms of gross calorific value, under colder climate conditions, rounded to the nearest integer and calculated in accordance with point 3 of Annex 8 to the Technical Regulation;

in addition, for solar water heaters:

8) the collector aperture area (to two decimal places), in m^2;

9) the storage volume, rounded to the nearest integer, in l;

in addition, for heat pump water heaters:

10) the sound power level, outdoors, in dB, rounded to the nearest integer.

Where other information contained in the product fiche is also provided, it shall be in the form and order specified in point 1 of Annex 4 to the Technical Regulation.

The size and font of the text in which the information referred in subpoints 1 to 10 of this point is printed or shown shall be legible.

2. Where end-users cannot be expected to see the hot water storage tank displayed, they shall be provided with the information referred to in section II of the Technical Regulation, in the following

order:

1) the energy efficiency class of the model, determined in accordance with points 1, 2 of Annex 2 to the Technical Regulation;

2) the standing loss, rounded to the nearest integer, in W;

3) the storage volume, rounded to the nearest integer, in l.

The size and font of the text in which the information referred in subpoints 1 to 3 of this point is printed or shown shall be legible.

3. Where end-users cannot be expected to see the package of water heater and solar device displayed, they shall be provided with the information referred to in section II of the Technical Regulation, in the following order:

1) the water heating energy efficiency of the model, determined in accordance with points 1, 2 of Annex 2 to the Technical Regulation;

2) the water heating energy efficiency, in %, rounded to the nearest integer;

3) the elements shown in Figure 1 of Annex 4 to the Technical Regulation.

The size and font of the text in which the information referred in subpoints 1 to 3 of this point is printed or shown shall be legible.

Annex 7
to the Technical Regulation
on Energy Labelling
of Water Heaters, Hot Water Storage Tanks
and Packages of Water Heater
and Solar Device
(point 3 of section I)

CONDITIONS
and technical parameters of measurements

1. The conditions for testing water heaters are the following:

1) measurements shall be carried out using the load profiles set out in Table 1 of this Annex;

2) measurements shall be carried out using a 24-hour measurement cycle as follows:

00:00 to 06:59 - no water draw-off;

from 07:00 - water draw-offs according to the declared load profile;

from end of last water draw-off until 24:00 - no water draw-off;

3) the declared load profile shall be the maximum load profile or the load profile one below the maximum load profile.

Table 1

Load profiles of water heaters

h	3XS			XXS			XS			S			
	Q_{tap}	f	Tm	Q_{tap}	f	Tm	Q_{tap}	f	Tm	Q_{tap}	f	Tm	Tp
	kWh	l/min	° C	kWh	l/min	° C	kWh	l/min	° C	kWh	l/min	° C	° C
1	2	3	4	5	6	7	8	9	10	11	12	13	14
07:00	**0,015**	2	25	**0,105**	2	25				**0,105**	3	25	
07:05	**0,015**	2	25										
07:15	**0,015**	2	25										
07:26	**0,015**	2	25										
07:30	**0,015**	2	25	**0,105**	2	25	**0,525**	3	35	**0,105**	3	25	
07:45													
08:01													
08:05													
08:15													
08:25													

08:30				**0,105**	2	25				**0,105**	3	25	
08:45													
09:00	**0,015**	2	25										
09:30	**0,015**	2	25	**0,105**	2	25				**0,105**	3	25	
10:00													
10:30													
11:00													
11:30	**0,015**	2	25	**0,105**	2	25				**0,105**	3	25	
11:45	**0,015**	2	25	**0,105**	2	25				**0,105**	3	25	
12:00	**0,015**	2	25	**0,105**	2	25							
12:30	**0,015**	2	25	**0,105**	2	25							
12:45	**0,015**	2	25	**0,105**	2	25	**0,525**	3	35	**0,315**	4	10	55
14:30	**0,015**	2	25										
15:00	**0,015**	2	25										
15:30	**0,015**	2	25										
16:00	**0,015**	2	25										
16:30													
17:00													
18:00				**0,105**	2	25				**0,105**	3	25	
18:15				**0,105**	2	25				**0,105**	3	40	
18:30	**0,015**	2	25	**0,105**	2	25							
19:00	**0,015**	2	25	**0,105**	2	25							
19:30	**0,015**	2	25	**0,105**	2	25							
20:00				**0,105**	2	25							
20:30							**1,05**	3	35	**0,42**	4	10	55
20:45				**0,105**	2	25							
20:46													

21:00				**0,105**	2	25							
21:15	**0,015**	2	25	**0,105**	2	25							
21:30	**0,015**	2	25							**0,525**	5	45	
21:35	**0,015**	2	25	**0,105**	2	25							
21:45	**0,015**	2	25	**0,105**	2	25							
Q_{ref}	**0,345**			**2,100**			**2,100**			**2,100**			

Load profiles of water heaters

h	M				L				XL			
	Q_{tap}	f	Tm	Tp	Q_{tap}	f	Tm	Tp	Q_{tap}	f	Tm	Tp
	kWh	l/min	° C	° C	kWh	l/min	° C	° C	kWh	l/min	° C	° C
1	2	3	4	5	6	7	8	9	10	11	12	13
07:00	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
07:05	**1,4**	6	40		**1,4**	6	40					
07:15									**1,82**	6	40	
07:26									**0,105**	3	25	
07:30	**0,105**	3	25		**0,105**	3	25					
07:45					**0,105**	3	25		**4,42**	10	10	40
08:01	**0,105**	3	25						**0,105**	3	25	
08:05					**3,605**	10	10	40				
08:15	**0,105**	3	25						**0,105**	3	25	
08:25					**0,105**	3	25					
08:30	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
08:45	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
09:00	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
09:30	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
10:00									**0,105**	3	25	

10:30	**0,105**	3	10	40	**0,105**	3	10	40	**0,105**	3	10	40
11:00									**0,105**	3	25	
11:30	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
11:45	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
12:00												
12:30												
12:45	**0,315**	4	10	55	**0,315**	4	10	55	**0,735**	4	10	55
14:30	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
15:00									**0,105**	3	25	
15:30	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
16:00									**0,105**	3	25	
16:30	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
17:00									**0,105**	3	25	
18:00	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
18:15	**0,105**	3	40		**0,105**	3	40		**0,105**	3	40	
18:30	**0,105**	3	40		**0,105**	3	40		**0,105**	3	40	
19:00	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
19:30												
20:00												
20:30	**0,735**	4	10	55	**0,735**	4	10	55	**0,735**	4	10	55
20:45												
20:46									**4,42**	10	10	40
21:00					**3,605**	10	10	40				
21:15	**0,105**	3	25						**0,105**	3	25	
21:30	**1,4**	6	40		**0,105**	3	25		**4,42**	10	10	40
21:35												
21:45												

Q_{ref}	**5,845**	**11,655**	**19,07**

Load profiles of water heaters

h	XXL			
	Q_{tap}	*f*	*Tm*	*Tp*
	kWh	l/min	° C	° C
1	2	3	4	5
07:00	**0,105**	3	25	
07:05				
07:15	**1,82**	6	40	
07:26	**0,105**	3	25	
07:30				
07:45	**6,24**	16	10	40
08:01	**0,105**	3	25	
08:05				
08:15	**0,105**	3	25	
08:25				
08:30	**0,105**	3	25	
08:45	**0,105**	3	25	
09:00	**0,105**	3	25	
09:30	**0,105**	3	25	
10:00	**0,105**	3	25	
10:30	**0,105**	3	10	40
11:00	**0,105**	3	25	
11:30	**0,105**	3	25	
11:45	**0,105**	3	25	
12:00				

12:30				
12:45	**0,735**	4	10	55
14:30	**0,105**	3	25	
15:00	**0,105**	3	25	
15:30	**0,105**	3	25	
16:00	**0,105**	3	25	
16:30	**0,105**	3	25	
17:00	**0,105**	3	25	
18:00	**0,105**	3	25	
18:15	**0,105**	3	40	
18:30	**0,105**	3	40	
19:00	**0,105**	3	25	
19:30				
20:00				
20:30	**0,735**	4	10	55
20:45				
20:46	**6,24**	16	10	40
21:00				
21:15	**0,105**	3	25	
21:30	**6,24**	16	10	40
21:35				
21:45				
Q_{ref}	**24,53**			

2. Conditions for testing the smart control compliance (smart) of water heaters.

Where the supplier deems it appropriate to declare the value of smart as being ‘1’, measurements of the weekly electricity and/or fuel consumption with smart controls and the weekly electricity and/or

fuel consumption without smart controls shall be carried out using a two-week measurement cycle as follows:

days 1 to 5: random sequence of load profiles chosen from the declared load profile and the load profile one below the declared load profile, and smart control disabled;

days 6 and 7: no water draw-offs, and smart control disabled;

days 8 to 12: repetition of the same sequence applied for days 1 to 5, and smart control enabled,

days 13 and 14: no water draw-offs, and smart control enabled;

the difference between the useful energy content measured during days 1 to 7 and the useful energy content measured during days 8 to 14 shall not exceed 2 % of Q_{ref} of the declared load profile.

3. Conditions for testing solar water heaters.

The solar collector, solar hot water storage tank, pump in the collector loop (where available) and heat generator shall be tested separately. Where the solar collector and solar hot water storage tank cannot be tested separately, they shall be tested in combination. The heat generator shall be tested under the conditions set out in point 1 of this Annex.

The results shall be used for the calculations set out in subpoint 2 of point 2 of Annex 8 to the Technical Regulation under the conditions set out in Tables 2, 3 of this Annex. For the purpose of establishing the value of Q_{tota} the efficiency of the heat generator using the Joule effect in electric resistance heating elements is assumed to be 100/CC, expressed in %.

4. Conditions for testing heat pump water heaters.

Heat pump water heaters shall be tested under the conditions set out in Table 4 of this Annex. Heat pump water heaters which use ventilation exhaust air as the heat source shall be tested under the conditions set out in Table 5 of this Annex.

5. Conditions for testing solar devices.

The solar collector, solar hot water storage tank and pump in the collector loop (where available) shall be tested separately. Where the solar collector and solar hot water storage tank cannot be tested separately, they shall be tested in combination.

The results shall be used for the calculations of Q_{nonsol} for the load profiles M, L, XL and XXL under the warmer climate conditions set out in Tables 2, 3 of this Annex and Q_{aux}.

Table 2

Average daytime temperature (° C)

Conditions	January	February	March	April	May	June	July	August	September	October	November	December
Warmer climate conditions	+ 2,8	+ 2,6	+ 7,4	+ 12,2	+ 16,3	+ 19,8	+ 21,0	+ 22,0	+ 17,0	+ 11,9	+ 5,6	+ 3,2
Colder climate conditions	- 3,8	- 4,1	- 0,6	+ 5,2	+ 11,0	+ 16,5	+ 19,3	+ 18,4	+ 12,8	+ 6,7	+ 1,2	- 3,5

Table 3

Average global solar irradiance (W/m^2)

Conditions	January	February	March	April	May	June	July	August	September	October	November	December
Warmer climate	70	104	149	192	221	222	232	217	176	129	80	56

conditions												
Colder climate conditions	22	75	124	192	234	237	238	181	120	64	23	13

Table 4

Standard rating conditions for heat pump water heaters, temperatures in dry bulb air temperature (wet bulb air temperature in parentheses)

Heat source	Outdoor air		Indoor air	Exhaust air	Brine	Water
Climate conditions	Warmer climate conditions	Colder climate conditions	Not applicable	All climate conditions		
Temperature	+ 7° C (+ 6° C)	+ 2° C (+ 1° C)	+ 20° C (maximum + 15° C)	+ 20° C (+ 12° C)	+ 0° C (inlet) / - 3° C (outlet)	+ 10° C (inlet) / + 7° C (outlet)

Table 5

Maximum ventilation exhaust air available (m^3/h] at a temperature of 20 °C and with humidity of 5,5 g/m^3

Declared load profile	XXS	XS	S	M	L	XL	XXL
Maximum ventilation exhaust air available	109	128	128	159	190	870	1021

6. Technical parameters of water heaters.

The following parameters shall be established for water heaters:

1) the daily electricity consumption Q_{elec}, rounded to three decimal places, in kWh;

2) the declared load profile, expressed by the appropriate letter in accordance with Table 1 of this Annex;

3) the sound power level, indoors, rounded to the nearest integer (for heat pump water heaters if applicable), in dB;

in addition, for water heaters using fossil and/or biomass fuels:

4) the daily fuel consumption Q_{fuel} in terms of gross calorific value, rounded to three decimal places, in kWh;

in addition, for water heaters for which the value of smart is declared as being '1':

5) the weekly fuel consumption with smart controls $Q_{fuel,\ week,\ smart}$ in terms of gross calorific value, rounded to three decimal places, in kWh;

6) the weekly electricity consumption with smart controls $Q_{elec,\ week,\ smart}$, rounded to three decimal places, in kWh;

7) the weekly fuel consumption without smart controls $Q_{fuel,\ week}$ in terms of gross calorific value, rounded to three decimal places, in kWh;

8) the weekly electricity consumption without smart controls $Q_{elec,\ week}$, rounded to three decimal places, in kWh;

in addition, for solar water heaters:

9) the collector aperture area A_{sol}, rounded to two decimal places, in m^2;

10) the zero-loss efficiency η_0, rounded to three decimal places;

11) the first-order coefficient a 1, rounded to two decimal places, in $W/(m^2K)$;

12) the second-order coefficient a_2, rounded to three decimal places, in $W/(m^2K^2)$;

13) the incidence angle modifier IAM, rounded to two decimal places;

14) the pump power consumption solpump, rounded to two decimal places, in W;

15) the standby power consumption solstandby, rounded to two decimal places, in W;

in addition, for heat pump water heaters:

16) the sound power level L_{WA}, outdoors, rounded to the nearest integer, in dB.

7. Technical parameters of hot water storage tanks.

The following parameters shall be established for hot water storage tanks:

1) the storage volume V, rounded to one decimal place, in litres;

2) the standing loss S, rounded to one decimal place, in W.

8. Technical parameters of solar devices.

The following parameters shall be established for solar devices:

1) the collector aperture area A_{sol}, rounded to two decimal places, in m^2;

2) the zero-loss efficiency η_0, rounded to three decimal places;

3) the first-order coefficient a_1, rounded to two decimal places, in $W/(m^2K)$;

4) the second-order coefficient a_2, rounded to three decimal places, in $W/(m^2K^2)$;

5) the incidence angle modifier IAM, rounded to two decimal places;

6) the pump power consumption solpump, rounded to two decimal places, in W;

7) the standby power consumption solstandby, rounded to two decimal places, in W.

Annex 8
to the Technical Regulation
on Energy Labelling
of Water Heaters, Hot Water Storage Tanks
and Packages of Water Heater
and Solar Device
(point 2 of section II)

CALCULATION
of the water heating energy efficiency of water heaters

1. The following parameters shall be calculated for water heaters under warmer climate conditions:

1) the water heating energy efficiency η_{wh} in %, rounded to one decimal place;

2) the annual electricity consumption AEC in terms of final energy, rounded to the nearest integer, in kWh;

in addition, for water heaters using fuels under warmer climate conditions:

3) the annual fuel consumption AFC in terms of gross calorific value, rounded to the nearest integer, in kWh;

in addition, for solar water heaters under warmer climate conditions:

4) the heat generator water heating energy efficiency $\eta_{wh,\ nonsol}$ in %, rounded to one decimal place;

5) the annual auxiliary electricity consumption Q_{aux} in terms of final energy, rounded to one decimal place, in kWh;

in addition, for solar water heaters and heat pump water heaters under colder climate conditions:

6) the parameters set out in subpoints 1 to 3 of this point;

in addition, for solar water heaters under warmer and colder climate conditions:

7) the annual non-solar heat contribution Q_{nonsol} in terms of primary energy for electricity and/or in terms of gross calorific value for fuels, rounded to one decimal place, in kWh.

2. Calculation of the water heating energy efficiency η_{wh}:

1) conventional water heaters and heat pump water heaters.

The water heating energy efficiency is calculated according to the following formula:

$$\eta_{wh} - \frac{Q_{ref}}{(Q_{fuel} + CC \cdot Q_{elec}) \cdot (1 - SCF \cdot smart) + Q_{cor}}.$$

For water-/brine-to-water heat pump water heaters, the electricity consumption of one or more ground water pumps shall be taken into account.

2) solar water heaters.

The water heating energy efficiency of a water heater is calculated according to the following formula:

$$\eta_{wh} = \frac{0,6 \cdot 366 \cdot Q_{ref}}{Q_{tota}},$$

где $Q_{tota} = \frac{Q_{nonscl}}{1{,}1 \cdot \eta_{wh,nonsol} - 0{,}1} + Q_{aux} \cdot CC$.

3. Calculation of the annual electricity consumption (AEC) and the annual fuel consumption (AFC):

1) conventional water heaters and heat pump water heaters:

the annual electricity consumption AEC in kWh in terms of final energy is calculated according to the following formula:

$$AEC = 0{,}6 \cdot 366 \cdot \left(Q_{elec} \cdot (1 \quad SCF \cdot smart) + \frac{Q_{cor}}{CC} \right);$$

the annual fuel consumption AFC in GJ in terms of gross calorific value is calculated according to the following formula:

$$AFC = 0{,}6 \cdot 366 \cdot \left(Q_{fuel} \cdot (1 - SCF \cdot smart) + Q_{cor} \right);$$

2) solar water heaters:

the annual electricity consumption AEC in kWh in terms of final energy is calculated according to the following formula:

$$AEC = \frac{CC \cdot Q_{elec}}{Q_{fuel} + CC \cdot Q_{elec}} \cdot \frac{Q_{tota}}{CC};$$

the annual fuel consumption AFC in GJ in terms of gross calorific value is calculated according to the following formula:

$$AFC = \frac{Q_{fuel}}{Q_{fuel} + CC \cdot Q_{elec}} Q_{tota}.$$

4. Determination of the smart control factor SCF and of smart control compliance smart:

1) the smart control factor is calculated according to the following formula:

$$SCF = 1 - \frac{Q_{fuel,\,week,\,smart} + CC \cdot Q_{elec,\,week,\,smart}}{Q_{fuel,\,week} + CC \cdot Q_{elec,\,week}};$$

2) if SCF ≥ 0,07, the value of smart shall be 1. In all other cases, the value of smart shall be 0.

5. Determination of the ambient correction term Q_{cor}.

The ambient correction term is calculated according to the following formulas:

for conventional water heaters using electricity:

$$Q_{cor} = -k \cdot \left(CC \cdot \left(Q_{elec} \cdot (1 - SCF \cdot smart) - Q_{ref} \right) \right);$$

for conventional water heaters using fuels:

$$Q_{cor} = -k \cdot \left(Q_{fuel} \cdot (1 - SCF \cdot smart) - Q_{ref} \right);$$

for heat pump water heaters:

$$Q_{cor} = -k \cdot 24h \cdot P_{stby},$$

where the k-values for each load profile are set out in the following Table.

k-values

Declared load profile	3XS	XXS	XS	S	M	L	XL	XXL
Correction coefficient k	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,0

Annex 9
to the Technical Regulation
on Energy Labelling
of Water Heaters, Hot Water Storage Tanks
and Packages of Water Heater
and Solar Device
(point 2 of section V)

PROCEDURE
for verification of conformity of actual technical characteristics of water heaters, hot water storage tanks and packages of water heater and solar device with the requirements of the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device

1. One water heater, hot water storage tank and package of water heater and solar device per model shall be subject to verification.

2. The model of water heater, hot water storage tank and package of water heater and solar device shall be considered to comply with the requirements of the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device (hereinafter referred to as the 'Technical Regulation'), if:

the values given in the technical documentation and (where possible) the values used to calculate these values are not more favourable for the supplier than the results of the corresponding measurements;

the declared values meet any requirements laid down in the Technical Regulation, and any necessary product information provided by the supplier does not contain values that are more favourable for the supplier than the declared values;

where the state market surveillance authorities verify the water heater, hot water storage tank and package of water heater and solar device, the determined values (the values of the relevant parameters as measured during the verification and the values calculated from these measurements) comply with the respective verification tolerances as given in this Annex.

3. If the results referred to in the second or third indents of point 2 of this Annex are not achieved, the model, along with the other models listed as equivalent models in the technical documentation, shall be considered not to comply with the requirements of the Technical Regulation;

4. If the result referred to in the fourth indent of point 2 of this Annex is not achieved, the state market surveillance authorities shall select three additional water heaters, hot water storage tanks and three packages of water heater and solar device of the same model for verification. As an alternative, the three additional water heaters, hot water storage tanks and three packages of water heater and solar device may be of the same model or of different models listed as equivalent models in the technical documentation.

5. The model shall be considered to comply with the requirements if, for these three water heaters, hot water storage tanks and three packages of water heater and solar device, the arithmetical mean of the determined values complies with the respective verification tolerances given in this Annex.

6. If the result referred to in point 5 is not achieved, the model of water heater, hot water storage tank and package of water heater and solar device, along with the other models listed as equivalent models in the technical documentation, shall be considered not to comply with the requirements of the Technical Regulation.

Verification tolerances*

Parameters to be verified	Verification tolerances

Daily electricity consumption (Q_{elec})	The determined value shall not exceed the declared value by more than 5 %
Sound power level, indoors and/or outdoors (L_{WA})	The determined value shall not exceed the declared value by more than 2 dB
Daily fuel consumption (Q_{fuel})	The determined value shall not exceed the declared value by more than 5 %
Weekly fuel consumption with smart controls ($Q_{fuel, week, smart}$)	The determined value shall not exceed the declared value by more than 5 %
Weekly electricity consumption with smart controls ($Q_{elec, week, smart}$)	The determined value shall not exceed the declared value by more than 5 %
Weekly fuel consumption without smart controls ($Q_{fuel, week}$)	The determined value shall not exceed the declared value by more than 5 %
Weekly electricity consumption without smart controls ($Q_{elec, week}$)	The determined value shall not exceed the declared value by more than 5 %
Storage volume (V)	The determined value shall not exceed the declared value by more than 2 %
Collector aperture area (A_{sol})	The determined value shall not exceed the declared value by more than 2 %
Pump power consumption (solpump)	The determined value shall not exceed the declared value by more than 3 %
Standby power consumption (solstandby)	The determined value shall not exceed the declared value by more than 5 %
Standing loss (S)	The determined value shall not exceed the declared value by more than 5 %

* The verification tolerances referred to in this Annex relate only to the verification of the measured parameters by state market surveillance authorities and shall not be used by the supplier as an allowed tolerance to establish the values in the technical documentation. The values and classes on the energy label or in the product fiche shall not be more favourable for the supplier than the values reported in the technical documentation.

Annex 10
to the Technical Regulation
on Energy Labelling
of Water Heaters, Hot Water Storage Tanks
and Packages of Water Heater
and Solar Device
(point 1 of section III)

INFORMATION
to be provided to end-users, in the case of sale, hire or hire-purchase of a water heater, hot water storage tank and package of water heater and solar device by means of distance selling (through the Internet)

1. An electronic energy label made available by suppliers in accordance with section II of the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device (hereinafter referred to as the 'Technical Regulation') shall be shown on the display mechanism in proximity to the price of the water heater, hot water storage tank and package of water heater and solar device. If both a product and a package are shown, but with a price indicated only for the package, only the package label shall be displayed. The electronic energy label shall be clearly visible, its size shall meet the requirements set out in Annex 3 to the Technical Regulation, and it may be displayed using a nested display. If nested display is applied, the electronic energy label shall appear on the screen using mouse or tactile screen expansion of image.

2. The image used for accessing the electronic energy label in the case if nested display is applied shall comply with the following requirements:

1) the colour of the arrow indicating the energy efficiency class of the water heater, hot water storage tank and package of water heater and solar device shall correspond to the energy efficiency class on the electronic energy label;

2) the energy efficiency class of the water heater, hot water storage tank and package of water heater and solar device shall be indicated in white in a font size equivalent to that of the price;

3) the arrow indicating the energy efficiency class of the water heater, hot water storage tank and package of water heater and solar device shall have one of the following formats.

3. If nested display is applied, the following requirements with regard to displaying the energy label shall be fulfilled:

1) the indication of the energy efficiency class shall be shown on the display mechanism in proximity to the price of the water heater, hot water storage tank and package of water heater and solar device;

2) the indication of the energy efficiency class shall link to the electronic energy label;

3) the electronic energy label shall appear on the screen using mouse or tactile screen expansion of image;

4) the electronic energy label shall be displayed by pop up, new tab, new page or inset screen display;

5) for magnification of the electronic energy label on tactile screens, the device conventions for tactile magnification shall apply;

6) the display of the electronic energy label may be ceased by means of a close option;

7) the alternative text for the graphic, to be displayed on failure to display the electronic energy label, shall contain the energy efficiency class of the water heater, hot water storage tank and package

of water heater and solar device, in a font equivalent to that of the price.

4. The product fiche made available by suppliers in accordance with section II of the Technical Regulation shall be shown on the display mechanism in proximity to the price of the water heater, hot water storage tank and package of water heater and solar device. The product fiche shall be clearly visible; it may be displayed using a nested display, in which case the link used for accessing the product fiche shall clearly and legibly indicate ‘Product fiche’. If nested display is applied, the product fiche shall appear on the screen using mouse or tactile screen expansion of image.

Annex 2
to the Technical Regulation
on Energy Labelling
of Water Heaters, Hot Water Storage Tanks
and Packages of Water Heater
and Solar Device
(point 2 of section II)

ENERGY EFFICIENCY CLASSES

1. The water heating energy efficiency class of a water heater shall be determined on the basis of its water heating energy efficiency as set out in Table 1 of this Annex.

2. The water heating energy efficiency of a water heater shall be calculated in accordance with point 2 of Annex 8 to the Technical Regulation on Energy Labelling of Water Heaters, Hot Water Storage Tanks and Packages of Water Heater and Solar Device (for solar water heaters and heat pump water heaters under average climate conditions).

3. The energy efficiency class of a hot water storage tank shall be determined on the basis of its standing loss as set out in Table 2 of this Annex.

Table 1

Water heating energy efficiency classes of water heaters, categorised by declared load profiles, η_{wk}, in %

Energy efficiency class	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	$\eta wh < 22$	$\eta wh < 23$	$\eta wh < 26$	$\eta wh < 26$	$\eta wh < 30$	$\eta wh < 30$	$\eta wh < 30$	$\eta wh < 32$

Table 2

Energy efficiency classes of hot water storage tanks

Energy efficiency class	Standing loss S, in W, with storage volume V, in litres
A+	$S < 5{,}5 + 3{,}16 \cdot V^{0,4}$
A	$5{,}5 + 3{,}16 \cdot V^{0,4} \leq S < 8{,}5 + 4{,}25 \cdot V^{0,4}$
B	$8{,}5 + 4{,}25 \cdot V^{0,4} \leq S < 12 + 5{,}93 \cdot V^{0,4}$
C	$12 + 5{,}93 \cdot V^{0,4} \leq S < 16{,}66 + 8{,}33 \cdot V^{0,4}$
D	$16{,}66 + 8{,}33 \cdot V^{0,4} \leq S < 21 + 10{,}33 \cdot V^{0,4}$
E	$21 + 10{,}33 \cdot V^{0,4} \leq S < 26 + 13{,}66 \cdot V^{0,4}$
F	$S > 26 + 13{,}66 \cdot V^{0,4}$