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ANNEXES 1 to 10

ANNEXES

to the

COMMISSION DELEGATED REGULATION (EU) .../...

supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to the energy labelling of water heaters, solar devices, shower water heat recovery devices, packages of those products and hot water storage tanks, and amending and repealing Commission Delegated Regulation (EU) No 812/2013

ANNEX I

Definitions applicable to Annexes II to IX

1. GENERIC DEFINITIONS

(1) 'declared values' means the values provided by the supplier for the stated, calculated or measured technical parameters, pursuant to Article 3(3) of Regulation (EU) 2017/1369 and in accordance with Article 3(1) point (d) and Annex VII of this Regulation, for the verification of compliance by the Member State authorities;

(2) 'equivalent model' means a model which has the same technical characteristics relevant for the technical information to be provided, and which is placed on the market or put into service by the same manufacturer, importer or authorised representative as another model with a different model identifier;

(3) 'model identifier' means the code, usually alphanumeric, which distinguishes a model from other models with the same brand or trade mark in the product database set under Regulation (EU) 2017/1369 ([1]);

(4) 'mixed water at 40 °C' (V40) means the quantity of water at 40 °C, which has the same heat content (enthalpy) as the heated water which is delivered above 40 °C by a hot water storage tank or storage water heater, expressed in litres;

(5) 'reference hot water temperature' (Θ_{wh}) means the temperature determined as the mean temperature value of the average temperatures during one single draw-off which ends when the hot water temperature is below 40 °C, measured simultaneously with the 'mixed water at 40 °C', expressed in °C;

2. DEFINITIONS FOR WATER HEATERS

(6) 'water heating energy efficiency' (η_{wh}) means the ratio between the useful energy provided by a water heater and the energy required for its generation, expressed in %;

(7) 'load profile' means a sequence of water draw-offs, as specified in Annex VII;

(8) 'water draw-off' means a given combination of useful water flow rate, useful water temperature, useful energy content and peak temperature;

(9) 'useful water flow rate' (f) means the minimum flow rate, expressed in litres per minute, for which heated water is contributing to the reference energy;

(10) 'useful water temperature' (T_m), means the water temperature, expressed in degrees Celsius, at which heated water starts contributing to the reference energy;

(11) 'useful energy content' (Q_{tap}) means the thermal energy content of heated 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;

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

([1]) Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (OJ L 198, 28.7.2017, p. 1; ELI: http://data.europa.eu/eli/reg/2017/1369/oj).

(13) 'peak temperature' (T_p) means the average water temperature, expressed in degree Celsius, to be achieved during the water draw-off;

(14) ‘reference energy’ (Q_{ref}) means the sum of the useful energy content of water draw-offs, expressed in kWh, in a particular load profile;

(15) ‘maximum load profile’ means the tapping 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;

(16) ‘standard rated electric power output’ means the electric power output of the cogeneration water heater at nominal heat input;

(17) ‘electric efficiency’ means the electric power produced divided by the fuel power required by the cogeneration water heater at nominal heat input;

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

(19) ‘conversion coefficient’ (CC) means the default coefficient referred to in Article 31(3) of the Directive (EU) 2023/1791 of the European Parliament and of the Council ([2]) in the version in force on 10 October 2023;

(20) ‘electric storage water heater’ (ESWH) means a storage water heater with a heat generator using the electric Joule effect ;

(21) ‘fuel storage water heater’ (FSWH) means a storage water heater with a heat generator using the combustion of gaseous or liquid fuels, and which does not produce electric power or uses ambient energy;

(22) ‘electric instantaneous water heater’ (EIWH) means an instantaneous water heater with a heat generator using the electric Joule effect;

(23) ‘fuel instantaneous water heater’ (FIWH) means an instantaneous water heater with a heat generator using the combustion of gaseous or liquid fuels;

(24) ‘heat pump water heater’ (HPWH) means a water heater that has a heat generator with a heat pump cycle capturing ambient or geothermal energy and/or waste heat for heat generation, possibly supplemented by a back-up water heater;

(25) ‘heat pump heat source’ means the heat source or heat exchanger used at the evaporator side of heat pump water heaters: outdoor air, indoor air, non-heated-space air, ventilation exhaust air (‘exhaust air’), ground heat exchanger (brine or water/ground heat exchanger), ground direct exchange (refrigerant/ground heat exchanger);

(26) ‘electric heat pump water heater’ (eHPWH) means a heat pump water heater with a heat generator using electricity, possibly supplemented by an electric back-up water heater;

(27) ‘thermally driven heat pump water heater’ (tdHPWH) means a heat pump water heater with a heat generator using the combustion of fuels, possibly supplemented by a fuel back-up water heater;

([2]) Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (OJ L 231, 20.9.2023, p. 1, ELI: http://data.europa.eu/eli/dir/2023/1791/oj).

(28) ‘fuel back-up water heater’ means a backup heater with a heat generator using the combustion of fuels;

(29) ‘standard rated heat output’ means the heat output calculated as the product of the water heating energy efficiency and of the maximum fuel or electric input corrected by the CC factor of 1,9, as defined for each water heater type in Annex IV;

(30) ‘standby mode’ means a condition where the water heater is connected to the mains power source and provides only the following functions, which may persist for an indefinite period of time:

(a) reactivation function, or reactivation function and only an indication of enabled reactivation function;

(b) reactivation function through a connection to a network (‘network standby’);

(c) information or status display;

(31) ‘active mode’ means a condition corresponding to the hours with a heating load for drinking or sanitary water and activated heating function, which for heat pump water heaters may involve cycling of the heat pump to reach or maintain a required water temperature;

(32) ‘network’ means network as defined in Article 2, point (9), of Commission Regulation (EU) 2023/826 ([3]);

(33) ‘reactivation function’ means a function that via a remote switch, a remote control, an internal sensor or timer provides a switch from standby mode to another mode, including active mode, providing additional functions;

(34) ‘standby mode power consumption’ (P_{SB}) means the electric power consumption of a water heater in standby mode, including network standby when the equipment is capable of resuming its function through a remotely initiated trigger from a network connection, expressed in kW;

(35) ‘out of the box mode’ means the standard operating condition, setting or mode set by the supplier at factory level, to be active immediately after the heater installation, suitable for normal use by the end-user according to the maximum load profile;

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

(37) ‘daily electricity consumption’ (Q_{elec}) means the consumption of electricity for water heating over 24 consecutive hours under the maximum load profile, expressed in kWh in terms of final energy;

(38) ‘daily electricity generation’ (Q_{elec_gen}) means the generation of electricity by cogeneration heat water for water heating over 24 consecutive hours under the maximum load profile, expressed in kWh in terms of final energy;

([3]) Commission Regulation (EU) 2023/826 of 17 April 2023 laying down ecodesign requirements for off mode, standby mode, and networked standby energy consumption of electrical and electronic household and office equipment pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulations (EC) No 1275/2008 and (EC) No 107/2009 (OJ L 103, 18.4.2023, p. 29. ELI: http://data.europa.eu/eli/reg/2023/826/oj).

(39) ‘daily fuel consumption’ (Q_{fuel}) means the consumption of fuels for water heating over 24 consecutive hours under the maximum load profile, expressed in kWh in terms of GCV;

(40) ‘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;

(41) ‘self-learning’ means a function of the water heater that automatically captures the end-user’s use patterns;

(42) ‘adaptive control’ means a control which adapts the temperature of the water stored in the water heater depending on the use patterns captured with the self-learning function of the water heater;

(43) ‘adaptive control factor’ (F_{AC}) means the water heating energy-efficiency gain due to adaptive control;

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

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

(46) ‘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;

(47) ‘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 GCV;

(48) ‘control factor’ (Fctrl) means a factor accounting for the capability of instantaneous water heaters to set the water temperature independently of the water flow;

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

(50) ‘annual fuel consumption’ (AFC) means the annual fossil and/or biomass fuel consumption of a water heater under the maximum load profile and under given climate conditions, expressed in kWh in terms of GCV;

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

(52) ‘climate conditions’ means outdoor air temperature or solar radiation; outdoor air temperatures are provided for in Annex VII Table 1;

(53) ‘average climate conditions’, mean the climate conditions characteristic for the city of Strasbourg;

(54) ‘colder climate conditions’ mean the climate conditions characteristic for the city Helsinki;

(55) ‘warmer climate conditions’ mean the climate conditions characteristic for the city of Athens;

(56) ‘off-peak water heater’ means a water heater that is able to work in an off-peak application;

(57) ‘off-peak application’ means the ability of the water heater to be automatically (without the intervention of the end-user each time) energised for a maximum period of eight consecutive hours between 22:00 and 07:00 of the 24-hour tapping pattern in the load profiles, as set out in Annex VII, section 3;

(58) ‘maximum ventilation exhaust air flow rate’ ($q_{v,max,wh}$) means the maximum volumetric flow rate of exhaust air at temperature conditions set out in Annex VII Table 2, that is available to heat pump water heaters when establishing its water heating energy efficiency;

(59) ‘energy smart appliance’ means a product whose supplier is a signatory of the Code of Conduct on energy management related interoperability of Energy Smart Appliances, and which is compliant with this Code of Conduct;

(60) ‘fluorinated green-house gases’ means the fluorinated green-house gases in scope of Regulation (EU) 2024/573 of the European Parliament and of the Council ([4]);

3. DEFINITIONS RELATED TO HOT WATER PACKAGES

(61) ‘package water heating energy efficiency’ ($\eta_{wh,pack}$) means the ratio between the useful energy provided by a water heating package and the energy required for its generation, expressed in %;

4. DEFINITIONS RELATED TO SOLAR DEVICES

(62) ‘solar collector’ means a device designed to absorb solar irradiance and to transfer the thermal energy so produced to a fluid passing through it;

(63) ‘gross thermal yield’ (GTY) means the reference annual thermal yield of the collector array of the solar device for a specific climate, in kWh/a, as set out in Annex VII, Section 5, calculated as the simple average of the thermal yield for the 25 ºC and 50 ºC collector operating temperature, in kWh/a;

(64) ‘gross area’ (Ag) means the maximum projected area covered by the outer dimensions of the collector array, expressed in m²;

(65) ‘solar device efficiency for water heating’ ($\eta_{sol,wh}$) means the efficiency of a solar device for water heating, considering the energy-efficiency class of the tank if applicable, calculated by multiplying the solar-device factor with the tank-correction factor, and expressed in %;

(66) ‘solar device factor for water heating’ ($f_{sol,wh}$), means a factor (>1) representing the contribution of a solar device to the water heating efficiency of a package of combination heater and solar device, as set out in Annex VII, section 5.2;

([4]) Regulation (EU) 2024/573 of the European Parliament and of the Council of 7 February 2024 on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No517/2014 (OJ L, 2024/573, 20.2.2024. ELI: http://data.europa.eu/eli/reg/2024/573/oj).

(67) ‘tank factor’ (f_{tank}) means a factor in the calculation of the solar device efficiency that depends on the energy-efficiency class of the solar hot-water storage tank, as set out in Annex VII, Section 5.2;

(68) ‘non solar heat required’ (Q_{nonsol}) means the part of the annual water heating demand which is not covered by the solar-device yield and therefore must be provided by the water heater, in kWh/a;

(69) ‘annual solar water heating demand’ ($Q_{wh,sol}$) means the water-heating demand per year to be met by the combination of solar device and water heater, in kWh/a;

(70) ‘solar heat delivered’ (Q_{sol}) means the part of the annual water-heating demand that is covered by the solar-device yield, in kWh/a;

5. DEFINITIONS RELATED TO HEAT RECOVERY DEVICES FOR SHOWERS

(71) ‘shower water heat recovery device factor’ ($f_{SWHRD,lp}$) means a factor representing the water-heating energy-efficiency gains of a water heater package comprising a shower-water heat-recovery device for a specific load profile;

(72) ‘shower water heat recovery efficiency’ ($\eta_{SWHRD,lp}$) means the thermal efficiency of the shower-water heat-recovery device calculated as the ratio of the heat recovered by the device divided by the heat supplied to the device for a specific load profile;

6. DEFINITIONS RELATED TO HOT WATER STORAGE TANKS

(73) ‘standing loss’ (S) means the heating power dissipated from a hot water storage tank at standard rating conditions, expressed in W;

(74) ‘multivalent tank’ means a hot water storage tank that has at least 6 points of connection allowing for cold water inflow, hot water outflow and/or hot water circulation;

ANNEX II

Energy efficiency classes and acoustic airborne-noise-emission classes

1. ENERGY EFFICENCY CLASSES FOR WATER HEATERS AND PACKAGES

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

2. The water heating energy efficiency of a water heater shall be calculated as set out in Annex VII for the average climate conditions.

Table 1

Water heating energy efficiency classes of water heaters, by maximum load profiles, η_{wh} in %

	Declared tapping profiles				
Energy label class	**3XS and 2XS**	**XS**	**S**	**M**	**L to 4XL**
A	55	84	160	210	260
B	49	49	120	160	210
C	46	46	90	120	160
D	43	43	70	90	120
E	< 43	< 43	49	70	90
F			46	49	49
G			< 46	< 49	< 49

2. ACOUSTIC AIRBORNE NOISE-EMISSION CLASS FOR WATER HEATERS AND PACKAGES

1. The acoustic airborne-noise-emission class of water heaters for average climate conditions shall be determined on the basis of their sound power, as set out in Table 2.

2. The sound power shall be calculated in accordance with Annex VII, Section 8.

Table 2

Acoustic airborne-noise-emission classes

Sound Power Level dB(A)	**$P_{rated} \leq 6$ kW**		**$6 < P_{rated} \leq 12$ kW**		**$12 < P_{rated} \leq 30$ kW**		**$30 < P_{rated} \leq 70$ kW**	
	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor
A	30	45	30	45	35	50	45	60
B	35	50	35	50	40	55	50	65
C	40	55	40	55	45	60	55	70

D	45	60	45	60	50	65	60	75
E	≥ 60	≥ 65	≥ 65	≥ 70	≥ 70	≥ 78	≥ 80	≥ 88

3. ENERGY EFFICIENCY CLASSES OF HOT WATER STORAGE TANKS

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

Table 3

Energy efficiency classes of hot water storage tanks

Energy label class	**Standing loss S in Watts, with storage volume V in litres**	
	hot water storage tanks (except multivalent tanks with a volume ≥ 80 L)	**multivalent tanks with a volume ≥ 80 L**
A	$S < 3 + 2.5 * V^{0,4}$	$S < 3 + 3.0 * V^{0,4}$
B	$3 + 2.5 * V^{0,4} \leq S \leq 5,5 + 3.16 * V^{0,4}$	$3 + 3.0 * V^{0,4} \leq S \leq 5,5 + 3.66 * V^{0,4}$
C	$5,5 + 3.16 * V^{0,4} \leq S < 8,5 + 4,25 * V^{0,4}$	$5,5 + 3.66 * V^{0,4} \leq S < 8,5 + 4,75 * V^{0,4}$
D	$8,5 + 4,25 * V^{0,4} \leq S$	$8,5 + 4,75 * V^{0,4} \leq S$

ANNEX III

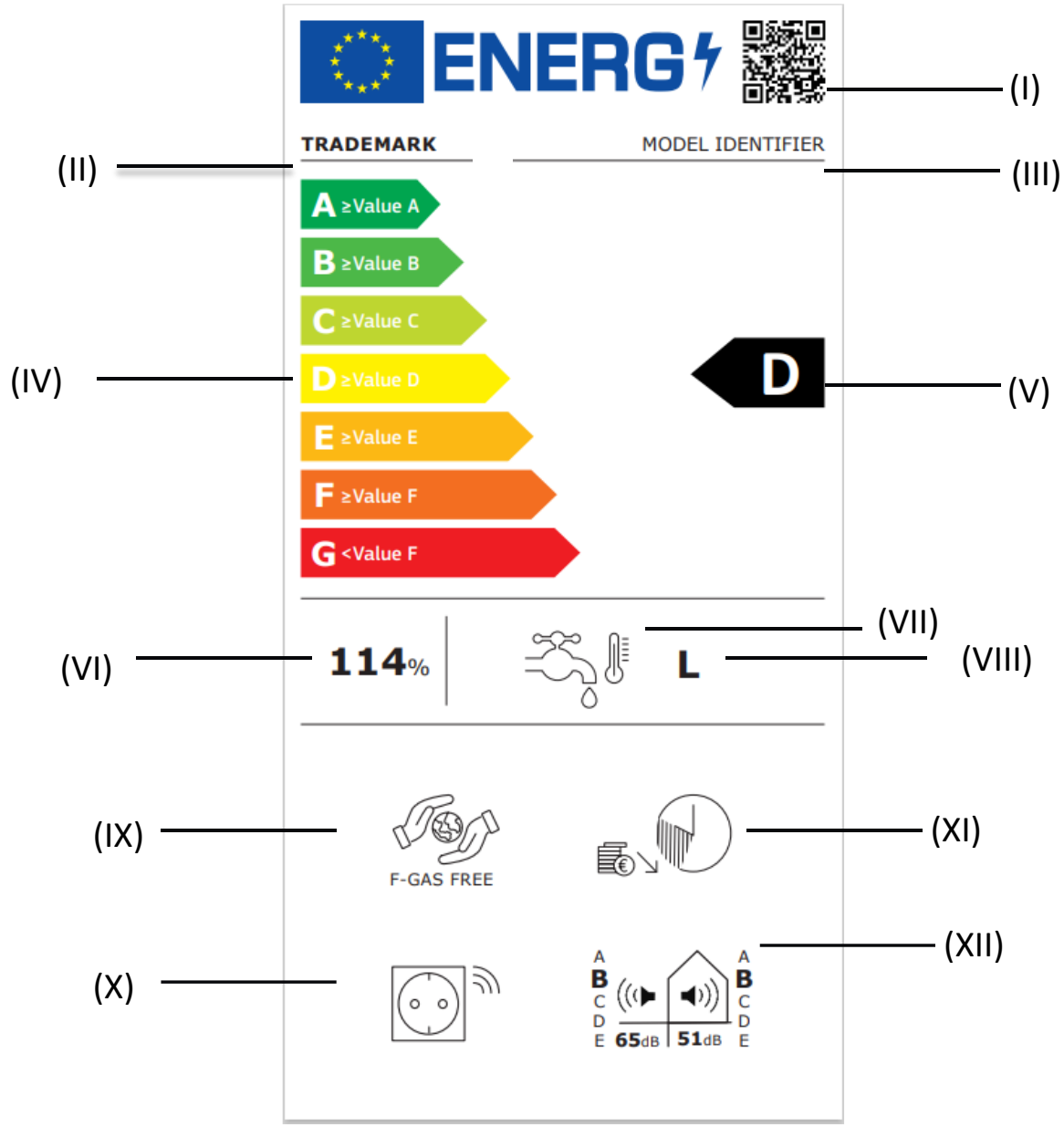
Labels

1. LABEL FOR WATER HEATERS

1.1. Label information for water heaters

Figure 1

Label for water heaters



The following information shall be included in the label:

I. QR code linking to the product information database on the European Product Registry for Energy Labelling;

II. brand or trademark;

III. supplier's model identifier;

IV. scale of energy efficiency classes from A to G, with the class boundary indicated for each class, which in accordance with Table 1 Annex II depend on the load profile of the water heater; for sizes for which classes F and G are not used, classes F and G should not appear on the label;

V. the water heating energy efficiency class determined in accordance with Table 1, Annex II;

VI. the water heating energy efficiency value determined in accordance with Section 3 of Annex VII, for the average climate conditions;

VII. the water heating functionality icon;

VIII. the maximum load profile;

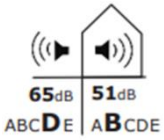
IX. if applicable, the indicator for heat pumps using a refrigerant fluid that is not a fluorinated gas;

X. if applicable, icon displaying that the appliance is compliant with the EU Code of Conduct for the interoperability of Energy Smart Appliances;

XI. if applicable, icon displaying that the appliance is equipped with a timer;

XII. airborne acoustic noise, with the emissions expressed in dB(A) with respect to 1 pW and rounded to the nearest integer, and airborne acoustic noise emission class, determined in accordance with Table 2, Annex II;

(i) for products emitting outdoor and indoor sound, the following icon shall be placed on the label in the space indicated by 'XII';



(ii) for products emitting only indoor sound, the following icon shall be placed on the label in the space indicated by 'XII'.

1.2. Label design for water heaters

Figure 2

Label design for water heaters

[Figure showing the label with dimensions will be provided once the draft has been approved]

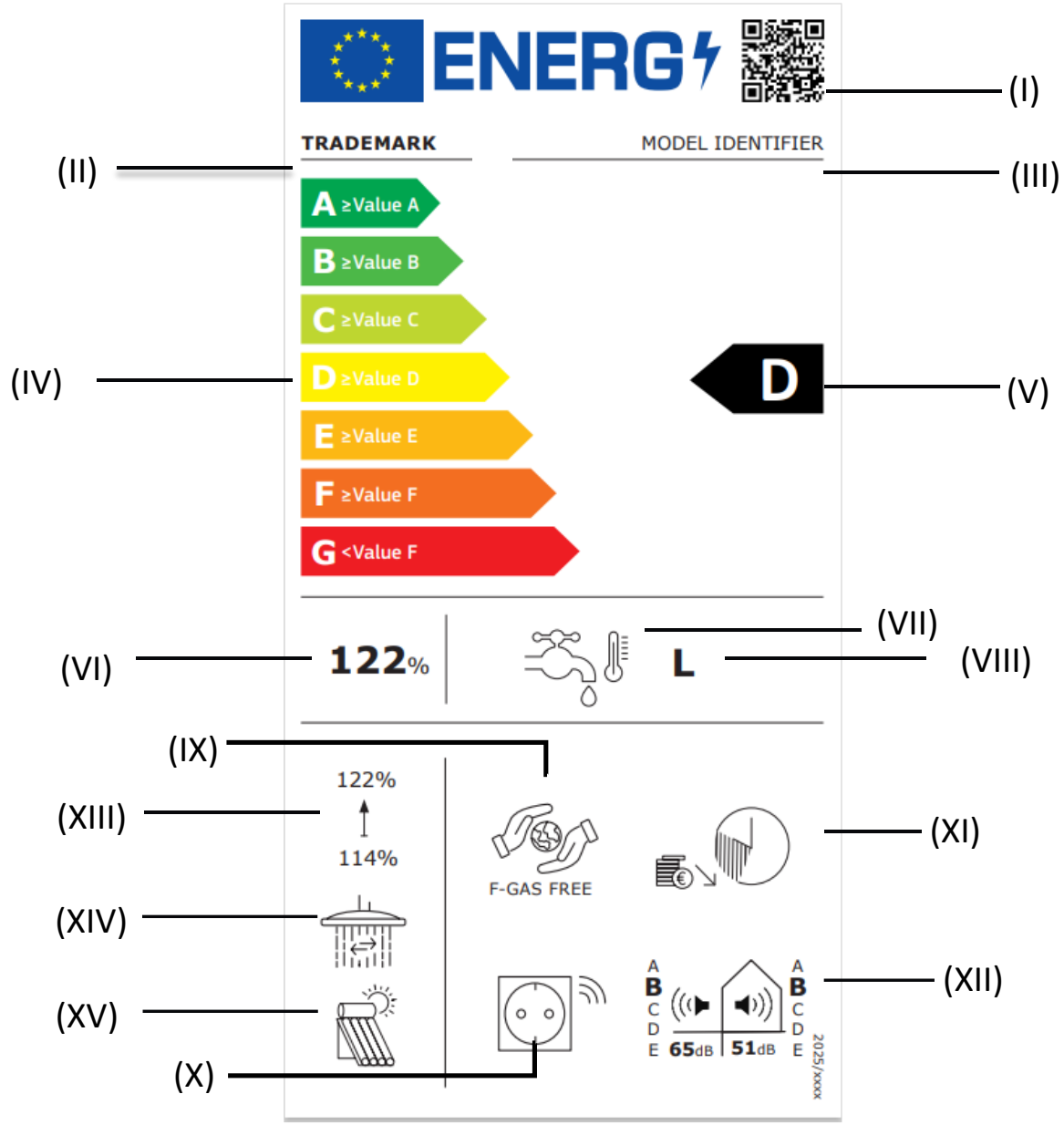
[Once the final draft has been approved, the following section will display the information related to the design of the label as provided by the EC designer]

2. LABEL FOR PACKAGES

2.1. Label information for packages

Figure 3

Label for packages



The following information shall be included in the label:

I. QR code linking to the product information database on the European Product Registry for Energy Labelling;

II. brand or trademark;

III. supplier's model identifier;

IV. scale of energy efficiency classes from A to G, with the class boundary indicated for each class, which in accordance with Table 1 Annex II depend on the load profile of the water heater; for sizes for which classes F and G are not used, classes F and G should not appear on the label;

V. the water heating energy efficiency class determined in accordance with Table 1, Annex II;

VI. the water heating energy efficiency value determined in accordance with Section 3 of Annex VII, for the average climate conditions;

VII. the water heating functionality icon;

VIII. the maximum load profile;

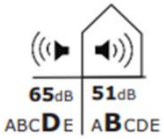
IX. if applicable, the indicator for heat pumps using a refrigerant fluid that is not a fluorinated gas;

X. if applicable, icon displaying that the appliance is compliant with the EU Code of Conduct for the interoperability of Energy Smart Appliances;

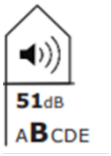
XI. if applicable, icon displaying that the appliance is equipped with a timer;

XII. airborne acoustic noise, with the emissions expressed in dB(A) with respect to 1 pW and rounded to the nearest integer, and airborne acoustic noise emission class, determined in accordance with Table 2, Annex II;

(i) for products emitting outdoor and indoor sound, the following icon shall be placed on the label in the space indicated by 'XII';



(ii) for products emitting only indoor sound, the following icon shall be placed on the label in the space indicated by 'XII'.



XIII. icon on the increase in water heating efficiency due to the inclusion of additional components in the package showing the values of the energy efficiency before and after the increase;

XIV. if applicable, icon displaying that the package contains one or more shower-water heat-recovery devices;

XV if applicable, icon displaying that the package contains one or more solar devices.

2.2. Label design for packages

Figure 6

Label design for packages

[Figure showing the label with dimensions will be provided once the draft has been approved]

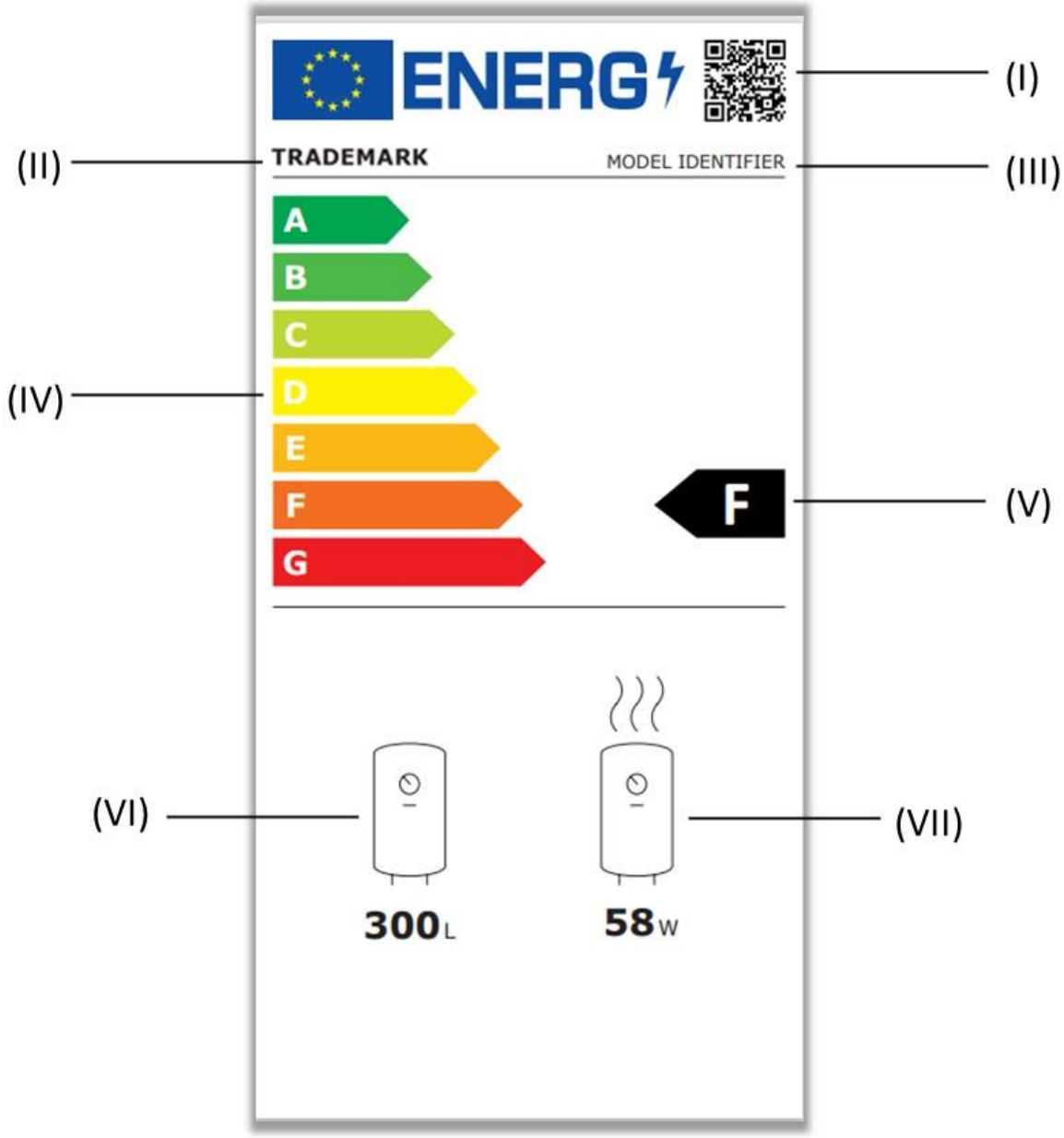
[Once the final draft has been approved, the following section will display the information related to the design of the label as provided by the EC designer]

3. LABEL FOR HOT WATER STORAGE TANKS

3.1. Label information for hot water storage tanks

Figure 3

Label for storage tanks



The following information shall be included in the label:

I. QR code linking to the product information database on the European Product Registry for Energy Labelling;

II. brand or trademark;

III. supplier's model identifier;

IV. scale of standing loss classes from A to G, with the class boundary indicated in Table 3, Annex II;

V. the standing loss class determined in accordance with Table 3, Annex II;

VI. the storage volume in litres;

VII. the standing loss in W;

3.2. Label design for storage tanks

Figure 4

Label for storage tanks

[Figure showing the label with dimensions will be provided once the draft has been approved]

[Once the final draft has been approved, the following section will display the information related to the design of the label as provided by the EC designer]

ANNEX IV

Product-information sheet and package-information sheet

1. The supplier shall enter into the public part of the European Product Registry for Energy Labelling (EPREL) the information as set out in:

   (i) for water heaters – Table 1;

   (ii) for solar devices – Table 2;

   (iii) for shower-water heat-recovery devices – Table 3;

   (iv) for packages – Table 4;

   (v) for the energy smart appliances – Table 5, part A;

   (vi) for hot water storage tanks – Table 6;

2. For heat pump water heaters using outdoor air as heat source, the information in Table 1 shall be provided for average climate conditions, colder climate conditions and warmer climate conditions. For solar devices, the information in Table 2 shall be provided for average climate conditions, colder climate conditions and warmer climate conditions. For packages including solar devices, the information in Table 4 shall be provided for average climate conditions, colder climate conditions and warmer climate conditions.

3. If a given parameter is not applicable to the product or package, the supplier shall fill in the relevant cell in the table with the expression 'N/A'.

4. The supplier shall add to the product-information sheet and package-information sheet any specific precautions that are to be taken when the heater is assembled, installed or maintained.

5. Any supplier providing a package shall enter into the European Product Registry for Energy Labelling (EPREL) the information related to the package and to each of its components.

6. The product-information sheet and the package-information sheet shall include the same information that is entered into the public part of the product database.

7. The information in the product-information sheet and package-information sheet shall clearly explain to customers the relationship between energy efficiency, fuel or electricity consumption and running costs, as those factors are of primary concern to consumers.

8. The user manual or other documents provided with the product or package shall clearly indicate the link to the model of the product or to the model of the package in the European Product Registry for Energy Labelling (EPREL) as a human-readable Uniform Resource Locator (URL) or as QR code or by providing the product or package registration number.

Table 1

Product information sheet for water heaters

Brand or trademark:
Model identifier:

Maximum load profile: [3XS / XXS / XS / S / M / L / XL / XXL / 3XL / 4XL]							
Parameters for water heater types	**EIWH**	**ESWH**	**FIWH**	**FSWH**	**CHPWH**	**eHPWH**	**tdHPWH**
Energy label class Based on energy label regulation [2026, xxx]	[A..G]	[A..G]	[A..G]	[A..G]	[A..G]	[A..G]	[A..G]
Water heater energy efficiency (%)	x,x	x,x	x,x	x,x	x,x	x,x	x,x
Standard rated heat output (kW)	x,x	x,x	x,x	x,x	x,x	x,x	x,x
Storage volume (litres)	N/A	x	N/A	x	x	x	x
Mixed water at 40 ºC (litres)	N/A	x,x	N/A	x,x	x,x	x,x	x,x
Daily electricity consumption (Qelec, kWhe/d)	x,x	x,x	x,x	x,x	x,x	x,x	x,x
Daily fuel consumption (Qfuel, kWh GCV/d)	N/A	N/A	x,x	x,x	x,x	N/A	x,x
Type of fuel (gas G20 or gas G25, gas G30 or gas G31, liquid fuel)	N/A	N/A				N/A	
NOx emissions (mg / kWh fuel input)	N/A	N/A	x,x	x,x	x,x	N/A	x,x
Annual electricity consumption (AEC, kWh/y)	x	x	x	x	x	x	x
Annual fuel consumption (AEF, kWh/y in GCV)	N/A	N/A	x	x	x	N/A	x
Off-peak water heater	N/A	[y/n]	N/A	N/A	N/A	[y/n]	N/A
Independent temperature / flow control	[y/n]	N/A	[y/n]	N/A	N/A	N/A	N/A
Adaptive control	N/A	[y/n]	N/A	N/A	N/A	[y/n]	N/A
Adaptive control factor (F_{AC})	N/A	x,xxx	N/A	N/A	N/A	x,xxx	N/A
Timer	[y/n]	[y/n]	[y/n]	[y/n]	[y/n]	[y/n]	[y/n]
For heat pumps, heat source type* *[outdoor air-to-water / indoor air-to-water / non-heated space air / exhaust air-to-water / brine-to-water / direct exchange-to-water]	N/A	N/A	N/A	N/A	N/A	[heat source]	[heat source]
Climate for outdoor air heat pumps (average / colder / warmer)	N/A	N/A	N/A	N/A	N/A	[climate]	[climate]

Ventilation exhaust air flow rate (m^3/h)* **=if ventilation air source heat pump*	N/A	N/A	N/A	N/A	N/A	x	x
Sound power level, in dB(A), indoor	x	x	x	x	x	x	x
Sound power level, in dB(A), outdoor	N/A	N/A	x	x	x	x	x
Electric power output (kW)	N/A	N/A	N/A	N/A	x,x	N/A	N/A
Electric efficiency (%)	N/A	N/A	N/A	N/A	x,x	N/A	N/A

Table 2

Product information sheet for solar devices

Solar device							
Brand or trademark:		Model identifier:					
Solar device factor for water heating							
Climate	**Number of solar collectors**	**Gross area of collector array [m^2]**	**Load profile of combination heater included in the package***				
			M	**L**	**XL**	**XXL**	**3XL**	**4XL**
			Solar device factor for water heating (per climate, chosen collector surface and load profile, in % points)**					
Average	**x**	**x,x**	**x,x**	**x,x**	**x,x**	**x,x**	**x,x**	**x,x**
Warmer			**x,x**	**x,x**	**x,x**	**x,x**	**x,x**	**x,x**
Colder			[…]***	**x,x**	**x,x**	**x,x**	**x,x**	**x,x**

* The list of profiles is an example and may be shorter or longer.

** Not less than 100 % and not more than 240 % for colder climate conditions, 450% for average climate conditions and 500 % for warmer climate conditions.

*** The " […] " notation also indicates that the table may be extended with additional rows below for larger number of solar collectors and gross area of collector array.

Table 3

Product information sheet for devices for recovering heat from shower water

Shower-water heat-recovery device

Brand or trademark:	Model identifier:							
Load profile of water heater included in the package	XS	S	M	L	XL	XXL	3XL	4XL
Shower water heat recovery device factor $f_{SWHRD,lp}$	x,x	x,x	x,x	x,x	x,x	x,x	x,x	x,x
Shower water heat recovery device efficiency $\eta_{SWHRD,lp}$	x,x	x,x	x,x	x,x	x,x	x,x	x,x	x,x
$\eta_{12.5}$ in %	x,x	x,x	x,x	x,x	x,x	x,x	x,x	x,x
η_i in %	x,x	x,x	x,x	x,x	x,x	x,x	x,x	x,x
$q_{V,I}$ in L/min	x,x	x,x	x,x	x,x	x,x	x,x	x,x	x,x

Table 4

Package information sheet

Package					
Brand or trademark:	Package model identifier:				
Package parameters					
Climate conditions: average □ warmer □ colder □					
Water heating					
Parameter	**Value**	**Unit**	**Item**	**Value**	**Unit**
Load profile (climate)		-	Water-heating energy efficiency (climate)		%
Package elements					
Water heater included in the package					
Type of heater:			**Parameter**	**Value**	**Unit**
ESWH □ FSWH □ CHPWH □ eHPWH □ tdHPWH □			Water-heating energy efficiency (climate)		%
Link to product database for the water heater model included in the package:			https://eprel.ec.europa.eu/qr/*EPREL identifier*		
Other elements of the package					

Solar device □	**Parameter**	**Value**	**Unit**
Number of products in the package:	Solar-device factor for water heating (climate)		%
Link to product database for the solar device model included in the package:	https://eprel.ec.europa.eu/qr/*EPREL identifier*		

Shower-water heat-recovery device □	**Parameter**	**Value**	**Unit**
Number of products in the package:	Shower water heat recovery device factor		**% points**
Link to product database for the shower water heat recovery device model included in the package:	https://eprel.ec.europa.eu/qr/*EPREL identifier*		

Table 5

Product information sheet and technical information sheet for energy smart appliances

Energy Smart Appliances	
Part A – Information for instruction manuals and free access websites	
Manufacturer's name or trademark, commercial registration number and address	
Model identifier	
Appliance compliant with the EU Code of Conduct for the interoperability of Energy Smart Appliances	□ Appliance compliant
How does the appliance achieve compliance with the Code of Conduct? ([5])	□ Dongle/adaptor □ Cloud connection □ Built in the appliance
Which use cases does the appliance implement? ([6])	□ Flexible start □ Power Consumption Monitoring □ Power Consumption Limitation □ Incentive Table-based Power Consumption Management □ Manual operation □ Future use cases ([7])

([5]) Only one may be selected.
([6]) More than one option may be selected.

Manufacturer's link to free access website with end-user information	
Part B – Technical documentation	
Communication Protocol used to implement the use cases:	□ SPINE □ SPINE IoT □ Matter □ Home Connectivity Alliance □ S2 □ Others (please specify) [_....__]

Table 6

Product information sheet for hot water storage tanks

Hot water storage tank		
Brand or trademark:		
Model identifier:		
Parameter	Unit	Decimals
Storage volume (or 'equivalent volume')	L	x
Volume of mixed water at 40°C	L	x
Standing loss	W	x,x
Multivalent tank		[y/n]
Energy label class		[A..D]
Information relevant for waste treatment		
Tank material (of the volume(s) that contain(s) drinking and/or system water)	(state material(s))	
Thermal insulation (the type of the materials used for thermal insulation)	(state material(s))	

([7]) Future use cases may be considered when the Code of Conduct is updated, as new versions will integrate evolving solutions and protocols to address emerging needs.

ANNEX V

Technical documentation for products and packages

The technical documentation referred to in Article 3 shall include information described in points 1 to 8 below:

1. a general description of the model allowing it to be unequivocally and easily identified;

2. references to the harmonised standards applied or other measurement standards used;

3. specific precautions to be taken when the product is assembled, installed, maintained or tested,

4. the details and the results of calculations performed in accordance with Annex VII;

5. testing conditions, where they are not described sufficiently in the references provided pursuant to point (b);

6. a list of all equivalent models, if any, including model identifiers;

7. the declared values for the technical parameters set out in the tables of Annex IV, to be considered for the purpose of the verification procedure set out in Annex IX:

   (a) for water heaters – Table 1;

   (b) for solar devices – Table 2;

   (c) for shower-water heat-recovery devices – Table 3;

   (d) for packages – Table 4;

   (e) for the energy smart appliances – Table 5, part A and part B;

   (f) for hot water storage tanks – Table 6;

8. Where the information included in the technical documentation for a particular model has been obtained (i) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different supplier, or (ii) by calculation based on design or extrapolation from another model of the same or a different supplier, or both, the technical documentation shall include:

   (a) the details of the calculation, including a detailed mathematical model;

   (b) the details of the assessment undertaken by the supplier to verify the accuracy of the calculation, including detailed description of any tests undertaken to verify the accuracy of the calculations; and, where appropriate;

   (c) the declaration of identity between the models of different suppliers.

Information described in points 1 to 8 shall constitute the mandatory part of the technical documentation that the supplier is to enter into the database, pursuant to Article 12(5) of Regulation (EU) 2017/1369. Information shall be entered into the database in the order it is presented in this annex.

ANNEX VI

Information to be provided in visual advertisements, in promotional material, and in distance selling

1. In visual advertisements, in technical promotional material and in paper-based distance selling and telemarketing, both for products and packages, the model efficiency class and the range of efficiency classes shall be displayed as indicated in Figure 1, and in accordance with the following additional specifications:

   (a) a "class arrow" shall be used, containing the letter indicating the energy efficiency positioned in the centre of the rectangular part of the arrow;

   (b) the class arrow shall have a border, and the internal background colour shall match the colour of the energy efficiency class in the full label;

   (c) the typeface of the "class letter" shall be Verdana, bold, 100 % white, with an outline in 100 % black and in a size equivalent to that of the price, if the price is shown;

   (d) the typeface of the range of available energy efficiency classes shall be in Verdana 100 % black on a white background.

Figure 1

Coloured class arrow, with range of energy efficiency classes

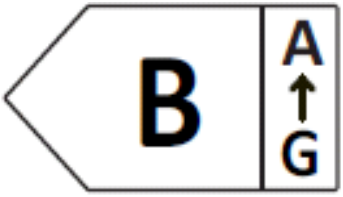
2. By way of derogation from point 1, if the visual advertisement, technical promotional material or paper-based distance selling is printed in monochrome, the energy efficiency class and the range of energy efficiency classes may be displayed, as indicated in Figure 2, and point 1 (b) and (c) shall be replaced by the following:

   (i) the class arrow shall have a border and the internal background shall be uncoloured, matching the colour of the background support;

   (ii) the typeface of the "class letter" shall be Verdana, bold, 100 % black and in a size equivalent to that of the price, if the price is displayed.

Figure 2

Monochrome class arrow, with range of energy efficiency classes



3. The class-arrow image shall be displayed in proximity to the price of the product.

4. For all the situations referred to in point 1 and 2 above, the customer shall be given access to the product and package information, via a link to the registration of the product in the product database EPREL (as URL or printed QR code).

5. In visual advertisements, in technical promotional material and in paper-based distance selling and telemarketing on the internet, both for products and for packages, the model efficiency class and the range of efficiency classes shall be displayed as indicated in Figure 1, in accordance with the following additional specifications:

   (a) the class-arrow image shall be the nested display of the full label set out in Annex III and shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image;

   (b) the full label shall be displayed by pop up, new tab, new page or inset screen display;

   (c) for magnification of the label on tactile screens, the device conventions for tactile magnification shall apply;

   (d) the label shall cease to be displayed by means of a close option or other standard closing mechanism;

   (e) the alternative text for the image shall be the energy efficiency class of the product or package model;

   (f) a text indicating “Product information sheet” or “Package information sheet”, in proximity to the class arrow, shall give direct access to the product information sheet as available from EPREL, or to the product model page in EPREL.

ANNEX VII

Measurements and calculations

1. INTRODUCTION

For the purposes of verification of conformity and of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for this purpose in the Official Journal of the European Union, or using other reliable, accurate and reproducible methods that consider the generally recognised state-of-the-art methods and are in conformity with the provisions of this annex and of Annex VIII.

2. TEST CONDITIONS

(a) The declared load profile of the water heater shall be the maximum load profile that can be reached for the given climate condition.

(b) The water-heating tests are performed in the 'out of the box mode'. The only alteration allowed is to enable the measurement of the adaptive-control factor. If the water heater is supplemented by a back-up heater, the back-up heater shall be connected to the control of the water heater during the entire test. The measured energy consumption of the back-up heater shall be accounted for during the test.

(c) The declared load profile of a water heater and the ability of a water heater to supply water at 50 °C for all shall be verified by tests, before proceeding with the remaining water heating measurements.

(d) The measurements for all water heaters shall be carried out for the load profile with the largest reference energy (Qref) that can be supplied by the water heater, as set out in Table 3.

(e) For measurements under point (d), the cold sanitary water inlet temperature shall be +10 °C and the ambient temperature shall be +20 °C if the water heater is designated for use in a heated space. If the water heater is designated for use in an unheated space, it shall be tested at the ambient temperature outdoors or, for heat-pump combination heaters, at the source air temperature set out in Table 1.

(f) The tests to determine energy efficiency and performance shall be subject to the following conditions:

  (i) measurements are carried out using the load profiles set out in Table 3;

  (ii) measurements are 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 maximum load profile;

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

  (iii) if the water heater has a network standby mode, the network standby mode is used during the test.

(g) Heat pump water heaters shall be tested under the conditions set out in Table 1. For electric heat pump water heaters, the 'indoor air' rating condition indicated in Table 1 shall be used only if the functional requirements set out in Annex II Section 1.5.4

of [2026/xxx] [8] are satisfied, otherwise the 'outdoor air' rating condition shall be used.

(h) Exhaust air-to-water heat pump water heaters shall be tested under the maximum air flow conditions set out in Table 2, whereby an alternate source shall be used and declared, if and in as much as the ventilation exhaust air is not enough to satisfy with the requirements of the maximum load profile.

(i) Water heaters classified as off-peak water heaters shall be energised for a maximum period of eight consecutive hours between 22:00 and 07:00 of the 24-hour tapping pattern. At the end of the 24-hour tapping pattern the water heaters shall be energised until the end of the step.

Table 1 Standard rating conditions for heat pump water heaters

Heat source	**Outdoor air (dry/wet)**	**Indoor air (dry/wet)**	**Non-heated space air (dry/wet)**	**Ventilation exhaust air (dry/wet)**	**Ground source (inlet/outlet)**	**Direct exchange (bath)**
Temperature	Average: +7 °C /+6 °C Colder: +2 °C / +1 °C Warmer: +14 °C/ +12 °C	+20 °C / maximum +15 °C	+15 °C / +12 °C	+20 °C / +15 °C	+5 °C/ +2 °C	+4°C

Table 2 Maximum ventilation exhaust air flow rate

Maximum load profile	**S**	**M**	**L**	**XL**	**XXL**	**3XL**	**4XL**
Ventilation exhaust air flow rate available $q_{v,max,wh}$ in m³/h	80	160	190	600	900	1700	3500

(j) For calculating the adaptive control factor F_{AC}, measurements of the weekly electricity and/or fuel consumption with or without adaptive controls shall be carried out using a two-week measurement cycle as follows:

(i) 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, self-learning function enabled, and adaptive control disabled;

(ii) days 6 and 7: no water draw-offs, self-learning function enabled, and adaptive control disabled;

(8) Commission Regulation (EU) … of XXX setting ecodesign requirements for water heaters, solar devices, shower water heat recovery devices, packages of those products and hot water storage tanks, amending and repealing Commission Regulation (EU) 814/2013 *[the date (OJ Serie L, dd.mm.2026 ELI: **http://data.europa.eu/eli/reg/2026/xxx/oj**, to be published on the same date as the present Regulation – OP – Please insert reference]*.

(iii) days 8 to 12: repetition of the same sequence applied for days 1 to 5, and adaptive control enabled;

(iv) days 13 and 14: no water draw-offs, and adaptive control enabled;

(v) 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 maximum load profile.

(k) The sound power level of heat pump water heaters shall be measured at standard rated heat output.

(l) The mixed water at 40 °C (*V40*) of a storage water heater or hot water storage tank shall be assessed using methods laid down in the relevant standards identified in Annex VIII, whereby for a storage water heater:

(i) the product shall be kept at its nominal operating temperature set point (in °C) for at least 12 consecutive hours;

(ii) at the end of the first thermostat cut-out thereafter, it shall be switched off and the water shall be withdrawn at the maximum flow rate in the maximum load profile until the water temperature at the outlet, measured and registered at the most at every three seconds, drops below 40 °C;

(m) For test conditions not mentioned in this Annex, the transitional methods mentioned in Annex VIII shall apply, as appropriate.

3. WATER HEATING ENERGY EFFICIENCY

(a) The water heating energy efficiency η_{wh}, expressed in %, of a combination heater shall be calculated as the ratio between the reference energy Q_{ref} of the declared load profile and the energy required for its generation based on GCV and including primary energy for electricity, calculated as:

$$\eta_{wh} = \frac{Q_{ref} + Q_{elec\_gen} \cdot 2{,}65}{\left(Q_{fuel} + CC \cdot Q_{elec}\right) \cdot (1 - F_{AC}.adapt) + Q_{cor}} \cdot Fctrl \cdot 100$$

where:

- Q_{ref} is the total energy delivered by the load profile used, value from Table 7, in kWh;
- Q_{elec} is the consumption of electricity for water heating over 24 consecutive hours under the maximum load profile, expressed in kWh, in terms of final energy, including the electricity use of auxiliary components that are necessary for testing the load profile but not delivered with the product (except the water circulator(s));
- Q_{elec_gen} is electricity generation by cogeneration water heater for water heating over 24 consecutive hours under the maximum load profile, expressed in kWh in terms of final energy;
- Q_{fuel} is the daily fuel consumption for domestic hot water over 24 consecutive hours under the maximum load profile, expressed in kWh, in terms of GCV;
- F_{AC} is the adaptive control factor, as set out in point (b);

- *adapt* is a Boolean either equal to 0 or to 1;
- Q_{cor} is the ambient correction term, as set out in point (c);
- *Fctrl* is the factor accounting for the capability of water heaters to set the water temperature independently of the water flow.

(b) The adaptive-control factor:

(i) for EIWH and FIWH, it shall be equal to 0;

(ii) for water heaters without adaptive control shall be equal to 0;

(iii) for water heaters with adaptive control shall be calculated in the following way:

$$F_{AC} = 1 - \frac{Q_{fuel,week,adaptive} + CC \times Q_{elec,week,adaptive}}{Q_{fuel,week} + CC \times Q_{elec,week}}$$

(iii) If the result of the calculation is ≥ 0.07 the difference between the useful energy content measured during days 1 to 7 and the useful energy content measured during days 8 to 14 does not exceed 2 % of Q_{ref} of the maximum load profile the value of F_{AC} shall be rounded up to 1, and in other cases, the value of F_{AC} shall be rounded down to 0;

Measurements $Q_{fuel,week,adaptive}$, $Q_{elec,week,adaptive}$, $Q_{fuel,week}$ and $Q_{elec,week}$ must be carried out in accordance with Section 2 point (j).

(c) Q_{cor}:

(i) for water heaters with load profiles XL to 4XL shall be equal to 0;

(ii) for water heaters with load profiles S to L shall be calculated in the following way:

(1) for heat-pump water heaters:

$$Q_{cor} = -0.23 \times 24h \times P_{stby}$$

(2) for water heaters other than heat-pumps, using fuel combustion for heating sanitary water:

$$Q_{cor} = -0{,}23 \cdot (Q_{fuel} \cdot (1 - F_{AC}) - Q_{ref})$$

(3) for water heaters other than heat-pumps, using the electric Joule effect for heating sanitary water:

(4) $$Q_{cor} = -0{,}23 \cdot (CC \cdot Q_{elec} \cdot (1 - F_{AC}) - Q_{ref})$$

(d) Fctrl:

(i) for storage water heaters, Fctrl shall be equal to 1;

(ii) for EIWH and FIWH, Fctrl shall be equal to 1 for water heaters that can control the water temperature independently from the water flow and shall be equal to 0,95 otherwise.

Table 3 Tapping (load) profiles

h	3XS			XXS			XS			S				M			
	Q_{tap}	f	T_m	Q_{tap}	f	T_m	Q_{tap}	f	T_m	Q_{tap}	f	T_m	T_p	Q_{tap}	f	T_m	T_p
	kWh	l/ min	°C	kWh	l/ min	°C	kWh	l/ min	°C	kWh	l/ min	°C	°C	kWh	l/ min	°C	°C
07:00	**0.015**	2	25	**0.105**	**2**	**25**				**0.105**	3	25		**0.105**	3	25	
07:05	**0.015**	2	25											**1.4**	6	40	
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		**0.105**	3	25	
08:01														**0.105**	3	25	
08:15														**0.105**	3	25	
08:30				**0.105**	2	25				**0.105**	3	25		**0.105**	3	25	
08:45														**0.105**	3	25	
09:00	**0.015**	2	25											**0.105**	3	25	
09:30	**0.015**	2	25	**0.105**	2	25				**0.105**	3	25		**0.105**	3	25	

	kWh	l/ min	°C	°C	kWh	l/ min	°C	°C	kWh	l/ min	°C	°C
07:00	**0.105**	3	25		**0.105**	3	25		**0.105**	3	25	
07:05	**1.4**	6	40									
07:15					**1.82**	6	40		**1.82**	6	40	
07:26					**0.105**	3	25		**0.105**	3	25	
07:30	**0.105**	3	25									
07:45	**0.105**	3	25		**4.42**	10	10	40	**6.24**	16	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	

	kWh	l/ min	°C	°C
07:00	**11.2**	48	40	
08:01	**5.04**	24	25	
09:00	**1.68**	24	25	
10:30	**0.84**	24	10	40
11:45	**1.68**	24	25	
12:45	**2.52**	32	10	50
15:30	**2.52**	24	25	
18:30	**3.36**	24	25	
20:30	**5.88**	32	10	50
21:30	**12.04**	48	40	
Q_{ref}	**46.76**			
h	**4XL**			

| | | |

20:30			**1.05** 3 35	**0.42** 4 10 50	**0.735** 4 10 50
20:45		**0.105** 2 25			
21:00		**0.105** 2 25			
21:15	**0.015** 2 25	**0.105** 2 25			**0.105** 3 25
21:30	**0.015** 2 25			**0.525** 5 40	**1.4** 6 40
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**	**5.845**

19:00	**0.105** 3 25	**0.105** 3 25	**0.105** 3 25	*Qtap:* energy content
20:30	**0.735** 4 10 50	**0.735** 4 10 50	**0.735** 4 10 50	*f :* flow rate
20:46		**4.42** 10 10 40	**6.24** 16 10 40	*Tm:* minimum temperature
21:00	**3.605** 10 10 40			*Tp:* peak temperature
21:15		**0.105** 3 25	**0.105** 3 25	
21:30	**0.105** 3 25	**4.42** 10 10 40	**6.24** 16 10 40	
Q_{ref}	**11.655**	**19.07**	**24.53**	

4. WATER HEATING EFFICIENCY OF PACKAGES

The water-heating efficiency of a package shall be calculated per climate condition:

$$\eta_{wh,pack} = \eta_{sol,wh,lp} * \eta_{wh,lp} * f_{SWHRD,lp}$$

where:

- $\eta_{sol,wh,lp}$ is the solar-device efficiency for water heating of the solar device included in the package, in %;
- $\eta_{wh,lp}$ is the water-heating energy efficiency of the water heater included in the package, indicated in the product-information sheet for this water heater; in case of a package made of a thermosiphon ICS solar device with no other heat generator than the solar device and a backup immersion heater, $\eta_{wh,lp}$ should be equal to *1/CC*, with *CC* the conversion coefficient;
- $f_{SWHRD,lp}$ is the shower-water heat-recovery device factor of the shower-water heat-recovery device included in the package, indicated in the product-information sheet for this shower-water heat-recovery device.

5. SOLAR DEVICE

5.1. Solar device testing

(a) The solar collector(s) and, if applicable, the solar hot water storage tank(s) of the solar device, shall be tested separately, except for a solar device, for which the solar collector(s) and hot-water storage tank(s) form an inseparable unit or need to be tested together in order to determine the solar-device efficiency, and which is placed on the market as a single unit.

(b) The standards as referenced in Annex VIII shall be be applied.

(c) The weather data to be used for determining GTY shall relate to the location of:

(i) Helsinki or Stockholm for the colder climate;

(ii) Strasbourg or Würzburg for the average climate;

(iii) Athens for the warmer climate.

(d) The orientation for non-tracking collectors shall be south for all locations.

(e) The inclination for non-tracking collectors shall be:

(i) 45º for the colder climate;

(ii) 35º for the average climate;

(iii) 25º for the warmer climate.

(f) For collectors designed to track the path of the sun, the optimal tracking parameters declared by the manufacturer for the locations indicated in point (c) shall be used.

(g) When performing tests of solar collectors and/or subsequent calculations, the volume of the solar storage tank shall not be less than 0,06 litre of water per kWh of GTY of the collector array.

5.2. Solar device efficiency for water heating

(a) The solar device efficiency for water heating $\eta_{sol,wh}$ shall be calculated per climate condition and load profile as:

$$\eta_{sol,wh} = f_{\text{sol},wh} \times f_{\text{tank}}$$

where:

- f_{tank} is the tank factor, as set out in Table 4, specified for the energy-efficiency class of the storage tank as indicated in the product-information sheet of the storage tank;
- $f_{\text{sol,wh,}}$ is the solar-device factor, calculated in accordance with point (b).

(b) The solar device factor $f_{\text{sol,wh}}$ shall be calculated per climate condition in the following way:

$$f_{sol,wh} = \left(a \times \left(\frac{GTY}{Q_{wh,sol}} \right)^2 + \left(b + d \times f_{profile} \right) \times \frac{GTY}{Q_{wh,sol}} + c \right)$$

where:

- *GTY* is the climate-specific gross thermal yield per year (kWh/yr) of the solar device, calculated in accordance with point (c);
- $Q_{wh,sol}$ means the annual solar water heating demand, for the applicable load profile, calculated in accordance with point (d);
- coefficient *a, b, c* and *d* are the solar device water heating efficiency coefficients per climate condition, set out in Table 4;
- $f_{profile}$ is tapping load profile specific coefficient as set out in Table 5.

The solar-device efficiency for water heating $\eta_{sol,wh}$ as calculated for the combinations of *GTY* and Q_{ref} shall not be less than 100 % and not more than the upper limits 240%, 450% and 500% for the colder, average and warmer climate respectively.

Table 4

Tank factor

Storage-tank energy-label class	**A**	**B**	**C**	**D**
Storage-tank correction factor f_{tank}	1.20	1.15	1.1	1.05

Table 5

Coefficients for calculation of $\eta_{sol,wh}$

Solar-device water-heating efficiency coefficients per climate	**a**	**b**	**c**	**d**
Average	-0.22	1.93	0.55	0.36
Colder	-0.52	1.94	0.60	0.28
Warmer	1.17	0.59	0.83	0.50

Table 6

Load profile specific coefficient for calculation of $\eta_{sol,wh}$

Load profile	M	L	XL	XXL	3XL	4XL
$f_{profile}$ (-)	0	0.92	1.38	1.64	2.43	3.56

(c) The GTY of a solar device shall be calculated in the following way:

(i) if the solar collector(s) of the solar device were tested separately from the hot water storage tank of the solar device, the GTY shall be calculated using the calculation method referred to in Annex VIII;

(ii) if the solar collector(s) and the hot water storage tank of the solar device were tested together, the GTY shall be equal to the amount of solar heat delivered ($Q_{sol,}$), determined for the smallest load profile, for which the non-solar heat required (Q_{nonsol}) for the 'warmer' climate conditions is equal to or higher than the minimum values shown in Table 7.

Table 7

The minimum value for Q_{nonsol}

	M	L	XL	XXL	3XL	4XL
Limit value (kWh/a)	520	950	1510	1910	3570	7060

(d) The non-solar heat required (Q_{nonsol}), expressed in kWh/a, shall be calculated in the following way:

$$Q_{nonsol} = Q_{wh,sol} - Q_{sol}$$

where:

- $Q_{wh,sol}$ is the annual solar water heating demand, calculated in accordance with point (3), and expressed in kWh/a;
- Q_{sol} is the solar heat delivered, determined using standards referred to in Annex VIII, and expressed in kWh/a;

(e) The annual solar-water-heating demand ($Q_{wh,sol}$) shall be calculated in the following way:

$$Q_{wh,sol} = 0.6 * 366 * \left(Q_{ref} + 1.09\right)$$

6. SHOWER WATER HEAT RECOVERY DEVICE

6.1. Testing of the shower-water heat-recovery device

(a) The shower water flow rate and the incoming cold water flow rate shall be matched.

(b) The shower water flow rate shall have a temperature between 35 and 40°C and the incoming cold water shall have a temperature of 10°C.

(c) The combined volume of flow rates for the highest flow rates at which the shower water heat recovery devices supplied in the package have been tested shall exceed the load profile flow rate for the water heater package as indicated in Table 7.

6.2. Shower-water heat-recovery device factor

(a) The shower water heat recovery device factor $f_{SWHRD,lp}$ shall be calculated, in % as:

$$f_{SWHRD,lp} = \frac{100}{\left(100 - \left(\eta_{SWHRD,lp} * 0.64\right)\right)}$$

Where $\eta_{SWHRD,lp}$ is the shower water heat recovery device efficiency for the declared load profile of the combination heater included in the package, calculated as set out in point (b) or (c) accordingly. If the package includes more than one shower-water heat-recovery device, the shower-water heat-recovery device efficiency is calculated in accordance with point (d).

(b) The shower-water heat-recovery device efficiency for a load profile $\eta_{SWHRD,lp}$, established at one flow rate, shall be calculated in the following way:

(i) If the shower-water heat-recovery device efficiency η_i has been established at a flow rate q_i equal to the load profile flow rate $q_{V,lp}$, the $\eta_{SWHRD,lp}$ for the maximum load profile is the η_i .

(ii) If the shower-water heat-recovery device efficiency has been established at a flow rate of 12.5 l/min ($\eta_{12.5}$) and the applicable load profile flow rate $q_{V,lp}$ is lower, the $\eta_{SWHRD,lp}$ for the maximum load profile is calculated as:

$$\eta_{SWHRD,lp} = \eta_{12.5} + \left(0.8 * 0.01 * (12.5 - q_{V,lp})\right)$$

(c) The shower water heat recovery device efficiency for a load profile $\eta_{SWHRD,lp}$, established at two flow rates, one of which is 12.5 l/min ($\eta_{12.5}$) and the other is lower (η_i), and the applicable load profile flow rate $q_{V,lp}$ is below 12.5 l/min, shall be calculated in the following way:

$$\eta_{SWHRD,lp} = \eta_{12.5} + \left(0.8 * \frac{\eta_{12.5} - \eta_i}{q_{V,12.5} - q_{V,i}} * (q_{V,lp} - 12.5)\right)$$

where:

- $\eta_{12.5}$ is the shower water heat recovery device efficiency established in a test at a flow rate of 12.5 l/min;
- η_i is the efficiency of the shower-water heat-recovery device efficiency established in a test at a flow rate other than 12.5 l/min;
- $q_{12.5}$ is the water flow rate of 12.5 l/min used in the test;
- $q_{V,i}$ is the water flow rate other than 12.5 l/min used in the test;
- $q_{V,lp}$ is the applicable load profile flow rate indicated in Table 8.

(d) The $\eta_{SWHRD,lp}$ for a package including multiple shower water heat recovery devices shall be calculated as the flow rate weighted average of the efficiencies established for the individual shower water heat recovery devices.

Table 8

Flow rate $q_{V,lp}$ per load profile

Load profile	**XS**	**S**	**M**	**L**	**XL**	**XXL**	**3XL**	**4XL**
$q_{V,lp}$ (l/min)	3	5	6	8	8	12	48	96

7. STANDING LOSS OF HOT WATER STORAGE TANKS

(a) The standing loss of a hot water storage tank shall be determined with the storage temperature set and stabilised at 65 ºC and an ambient temperature of 20 ºC.

(b) Heat exchangers shall be filled with system or sanitary water (whichever applies) where it can be assumed that the filled condition contributes significantly to standing loss measured, such as heat exchangers located on the perimeter of the hot water storage tank.

(c) The standing loss S of storage tanks shall be the energy required to keep the storage tank contents at the required temperature divided by the test duration.

(d) The equivalent volume of a storage tank containing PCM material Veq shall be calculated as:

$$V_{eq} = V_{40} * \frac{30}{\Theta_{\mathrm{wh}} - 10} \div 0.85$$

where:

– V_{40} is the volume of mixed water, established in accordance with methods identified in Annex VIII;

– Θ_{wh} is the reference hot water temperature, established in accordance with methods identified in Annex VIII.

ANNEX VIII

Transitional methods

References and qualifying notes for water heaters

(The source of all references is CEN unless otherwise indicated)

Parameter	Reference/ Title	Notes and short description

1. ELECTRIC INSTANTANEOUS WATER HEATERS

Standard rated heat output, Prated	EN 50193-1:2016/A1:2020 Electric instantaneous water heaters - Methods for measuring the Performance - Part 1: General requirements Clause 5.1.2	The value of Pnom is the power consumption of the appliance measured after a minimum of 30 minutes of operation under full load conditions.
Water heating energy efficiency η_{wh}	Clause 5.2.4	
Sound power level indoor (L_{WA})		Test method / default numerical value required for product information.
Daily electricity consumption Qelec	Clause 5.2.2	
Weekly electricity consumption Qelec,week	Clause 5.1.4	By default the standard assumes SCF=0 (as there are no efficiency gains to be achieved for smart control)
Weekly electricity consumption 'smart' enabled Qelec,week,smart	Clause 5.1.4	
SCF	Clause 5.1.4	
Fctrl		The ability to control the water temperature independently of the flow is measured by comparing the energy supplied to the water for a given load profile in two different situations: (1) with the set point adapted to the temperature required for each tapping of the specific load profile (which gives a reference time required to reach the required energy supply by tapping), and (2)

		with the maximum temperature set point (to be held for the reference time established in (1)). The ratio between these two energy quantities is then compared to pre-established thresholds.

2. ELECTRIC STORAGE WATER HEATER

Standard rated heat output, Prated		Calculate Prated as product of: Prated=η_{wh}*CC*P_{nom} where P_{nom} is the nominal electric power indicated on the product rating plate and checked as part of verifications led under the Low Voltage Directive.
Water heating energy efficiency η_{wh}	EN 50440:2015+A1:2020 Efficiency of domestic electrical storage water heaters and testing methods Annex A.2	
Sound power level (L_{WA})		Test method / default numerical value required for product information.
Storage volume	Clause 9.1.4	
Mixed water at 40 °C	Clause 9.1.10	
Daily electricity consumption Qelec	Clause 9.1.8.	
Weekly electricity consumption Qelec,week	Clause 9.2	
Weekly electricity consumption 'smart' enabled Qelec,week,smart	Clause 9.2	
SCF	Clause 9.2.	

3. FUEL INSTANTANEOUS WATER HEATER

Standard rated heat		Prated is called nominal useful

output, Prated		output Pn but standards do not describe a measurement method. It is proposed to define Prated as the nominal fuel input multiplied by the nominal efficiency from: - for gaseous fuel - EN26:2023 Clause 7.3.2 corrected for GCV of the fuel; - for liquid fuel - EN 303-6:2019 – Clause 6.4.3.1 corrected for GCV of the fuel.
Water heating energy efficiency η_{wh}	gaseous fuels: EN13203-2:2022 - Gas-fired domestic appliances producing hot water - Part 2: Assessment of energy consumption. Clause 7.1 Gaseous fuels with passive flux heat recovery device: EN13203-7:2022 - Gas-fired domestic appliances producing hot water - Part 2: Assessment of energy consumption. Clause 7.1 Liquid fuels: EN 303-6:2019 - Heating boilers - Part 6: Heating boilers with forced draught burners - Specific requirements for the domestic hot water operation and energy performance of water heaters and combination boilers with atomizing oil burners of nominal heat input not exceeding 70 kW Clause 10.1	
Sound power level (L_{WA})	EN 26:2023 – Gas-fired instantaneous water heaters for the production of domestic water heaters Clause 11.	Not covered for liquid fuel appliance.

NOx emissions / gaseous	EN 26:2023 Clause 10.	
NOx emissions / liquid	EN 267:2020 Automatic forced draught burners for liquid fuels; Clause 5. Testing. ANNEX B	Tests to be performed at nominal conditions (80/60 supply/return and maximum capacity).
Daily electricity consumption Qelec	EN 13203-2:2022 Clause 5.5	
Daily fuel consumption Qfuel	EN 13203-2:2022 Clause 7.1	
Weekly electricity consumption Qelec,week		Not covered by standards EN 13203-2, EN13203-7 and EN303-6:2019.
Weekly electricity consumption 'smart' enabled Qelec,week,smart		
Weekly fuel consumption Qfuel,week		
Weekly fuel consumption 'smart' enabled Qfuel,week,smart		
SCF		
Fctrl		The ability to control the water temperature independently of the flow is measured by comparing the energy supplied to the water in two different situations: (1) with the set point adapted to the temperature required for each tapping of the specific load profile (which gives a reference time required to reach the required energy supply by tapping), and (2) with the maximum temperature set point (to be held for the reference time established in (1)). The ratio between these two energy quantities is then compared

		to pre-established thresholds.

4. FUEL STORAGE WATER HEATER

Standard rated heat output, Prated		Prated is called nominal useful output Pn but standards do not describe a measurement method. It is proposed to define Prated as the nominal fuel input multiplied by the nominal efficiency from: - for gaseous fuel – EN 89:2015 Clause 7.1.2.2 corrected for GCV of the fuel; - for liquid fuel - EN 303-6:2019 – Clause 6.4.3.1 corrected for GCV of the fuel.
Water heating energy efficiency η_{wh}	gaseous fuels: EN 89:2015 Gas-fired storage water heaters for the production of domestic hot water liquid fuels: EN 303-6:2019 Clause 10.1	EN 89:2015 refers to EN13203-2 (undated) Clause 7.1
Sound power level (L_{WA})	EN 89:2015 Clause 11	Not covered for liquid fuel appliance.
NOx emissions / gaseous	EN 89:2015 Clause 10	
NOx emissions / liquid	EN 267:2020 Automatic forced draught burners for liquid fuels § 5. Testing. ANNEX B	Tests to be performed at nominal conditions (80/60 supply/return and maximum capacity)
Storage volume	EN 89:2015 Clause 6.11	Referred to as nominal capacity
Mixed water at 40 °C	EN 89:2015 Clause 7.4	
Daily electricity consumption Qelec	EN13203-2:2022 Clause 5.5	
Daily fuel consumption Qfuel	EN13203-2:2022 Clause 7.1	
Weekly electricity consumption		Not covered.

Qelec,week		
Weekly electricity consumption 'smart' enabled Qelec,week,smart		
Weekly fuel consumption Qfuel,week		
Weekly fuel consumption 'smart' enabled Qfuel,week,smart		
SCF		

5. ELECTRIC HEAT PUMP WATER HEATER

Standard rated heat output / water heating (Prated)	EN 16147:2017+A1:2022 - Heat pumps with electrically driven compressors - Testing, performance rating and requirements for marking of domestic hot water units Clause 7.14.1	With V40 as established using the same settings as during the tests for water heating energy efficiency
Water heating energy efficiency η_{wh}	EN 16147:2017+A1:2022 Clause 7.13	
Sound power level (L_{WA})	EN 12102-2:2019 Clause 10.1.3.2	
Storage volume	EN 16147:2017+A1:2022 Clause 7.6	"Rated volume"
Mixed water at 40 °C	EN 16147:2017+A1:2022 Clause 7.10	
Electric input power		Use electrical energy consumption W_{EL-LP} (EN 16147:2017+A1:2022 Clause 7.9.2) divided by 24h
Daily electricity consumption Qelec	EN 16147:2017+A1:2022 Clause 7.13.1	
Weekly electricity consumption Qelec,week	EN 16147:2017+A1:2022 Clause 7.11.2	

Weekly electricity consumption 'smart' enabled Qelec,week,smart		
SCF		
Pstby	EN 16147:2017+A1:2022 Clause 7.8	

6. THERMALLY DRIVEN HEAT PUMP WATER HEATER

Standard rated heat output / water heating (Prated)		There is currently no procedure described in existing standards for establishing the Prated for tdHPWH (only for space heating). The same calculation method as in EN 16147:2017+A1:2022 Clause 7.14.1 must be applied.
Water heating energy efficiency η_{wh}	EN 13203-6:2022 Gas-fired domestic appliances producing hot water - Part 6: Assessment of energy consumption of adsorption and absorption heat pumps Clause 7.1	
Sound power level (L_{WA})	EN 12102-2:2019 Clause 10.1.3.2	
NOx emissions / gaseous	EN12309-2:2015 Clause 7.3.13	No correction for 3rd family gases shall be applied whatsoever (this is already taken into account in the ecodesign requirements)
NOx emissions / liquid	EN 267:2020 Automatic forced draught burners for liquid fuels; § 5. Testing. ANNEX B	Tests to be performed at nominal conditions (80/60 supply/return and maximum capacity)
Storage volume	EN 13203-6:2022 Clause 5.1.1	
mixed water at 40 °C	EN13203-4:2022 Clause 7.5	
Daily electricity consumption Qelec	EN 13203-6:2022 Clause 5.7	Refers to EN13203-2:2022 Clause 5.7
Daily fuel	EN13203-6:2022	

consumption Qfuel	Clause 7.1	
Weekly electricity consumption Qelec,week	EN13203-6:2022 Clause 7.1	
Weekly electricity consumption 'smart' enabled Qelec,week,smart		
Weekly fuel consumption Qfuel,week		
Weekly fuel consumption 'smart' enabled Qfuel,week,smart		
SCF		
Pstby		Determination of Pstby is not covered in EN13203-6:2022 A procedure similar to EN 16147:2017 Clause 7.8 must be applied.

7. COGENERATION WATER HEATER

Standard rated heat output, Prated	EN 50465:2015+A1:2019 Gas appliances - Combined heat and power appliance of nominal heat input inferior or equal to 70 kW Clause 6.3.4	This clause does not describe actual measurement but a verification that the fuel input multiplied by overall efficiency is not less than the nominal overall thermal and electric output. In this regulation the Prated of cogeneration water heaters must be the product of nominal heat input and the water heating energy efficiency.
Water heating energy efficiency η_{wh}	EN 13203-4:2022 Gas-fired domestic appliances producing hot water - Part 4: Assessment of energy consumption of gas combined heat and power appliances (mCHP) producing hot water and electricity	The standard EN 13203-4:2022 describes the correct test set-up but in Clause 7.1 the net delivered electrical energy is subtracted from the fuel input, whereas the Regulation requires consideration of electric output in the numerator using a factor 2.65

Sound power level (L_{WA})	EN 15036 - 1:2006 Heating boilers - Test regulations for airborne noise emissions from heat generators And EN 15036-2:2006 Heating boilers - Test regulations for airborne noise emissions from heat generators - Part 2: Flue gas noise emissions at the outlet of the heat generator	
NOx emissions / gaseous	EN 50465:2015+A1:2019 Clause 7.8.2 NOx (Other pollutants)	The clause describes the correct measurement set-up and calculations for NOx emissions for space heating, but prescribes output capacities relevant for space heating. For water heating the conditions in Clause 7.3.1 shall apply.
NOx emissions / liquid	EN 267:2020 Automatic forced draught burners for liquid fuels	
Storage volume	EN 13203-4:2022 Clause 5.1	
Mixed water at 40 °C	EN 89:2015 Gas-fired storage water heaters for the production of domestic hot water Clause 6.11	There is no determination of storage volume in EN13203-4:2022 nor in its 'mother' standard EN13203-2:2022.
Daily electricity consumption Qelec	EN 13203-4:2022 Clause 5.5	Referred to as Eelecco
Daily fuel consumption Qfuel	EN 13203-4:2022 Clause 7.1	
Weekly electricity consumption Qelec,week	EN 13203-4:2022 Clause 7.2	
Weekly electricity consumption 'smart' enabled Qelec,week,smart		

Weekly fuel consumption Qfuel,week		
Weekly fuel consumption 'smart' enabled Qfuel,week,smart		
SCF		

8. HOT WATER STORAGE TANKS

Storage volume	EN 15332:2019 Heating boilers – Energy assessment of hot water storage tanks Clause 5.4 EN 12897:2016+A1:2020 Water supply - Specification for indirectly heated unvented (closed) storage water heaters Clause 6.2.2	All volumes relevant for providing the effective thermal capacity (here: for water heating) and relevant for determining the standing loss must be included in the measurement, for example: if the tank is filled with primary water only, and uses a heat exchanger to extract heat for domestic hot water (DE: Hygiene-speicher), the primary side has to be filled as well.
Indirectly heated unvented storage volume	EN 17692:2025 Central heating boilers - Specification for indirectly heated unvented (closed) pressurized buffer tanks - Requirements, testing and marking	Refers to EN 15332:2019 for determination of standing loss and storage volume, to EN 15332:2019 and EN 12897:2016+A1:2020 for determination of storage volume and mixed water at 40 °C.
Mixed water at 40 °C	EN 12897:2016+A1:2020 Clause 6.2.2 Annex A.4.3	
Reference hot water temperature Θ_{wh}	EN 12897:2016+A1:2020 Annex A.4.3	The reference hot water temperature is noted Θ_p.
Standing loss	EN 15332:2019 Clause 5.3 EN 12897:2016+A1:2020 Clause 6.2.2 Annex B EN 12977-3:2018 Annex F.2	When determining standing losses using EN 12897 all relevant volumes, for both/either system water side and domestic hot water side should be filled and heated to required storage temperatures as prescribed in EN 15332.
Equivalent storage volume OR thermal capacity		See calculation in Annex III, point 7

9. SHOWER WATER HEAT RECOVERY DEVICES

Shower water heat recovery device efficiency (%)	NEN 7120:2011/C2:2011 NTA8800:2020, Bijlage U CSTB Protocol RECADO 2015	All three test standards may be accepted as method to determine shower heat recovery device efficiency, as long as the test conditions in ANNEX VII, point 4 are met. The efficiency to use in calculations should be determined using shower water flow rates equal or larger than the water flow rates shown in the table (combination of devices to achieve sufficient capacity is allowed)

10. SOLAR DEVICES

Measurement of solar collectors	ISO 9806:2017	Tests produces the input-parameters for the GTY calculation below
Storage tank standing losses (used in tank factor *f*)	EN 15332:2019 Clause 5.3 EN 12897:2016+A1:2020 Clause 6.2.2 Annex B EN 12977-3:2018 Annex F.2	When determining standing losses using EN 12897 all relevant volumes, for both/either primary side and domestic side should be filled and heated to required storage temperatures, similar as how the tank would be used in real-life. See EN 15332 for instructions.
Gross Thermal yield (GTY) of solar devices the solar collectors of which are tested separately	ScenoCalc v6.1, using inputs from ISO 9806:2017 Use prEN 12975:2021, Annex B, Clause B.2.1 for calculation of GTY, Clause B.1.2 and B.3 for the climate reference conditions.	The calculation of GTY shall be climate specific (Helsinki/Stockholm, Strasbourg/Würzburg, and/or Athens) and consider orientation and inclination as indicated in Annex VII. The GTY calculated is the summation of the Gross Thermal Yield (GTY) and Gross Electric Yield (GEY) for the average of collector mean temperatures of 25 ºC and 50 ºC.
Correction factor $f_{profile}$	ISO 9806:2017	
Correction factor *a, b, c* and *d*, for water heating		
Solar device		

efficiency for water heating $\eta_{sol,wh,clim}$		
Solar-assisted water heating energy efficiency η_{wh+sol}		

ANNEX IX

Product compliance verification by market surveillance authorities

1. INTRODUCTION

The verification tolerances set out in this Annex relate only to the verifications conducted by Member State authorities of the declared values and shall not be used by the supplier, importer or authorised representative as an allowed tolerance to: (i) determine the values in the technical documentation or in interpreting these values with a view to achieving compliance; or (ii) communicate better performance by any means.

2. PROCEDURE

As part of verifying the compliance of a product model with the requirements referred to in this Annex, the authorities of the Member States shall apply the procedure set out in points (a) to (e) below.

(a) The Member State authorities must verify one single unit of the model.

(b) The model will be considered to comply with the applicable requirements if:

(i) the declared values given in the technical documentation pursuant to Article 3(3) of Regulation (EU) 2017/1369, and, where applicable, the values used to calculate these declared values, are not more favourable for supplier than the results of the corresponding values given in the test reports;

(ii) the declared values meet all requirements laid down in this Regulation, and any required product information published by the supplier or dealer does not contain values that are more favourable for the manufacturer or importer than the declared values;

(iii) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances set out in Table 1.

(c) If the results referred to in point (b)(i) or (ii) are not achieved, the model and all other equivalent models shall be considered not to comply with this Regulation.

(d) If the result referred to in point (b)(iii) is not achieved, the Member State authorities shall select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more different equivalent models. The model shall be considered to comply with the applicable requirements if, for those three units, the arithmetical mean of the determined values complies with the respective verification tolerances set out in Table 1.

(e) If the result referred to in point (d) is not achieved, the model and all other equivalent models shall be considered not to comply with this Regulation.

(f) The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision being taken on the non-compliance of the model in accordance with point (c) or (e).

The Member State authorities shall use the measurement and calculation methods set out in Annex III.

3. VERIFICATION TOLERANCES

The Member State authorities shall only apply the verification tolerances that are set out in Table 1 and shall only use the procedure described in Section 2 for the requirements referred to in this Annex. No other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

Table 1 Verification tolerances

Parameters	**Verification tolerances**
Water-heating energy efficiency, η_{wh}	The determined value must not be more than 8 % lower than the declared value.
Sound power level, L_{WA}	The determined value must not exceed the declared value by more than 2 dB(A).
Daily electricity consumption, Q_{elec}	The determined value must not exceed the declared value by more than 5 %
Daily electricity generation, Q_{elec_gen}	The determined value must not exceed the declared value by more than 5 %
Daily fuel consumption, Q_{fuel}	The determined value must not exceed the declared value by more than 5 %
Weekly fuel consumption without smart controls, $Q_{fuel,week}$	The determined value must not exceed the declared value by more than 5 %
Weekly fuel consumption with smart controls, $Q_{fuel,week,smart}$	The determined value must not exceed the declared value by more than 5 %
Weekly electricity consumption without smart controls, $Q_{elec,week}$	The determined value must not exceed the declared value by more than 5 %
Weekly electricity consumption with smart controls, $Q_{elec,week,smart}$	The determined value must not exceed the declared value by more than 5 %
Storage volume, V	The determined value must not be lower than the declared value by more than 2 %.
Mixed water at 40 °C, *V40*	The determined value must not be lower than the declared value by more than 3 %.
Standing loss, S	The determined value must not exceed the declared value by more than 5 % or 5 W, whichever figure is higher.
Emissions of nitrogen oxides	The determined value shall not exceed the declared value by more than 20 %.

ANNEX X

Amendments to Commission Delegated Regulation (EU) N° 812/2013

Commission Delegated Regulation (EU) N° 812/2013 is amended as follows:

(a) In Annex I, the following definition is inserted after point (2)

> (3) 'out of the box mode' means the standard operating condition, setting or mode set by the manufacturer at factory level, to be active immediately after the appliance installation, suitable for normal use by the customer according to the water tapping pattern for which the product has been designed and placed on the market. Any change to a different operating condition, setting or mode, if applicable, shall be the result of an intentional intervention by the end-user, and cannot be automatically modified by the water heater at any time, except for smart control function adapting the water heating process to individual usage conditions with the aim of reducing energy consumption.';

(b) In Annex VII, the text in letter (a) of point 2 on "General conditions for testing water heaters", is replaced by the following:

> (a) Water-heating tests shall be performed in the 'out of the box mode'. Measurements shall be carried out using the load profiles in Table 1;