

**Working Document**

**Draft COMMISSION DELEGATED REGULATION (EU) No .../..**

**of [...]**

**implementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of boilers**

**(Text with EEA relevance)**

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Directive 2010/30/EU of 19 May 2010 of the European Parliament and of the Council on the indication by labelling and standard product information of the consumption of energy and other resources energy-related products<sup>1</sup>, and in particular Article 11 thereof,

Whereas:

- (1) Directive 2010/30/EU requires the Commission to adopt delegated acts as regards the labelling of energy-related products representing significant potential for energy savings and having a wide disparity in performance levels with equivalent functionality.
- (2) The energy consumed by boilers accounts for a significant share of energy demand in the Union, boilers with equivalent functionality have a wide disparity in terms of energy efficiency and the scope for reducing the energy consumption of boilers is substantial, including by combining boilers with appropriate temperature controls and passive flue heat recovery devices.
- (3) Provisions should be laid down by this Regulation in order to ensure that the energy label and the fiche provide dynamic incentives for suppliers to further improve the energy efficiency of boilers and to accelerate market transformation towards energy-efficient technologies.
- (4) The information provided on the label should be obtained through reliable, accurate and reproducible measurement procedures that take into account the recognised state-of-the-art measurement methods including, where available, harmonised standards adopted by the European standardisation bodies, as listed in Annex I to Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down

---

<sup>1</sup> OJ L 153, 18.6.2010, p. 1.

a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services<sup>2</sup>.

- (5) This Regulation should specify a uniform design and content of the label for boilers.
- (6) In addition, this Regulation should specify requirements as to the technical documentation and the fiche for boilers, temperature controls and passive flue heat recovery devices.
- (7) Moreover, this Regulation should specify requirements as to the information to be provided for any form of distance selling, advertisements and technical promotional material of boilers.
- (8) It is appropriate to provide for a review of the provisions of this Regulation taking into account technological progress.

HAS ADOPTED THIS REGULATION:

---

<sup>2</sup> OJ L 204, 21.7.1998, p. 37.

*Article 1*  
***Subject matter and scope***

- (1) This Regulation establishes requirements for the labelling of and the provision of supplementary product information on boilers with a rated input between, and including, 4 kW and 70 kW, their temperature controls and passive flue heat recovery devices.
- (2) This Regulation shall not apply to:
  - (a) equipment specifically designed for using biomass fuels;
  - (b) equipment using solid fuels;
  - (c) equipment within the scope of Directive 2010/.../EU of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control)<sup>3</sup>;
  - (d) equipment distributing heat provided by district heating;
  - (e) components and sub-assemblies of boilers;
  - (f) equipment generating heat only for the purpose of providing sanitary hot water;
  - (g) equipment for heating and distribution of gaseous heat transfer media such as vapour or air;
  - (h) cogeneration equipment with a maximum electrical capacity of 50 kW or above.

*Article 2*  
***Definitions***

In addition to the definitions set out in Directive 2009/125/EC, the following definitions shall apply:

- (1) “boiler” means a device which meets all of the following criteria:
  - it provides heat to a water-based central heating system in order to reach and maintain the indoor temperature of an enclosed space such as a building, a dwelling, or a room, at a desired level;
  - it uses a heat generator using the processes listed in point (3);
- (2) “heat generator” means the part of a boiler that generates the heat using one of the following processes:
  - combustion of gaseous or liquid fossil fuels;

---

<sup>3</sup> OJL ...

- use of the Joule effect in electric resistance heating elements;
  - capture of ambient heat from air, water or ground source, and/or waste heat;
- (3) “water-based central heating system” means a system using water as heat transfer medium to distribute centrally generated heat to heat emitters for space heating of buildings, or parts thereof;
  - (4) “rated input” means the maximum design energy input per unit time to the boiler in continuous operation, while complying with all applicable safety requirements, expressed in kW and, where applicable, based on the gross calorific value of the fuel;
  - (5) “gross calorific value” (GCV) means the heat released when a certain fuel is burned completely with oxygen at a constant pressure, and when the products of combustion are returned to ambient temperature, in kWh;
  - (6) “biomass fuel” means a gaseous, liquid or solid fuel produced from biomass;
  - (7) “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 agriculture, as well as the biodegradable fraction of industrial and municipal waste;
  - (8) “fossil fuel” means a gaseous, liquid or solid fuel of fossil origin;
  - (9) “cogeneration” means the simultaneous generation in one process of heat and electricity;
  - (10) “temperature control” means equipment that interfaces with the end-user regarding the values and timing of desired indoor temperature and communicates/translates relevant data, such as registered actual indoor and/or outdoor temperature(s), to an interface of the boiler such as a central processing unit, thus contributing to the regulation of the indoor temperature(s); means equipment that regulates the heat output of a boiler;
  - (11) “passive flue heat recovery device” means a device that captures latent heat from exhaust gas of boilers using fossil fuels;
  - (12) “combination boiler” means a boiler that is designed to provide also hot sanitary water to desired temperature levels, quantities, flow rates and intervals;
  - (13) “solar collector” means a device designed to absorb solar irradiation and to transfer the resulting thermal energy to a fluid passing through it;
  - (14) “storage tank” means a vessel for storing room heating or sanitary hot water, including with additives, and including vessels equipped with the means for indirect heating or cooling of the water content by an external heat source or heat sink;

For the purposes of the Annexes, additional definitions are set out in Annex I.

*Article 3*  
***Responsibilities of suppliers***

1. Suppliers of boilers shall ensure that:
  - (a) each boiler is supplied with a printed label(s) in the format and containing the information set out in Annex II;
  - (b) a product fiche, as set out in Annex III, point 1 is made available;
  - (c) the technical documentation set out in Annex IV is made available on request to authorities of the Member States and to the Commission;
  - (d) any advertisement for a specific boiler model contains its seasonal space heating energy efficiency class, and in addition for a combination boiler its water heating energy efficiency, if the advertisement discloses energy-related or price information;
  - (e) any technical promotional material concerning a specific boiler model which describes its specific technical parameters includes the seasonal space heating energy efficiency class, and in addition for a combination the water heating energy efficiency, of that model;
  - (f) the format of the label set out in Annex II shall be applied according to the following timetable:
    - (a) for boilers placed on the market from [date to be inserted: 12 months after publication of this Regulation in the Official Journal of the European Union] labels for boilers with energy efficiency classes:
      - (i) A+, A, B, C, D, E, F, G shall be in accordance with point 1 of Annex V or, where suppliers deem appropriate, with point 2 of that Annex;
      - (ii) A++ shall be in accordance with point 2 of Annex II;
      - (iii) A+++ shall be in accordance with point 3 of Annex II.
    - (b) labels for boilers placed on the market from [date to be inserted: 36 months after publication of this Regulation in the Official Journal of the European Union] with energy efficiency classes A++, A+, A, B, C, D, E shall be in accordance with point 2 of Annex II.
2. Suppliers of boilers placing on the market a combination of a boiler with temperature controls, and/or storage tanks, and/or solar collectors, and/or an additional boiler, may include the
  - seasonal space heating energy efficiency class,
  - the seasonal space heating energy efficiency,
  - the water heating energy efficiency class,

- the water heating energy efficiency

of that combination, calculated in accordance with the provisions of the product fiche of the boiler referred to in point 1(b), in advertisements and technical promotional materials.

3. Suppliers of temperature controls shall ensure that:
  - (a) a product fiche, as set out in Annex III, point 2 is made available;
  - (b) the technical documentation set out in Annex IV is made available on request to authorities of the Member States and to the Commission.
4. Suppliers of passive flue heat recovery devices shall ensure that:
  - (a) a product fiche as set out in Annex III, point 3 is made available;
  - (b) the technical documentation set out in Annex IV is made available on request to authorities of the Member States and to the Commission.

#### *Article 4* **Responsibilities of dealers**

Dealers of boilers shall ensure that:

- (a) each boiler, at the point of sale, bears the label provided by suppliers in accordance with Article 3(1) on the front of the boiler, in such a way as to be clearly visible;
- (b) boilers offered for sale, hire or hire-purchase where the end-user cannot be expected to see the boiler displayed, are marketed with the information provided by suppliers in accordance with Annex V;
- (c) any advertisement for a specific boiler model contains a reference to its energy efficiency class, if the advertisement discloses energy-related or price information;
- (d) any technical promotional material concerning a specific boiler model which describes its specific technical parameters includes a reference to the energy efficiency class of that model;
- (e) offers for combinations of a boiler model with temperature controls, and/or storage tanks for the purpose of storing hot water for space heating, and/or solar panels providing heat the purpose of space heating, and/or an additional boiler, include the product fiche of the boiler model, duly completed to indicate the seasonal space heating energy efficiency of that combination as offered to the end-user;
- (f) offers for combinations of a combination boiler model with storage tanks for the purpose of storing hot sanitary water, and/or solar panels providing heat for the purpose of heating sanitary water, and/or passive flue heat recovery devices include, in addition to the information set out in point (e), the product fiche of the combination boiler model related to water heating energy efficiency, duly completed to indicate the water heating energy efficiency of that combination as offered to the end-user.

*Article 5*  
**Measurement methods**

The information to be provided pursuant to Articles 3 and 4 shall be obtained by reliable, accurate and reproducible measurement methods, which take into account the recognised state-of-the-art measurement methods.

*Article 6*  
**Verification procedure for market surveillance purposes**

Member States shall apply the procedure laid down in Annex VIII when assessing the conformity of the supplier's declarations.

*Article 7*  
**Revision**

The Commission shall review this Regulation in the light of technological progress no later than five years after its entry into force.

*Article 8*  
**Repeal**

Council Directive 1992/42/EEC shall be repealed from [date to be inserted: one year after entry into force of this regulation].

*Article 9*  
**Entry into force and application**

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

It shall apply from [date to be inserted: one year after publication in the OJ]. However, Articles 3(d),(e), 4(b),(c) and (d) shall apply from [date to be inserted: 16 months after publication in the OJ].

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

*For the Commission*  
*Member of the Commission*

**ANNEX I**  
**Definitions applicable for the purposes of Annexes II to VIII**

For the purposes of Annexes II to VIII the following definitions shall apply:

- (1) “fossil fuel boiler” means a boiler that is equipped with a heat generator that generates heat using the combustion of fossil fuels;
- (2) “heat pump” means a boiler that uses ambient and/or waste heat for heat generation, and possibly an additional heat generator using the Joule effect in electric resistance heating elements;
- (3) “cogeneration boiler” means a cogeneration unit with a maximum electrical capacity below 50 kW;
- (4) “seasonal space heating energy efficiency” (etas) means the ratio between the annual space heating demand pertaining to a designated heating season provided by a boiler, and the annual energy consumption required for its generation;
- (5) “sound power level” means the A-weighted sound power level [dB(A)] indoors and/or outdoors measured;
- (6) “off mode” is a condition when a boiler is connected to the mains power source and is not providing any function, including conditions providing only an indication of off mode condition, and conditions providing only functionalities intended to ensure electromagnetic compatibility pursuant to Directive 2004/108/EC of the European Parliament and of the Council<sup>4</sup>;
- (7) “off-mode power consumption” (P<sub>off</sub>) means the power consumption of a boiler [kW] in off-mode;
- (8) “auxiliary electricity correction” means the contribution to the seasonal space heating energy efficiency of a boiler due to consumption of electric auxiliary energy;
- (9) “primary energy factor” (prim) means a factor representing the average efficiency for generating electricity from primary energy sources”;
- (10) “rated power” (Prated) means the heat output [kW] of a fossil fuel boiler at rated input, or the declared capacity of a heat pump for standard rating conditions under average climate conditions, as applicable;

**Definitions related to fossil fuel and cogeneration boilers:**

- (11) “seasonal steady-state space heating energy efficiency” means a weighted average of the useful efficiency at rated input, and of the useful efficiency at 30% of the rated input;
- (12) “useful efficiency” means the ratio of the useful output and energy input, where the energy input is expressed in terms of the gross calorific value of the fuel (GCV);

---

<sup>4</sup> OJ L 390, 31.12.2004, p.24.



- (13) “useful output” means the heat output [kW] transmitted to the heat carrier;
- (14) “emissions of nitrogen oxides” means the emissions of nitrogen oxides expressed in mg per kWh with respect to the GCV of the fuel;
- (15) “ignition burner power consumption” ( $P_{ign}$ ) means the power consumption of a burner intended to ignite the main burner, expressed in terms of kW with respect to the GCV of the fuel;
- (16) “condensing boiler” means a fossil fuel boiler in which, under normal operating conditions and at certain operating water temperatures, the water vapour in the combustion products is partially condensed, in order to make use of the latent heat of this water vapour for heating purposes;
- (17) “staged capacity fossil fuel boiler” means a fossil fuel boiler with a heat generator featuring two fuel-burning rates, i.e. a full rate and reduced rate;
- (18) “fixed capacity fossil fuel boiler” means a fossil fuel boiler equipped with a heat generator that has one fixed fuel burning rate for space heating, including boilers appliances with alternative heating rates of which one particular rate is selected when putting a unit into service;
- (19) “variable capacity fossil fuel boiler” means a fossil fuel boiler with two or more reduced water heating rates with a heat output distributed equidistant  $\pm 10\%$  between zero and full rate, or a fossil fuel boiler with continuously adjustable reduced rate;
- (20) “turndown ratio” means the ratio between the minimum and the maximum steady-state power output;
- (21) “electric auxiliary energy” means the electric energy [kWh] required for designated operation of a unit, calculated from the electric power consumption at full load ( $e_{lmax}$ ), 30% part load ( $e_{lmin}$ ), stand-by mode ( $f_{ossb}$ ) and default operating hours at each mode;
- (22) “standby losses correction” means the contribution to the seasonal space heating energy efficiency due to standby heat losses;
- (23) “standby heat losses” ( $P_{stby}$ ) means the heat loss [kW] in operating modes without heat demand;
- (24) “rated power” ( $P_{rated}$ ) means the heat output [kW] of a fossil fuel boiler at rated input;

**Definitions related to heat pumps:**

- (25) “standard rating conditions” means the operating conditions while establishing the rated capacity, sound power level, and rated coefficient of performance ( $CO_{Prated}$ ) for heating, as set out in Annex VII, Table 1;
- (26) “outdoor temperature” ( $T_j$ ) means the dry bulb outdoor air temperature [ $^{\circ}C$ ] of which relative humidity can be indicated by a corresponding wet bulb temperature;

- (27) “rated coefficient of performance” ( $CO_{Prated}$ ) means the declared capacity [kW] divided by the rated power input [kW] when providing heating at standard rating conditions;
- (28) “reference design conditions” means the combination of the reference design temperature, the maximum bivalent temperature and the maximum operation limit temperature, as set out in Annex VII, Table 2;
- (29) “reference design temperature” means the outdoor temperature [ $^{\circ}C$ ] as described in Annex VII, Table 2, at which the part load ratio shall be equal to 1, and which varies according the designated heating season;
- (30) “full load” ( $P_{designh}$ ) means the heating demand at the conditions pertaining to the reference design conditions;
- (31) “part load ratio” ( $pl(T_j)$ ) means the outdoor temperature minus  $16^{\circ}C$ , divided by the reference design temperature minus  $16^{\circ}C$ ;
- (32) “heating season” means a set of operating conditions for average, warmer and colder climate conditions, describing per bin the combination of outdoor temperatures and the number of hours these temperatures occur per season, as defined in Annex VII, Table 3;
- (33) “bin hours” means the hours per season ( $h_j$ ) at which a outdoor temperature, rounded to an integer, occurs for each bin, as set out in Annex VII, Table 3;
- (34) “part load” means the heating load ( $Ph(T_j)$ ) [kW] at a specific outdoor temperature  $T_j$ , calculated as the design load multiplied by the part load ratio;
- (35) “seasonal coefficient of performance” (SCOP) is the overall coefficient of performance of the unit, representative for the whole designated heating season, calculated as the reference annual heating demand divided by the reference annual energy consumption for heating; *[NB: the difference between annual energy consumption, given by the ratio of reference demand and  $\eta_{as}$ , and reference annual energy consumption is that the first considers corrections such as controls ..., and the second does not]*
- (36) “reference annual heating demand” ( $QH$ ) means the reference heating demand [kWh/a], pertaining to a designated heating season, to be used as basis for calculation of SCOP and calculated as the product of the design load for heating ( $P_{designh}$ ) and the seasonal equivalent active mode hours for heating (HHE);
- (37) “reference annual energy consumption” means the energy consumption required to meet the reference annual heating demand and which pertains to designated heating season, without taking into account corrections for temperature controls, designated position (outdoor or indoor), primary storage tank losses, and, for heat pumps using fossil fuels, the gas heat pump auxiliary electricity consumption;
- (38) “equivalent active mode hours” (HHE) means the assumed annual number of hours [h/a] a unit must provide the design load for heating ( $P_{designh}$ ) in order to satisfy the reference annual heating demand, as set out in Annex VII, Table 4;

- (39) “active mode coefficient of performance” (SCOP<sub>on</sub>) means the average coefficient of performance of the unit in active mode for the designated heating season, constructed from the part load, electric back up heating capacity (where required) and bin-specific coefficients of performance (COP<sub>bin</sub>(T<sub>j</sub>)) and weighted by the bin hours the bin condition occurs;
- (40) “electric back-up heater capacity” (elbu(T<sub>j</sub>)) is the heating capacity [kW] of a real or assumed electric back-up heater with COP of 1 that supplements the declared capacity for heating (P<sub>dh</sub>(T<sub>j</sub>)) in order to meet the part load for heating (P<sub>h</sub>(T<sub>j</sub>)) in case P<sub>dh</sub>(T<sub>j</sub>) is less than P<sub>h</sub>(T<sub>j</sub>), for the outdoor temperature (T<sub>j</sub>);
- (41) “bin-specific coefficient of performance” (COP<sub>bin</sub>(T<sub>j</sub>)) means the coefficient of performance specific for every bin j with outdoor temperature T<sub>j</sub> in a season, derived from the part load, declared capacity and declared coefficient of performance (COP<sub>d</sub>(T<sub>j</sub>)) for specified bins (j) and calculated for other bins through inter/extrapolation, when necessary corrected by the degradation coefficient;
- (42) “declared capacity” [kW] is the capacity of the vapour compression cycle of the unit for heating (P<sub>dh</sub>(T<sub>j</sub>)), pertaining to an outdoor temperature T<sub>j</sub>, as declared by the supplier;
- (43) “capacity control” means the ability of the unit to change its capacity by changing the volumetric flow rate, to be indicated as ‘fixed’ if the unit cannot change its volumetric flow rate, ‘staged’ if the volumetric flow rate is changed or varied in series of not more than two steps, or ‘variable’ if the volumetric flow rate is changed or varied in series of three or more steps;
- (44) “design load” means the declared heating load (P<sub>designh</sub>) [kW] at the reference design temperature, where P<sub>designh</sub> is equal to the part load at T<sub>j</sub> equal to T<sub>designh</sub>;
- (45) “declared coefficient of performance” (COP<sub>d</sub>(T<sub>j</sub>)) means the coefficient of performance at a limited number of specified bins (j) with outdoor temperature (T<sub>j</sub>), as declared by the manufacturer;
- (46) “bivalent temperature” (T<sub>biv</sub>) means the outdoor temperature (T<sub>j</sub>) [°C] declared by the manufacturer for heating at which the declared capacity equals the part load and below which the declared capacity must be supplemented with electric back up heater capacity in order to meet the part load for heating;
- (47) “operation limit temperature” (T<sub>ol</sub>) means the outdoor temperature [°C] declared by the manufacturer for heating, below which the heat pump will not be able to deliver any heating capacity and the declared capacity is equal to zero;
- (48) “cycling interval capacity” [kW] is the (time-weighted) average of the declared capacity over the cycling test interval for heating (P<sub>psych</sub>);
- (49) “cycling interval efficiency for heating” (COP<sub>psych</sub>) is the average coefficient of performance over the cycling test interval (compressor switching on and off), calculated as the integrated heating capacity over the interval [kWh] divided by the integrated electric power input over that same interval [kWh];

- (50) “degradation coefficient” is the measure of efficiency loss due to cycling (compressor switching on/off in active mode) established for heating (Cdh) or chosen as default value 0,25;
- (51) “active mode” means the condition corresponding to the hours with a heating load of the building and activated heating function; this condition may involve on/off-cycling of the unit in order to reach or maintain a required indoor air temperature;
- (52) “thermostat-off mode” means the condition corresponding to the hours with no heating load and activated heating function, that is the unit is not operational; this condition is related to outdoor temperatures and not to indoor loads; cycling on/off in active mode is not considered as thermostat off;
- (53) “crankcase heater operation” means the condition in which the a heating device is activated to avoid the refrigerant migrating to the compressor in order to limit the refrigerant concentration in oil at compressor start;
- (54) “thermostat-off mode power consumption” (PTO) means the power consumption of the unit [kW] while in thermostat-off mode;
- (55) “Crankcase heater mode power consumption” (PCK) means the power consumption of the unit [kW] while in crankcase heater operation mode;
- (56) “thermostat-off mode operating hours” (HTO) means the annual number of hours [h/a] the unit is considered to be in thermostat-off mode, the value of which depends on the designated season and function;
- (57) “off-mode operating hours” (HOFF) means the annual number of hours [h/a] the unit is considered to be in off-mode, the value of which depends on the designated season and function;
- (58) “crankcase heater mode operating hours” (HCK) means the annual number of hours [h/a] the unit is considered to be in crankcase heater operation mode, the value of which depends on the designated season and function;
- (59) “rated power input for heating” (PCOP) means the electric power input [kW] of a unit when providing heating at standard rating conditions;
- (60) “capacity ratio” means the ratio of the total stated heating capacity of all operating indoor units to the heating capacity of the outdoor unit at the rating conditions
- (61) “low temperature heat pump” means an air-to-water heat pump that is specifically designed for low temperature application, and that cannot deliver heating water with an outlet temperature of 52°C at inlet dry (wet) bulb temperature of -7°C (-8°C) under the reference design conditions for average climate;
- (62) “low temperature application” means an application where the heat pump delivers its rated capacity at an indoor heat exchanger outlet temperature of 35°C;
- (63) “medium temperature application” means an application where the heat pump delivers its rated capacity at an indoor heat exchanger outlet temperature of 55°C;

- (64) “Global warming potential” (GWP) means the measure of how much 1 kg of the refrigerant applied in the vapour compression cycle of a heat pump is estimated to contribute to global warming, expressed in kg CO<sub>2</sub> equivalents over a 100 year time horizon;
- (65) “gas heat pump auxiliary electric power consumption” (hp<sub>aux</sub>) means the electric power consumption [kW] in active mode of heat pumps using gaseous fuels;
- (66) “hybrid coefficient of performance/hybrid heat pump power” means the coefficient of performance/capacity used as input for evaluating the seasonal space heating energy efficiency of combinations of heat pumps and fossil fuel boilers, referred to in point 1(2) of Annex III. For air-to-water heat pumps it is the declared Coefficient of performance/Declared capacity for part load pertaining to outdoor temperature  $T_j=2^{\circ}\text{C}$  under average climate conditions. For water/brine-to-water heat pumps, it is the declared Coefficient of performance/Declared capacity at part load condition 0,54 under average climate conditions;

**Definitions related to sanitary water heating in combination boilers:** *[NB: to be adapted to final version of water heater regulation]*

- (67) “water heating energy efficiency” means the ratio between the useful energy for sanitary water heating provided by a combination boiler, and the energy required for its generation, taking also into account effects of hot water distribution and waste heat recovery;
- (68) “load profile” means a certain sequence of water draw-offs, as specified in Annex VII, Table 5;
- (69) “water draw-off” means a certain combination of useful water flow rate, useful water temperature, useful water energy content and peak temperature, as specified in Annex VII, Table 5;
- (70) “useful water flow rate” (f) means the flow rate in litres per minute for which hot water is contributing to the reference heat, as specified in Annex VII, Table 5;
- (71) “useful water temperature” (T<sub>m</sub>) means the water temperature for which hot water is contributing to the reference heat, as specified in Annex VII, Table 5;
- (72) “useful energy content” (Q<sub>tap</sub>) means the energy content of water provided at temperature equal to, or above, the useful temperature, and at flow rates equal to, or above, the useful water flow rate, as specified in Annex VII, Table 5;
- (73) “energy content of hot water” means the product of the specific heat capacity of water, the average temperature difference between the cold water input and hot water output, and the total mass of the hot water delivered;
- (74) “peak temperature” (T<sub>p</sub>) means the minimum water temperature in degrees Celsius to be achieved during water draw-off, as specified in Annex VII, Table 5;
- (75) “reference energy” (Q<sub>ref</sub>) means the sum of the energy content of water draw-offs in a specific load profile, as specified in Annex VII, Table 5;

- (76) “maximum load profile” means the load profile with the largest reference energy  $Q_{ref}$  defined in Annex VII, Table 5 which a water heater is capable to provide, while fulfilling the minimum temperature and flow rate conditions of that load profile;
- (77) “water heating electricity consumption” ( $Q_{elec}$ ) means the consumption of electricity during 24 consecutive hours under a particular load profile, expressed in kWh;
- (78) “water heating fuel consumption” ( $Q_{fuel}$ ) means the consumption of liquid or gaseous fossil fuels during 24 consecutive hours under a particular load profile in terms of GCV;
- (79) “average flue gas temperature”,  $T_{flue}$ , means the dry bulb temperature of combustion gases, in degrees Celsius;
- (80) “combustion efficiency”,  $\eta_{comb}$ , means the efficiency taking into account only heat loss in flue gases;
- (81) “envelope volume” means the volume of the smallest rectangular-shaped or cylindrical envelope fitting the water heater envelope, in m<sup>3</sup>;
- (82) “distribution loss”,  $Q_{distr}$ , means the heat loss due to the distribution of hot water inside a dwelling, in kWh;
- (83) “reference distribution loss”,  $Q_{distr,ref}$ , means the average distribution loss of the EU stock of water heaters, in kWh;
- (84) “recoverable waste heat”,  $Q_{waste}$ , means the heat generated by the water heater that is not transferred to water or flue gases, in kWh;
- (85) “recovered fraction of waste heat”,  $q_{recov}$ , means the fraction of the waste heat  $Q_{waste}$  that contributes to useful space heating;
- (86) “flue gas heat”,  $Q_{fluegas}$ , means the average sensible heat contained in the flue gasses of water heaters using fuels emitted during a particular load profile, in kWh;

**Other definitions:**

- (87) “model identifier” means the code, usually alphanumeric, which distinguishes a specific boiler model from other models of the same trade mark or supplier’s name;
- (88) “storage tank volume” means the volume of a storage tank as referred to in Annex I, point (..) of Commission Delegated Regulation (EC) No ../.. (NB: water heater labelling regulation);
- (89) “storage tank energy efficiency class” means the energy efficiency class of a storage tank as referred to in Annex IX, point (2) of Commission Delegated Regulation (EC) No ../.. (NB: water heater labelling regulation);
- (90) “solar collector area” means the solar collector area as referred to in Annex I, point (..) of Commission Delegated Regulation (EC) No ../.. (NB: water heater labelling regulation);

(91) “solar collector efficiency” means the solar collector efficiency as referred to in Annex I, point (..) of Commission Delegated Regulation (EC) No ../.. (NB: water heater labelling regulation).

## ANNEX II Labels

### 1. Label 1

#### (1) Label 1 related to the seasonal space heating energy efficiency

##### (a) Label 1 for fossil fuel boilers is set out in Figure 1.

##### (i) The following information shall be included in the label:

- I. supplier's name or trade mark;
- II. supplier's model identifier;
- III. the seasonal space heating energy efficiency class, determined in accordance with point 1 of Annex VI. The head of the arrow containing the seasonal space heating energy efficiency class of the boiler shall be placed at the same height as the head of the relevant energy efficiency class;
- IV. the seasonal space heating energy efficiency, rounded up to the nearest integer and calculated in accordance with Annex VII;
- V. the rated power;
- VI. the noise.

##### (ii) The design aspects of the label for fossil fuel boilers and cogeneration boilers, as related to the space heating energy efficiency shall be in accordance with Figure .. *[NB: label specifications to be added to final version]*.

##### (b) Label 1 for cogeneration boilers is set out in Figure 2.

##### (i) The following information shall be included in the label:

- I. supplier's name or trade mark;
- II. supplier's model identifier;
- III. the seasonal space heating energy efficiency class, determined in accordance with point 1 of Annex VI. The head of the arrow containing the seasonal space heating energy efficiency class of the boiler shall be placed at the same height as the head of the relevant energy efficiency class;



- IV. the seasonal space heating energy efficiency, rounded up to the nearest integer and calculated in accordance with Annex VII;
  - V. the rated power;
  - VI. the noise;
  - VII. the electric efficiency.
- (ii) The design aspects of the label for fossil fuel boilers and cogeneration boilers, as related to the space heating energy efficiency shall be in accordance with Figure ...
- (c) Label 1 for heat pumps, except low-temperature heat pumps, is set out in Figure 3.
- (i) The following information shall be included in the label:
    - I. supplier's name or trade mark;
    - II. supplier's model identifier;
    - III. the seasonal space heating energy efficiency class, determined in accordance with point 1 of Annex VI. The head of the arrow containing the seasonal space heating energy efficiency class of the boiler shall be placed at the same height as the head of the relevant energy efficiency class;
    - IV. the seasonal space heating energy efficiency under warmer climate conditions, the seasonal space heating energy efficiency, and the seasonal space heating energy efficiency under colder climate conditions, rounded up to the nearest integer and calculated in accordance with Annex VII;
    - V. the nominal capacity under warmer climate conditions, the nominal capacity, and the nominal capacity under colder climate conditions, rounded to the first integer;
    - VI. the SCOP under warmer climate conditions, the SCOP, the SCOP under colder climate conditions, rounded to the first decimal;
    - VII. the outdoor noise;
    - VIII. the indoor noise.
  - (ii) The design aspects of the label for heat pumps, except low-temperature heat pumps, related to the space heating energy efficiency shall be in accordance with Figure ...
- (d) Label 1 for low-temperature heat pumps is set out in Figure 4.

- (i) The following information shall be included in the label:
  - I. supplier's name or trade mark;
  - II. supplier's model identifier;
  - III. the seasonal space heating energy efficiency class, determined in accordance with point 2 of Annex VI. The head of the arrow containing the seasonal space heating energy efficiency class of the boiler shall be placed at the same height as the head of the relevant energy efficiency class;
  - IV. the seasonal space heating energy efficiency under warmer climate conditions, the seasonal space heating energy efficiency, and the seasonal space heating energy efficiency under colder climate conditions, rounded up to the nearest integer and calculated in accordance with Annex VII;
  - V. the nominal capacity under warmer climate conditions, the nominal capacity, and the nominal capacity under colder climate conditions, rounded to the first integer;
  - VI. the SCOP under warmer climate conditions, the SCOP, the SCOP under colder climate conditions, rounded to the first decimal;
  - VII. the outdoor noise;
  - VIII. the indoor noise.
- (ii) The design aspects of the label for low-temperature heat pumps related to the space heating energy efficiency shall be in accordance with Figure ..

(2) Label 1 related to the water heating energy efficiency for combination boilers

Label 1 for fossil fuel combination boilers and cogeneration combination boilers is set out in Figure 5.

TBD, in accordance with label for water heaters

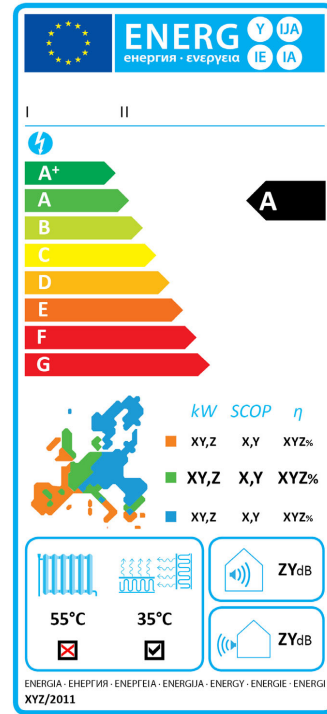
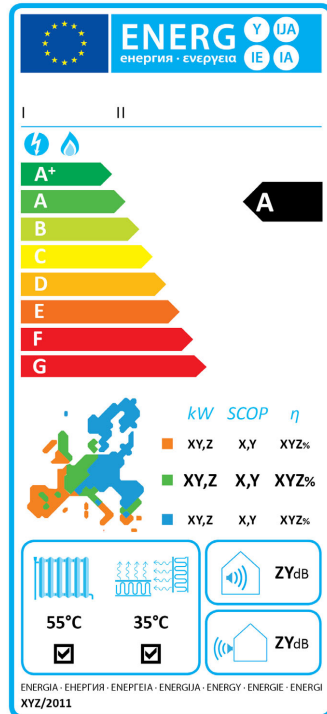
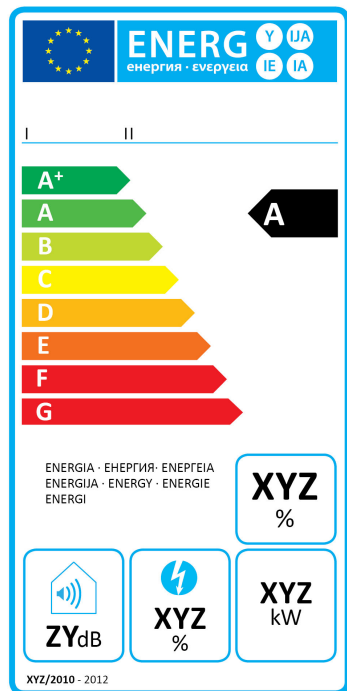
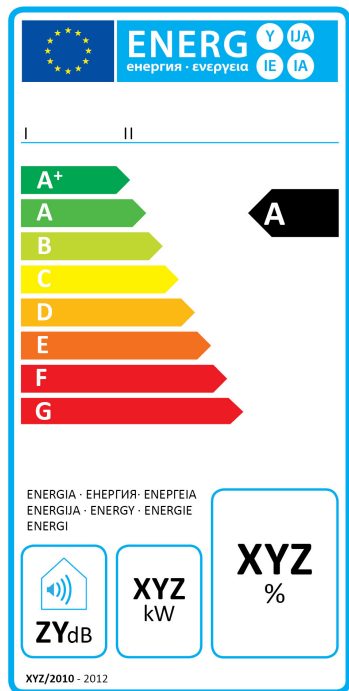
Figure 1: Label 1 for fossil fuel boilers

Figure 2: Label 1 for cogeneration boilers

Figure 3: Label 1 for heat pumps, except low temperature heat pumps

Figure 4: Label 1 for low temperature heat pumps

Figure 5: Label 1 for water heating energy efficiency of fossil fuel and cogeneration boilers



TBA in accordance with water heater label

## 2. Label 2

### (1) Label 2 related to the seasonal space heating energy efficiency

#### (a) Label 2 for fossil fuel boilers is set out in Figure 6.

- (i) The information listed in point 1(1)(a)(i) shall be included in the label.
- (ii) The design aspects of the label for fossil fuel boilers, as related to the space heating energy efficiency shall be in accordance with Figure ...

#### (b) Label 2 for cogeneration boilers is set out in Figure 7.

- (i) The information listed in point 1(1)(b)(i) shall be included in the label.
- (ii) The design aspects of the label for cogeneration boilers, as related to the space heating energy efficiency shall be in accordance with Figure ...

#### (c) Label 2 for heat pumps, except low-temperature heat pumps, is set out in Figure 8.

- (i) The information listed in point 1(1)(c)(i) shall be included in the label.
- (ii) The design aspects of the label for heat pumps, except for low-temperature heat pumps, as related to the space heating energy efficiency shall be in accordance with Figure ...

#### (d) Label 2 for low-temperature heat pumps is set out in Figure 9.

- (i) The information listed in point 1(1)(d)(i) shall be included in the label.
- (ii) The design aspects of the label for low-temperature heat pumps, as related to the space heating energy efficiency shall be in accordance with Figure ...

### (2) Label 2 related to the water heating energy efficiency for combination boilers

Label 2 for fossil fuel combination boilers is set out in Figure 10.

TBD, in accordance with label for water heaters

Figure 6: Label 2 for fossil fuel boilers

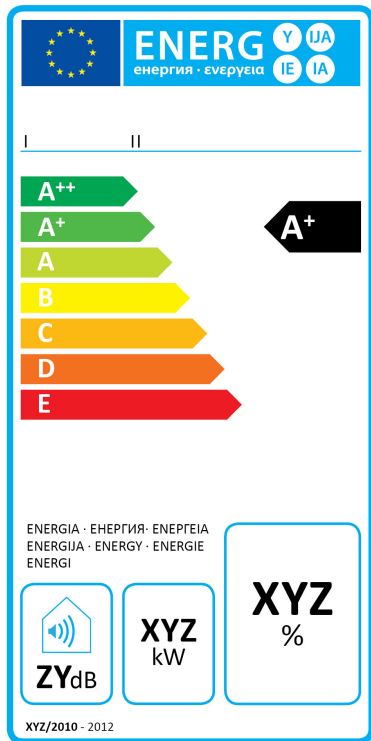


Figure 7: Label 2 for cogeneration boilers

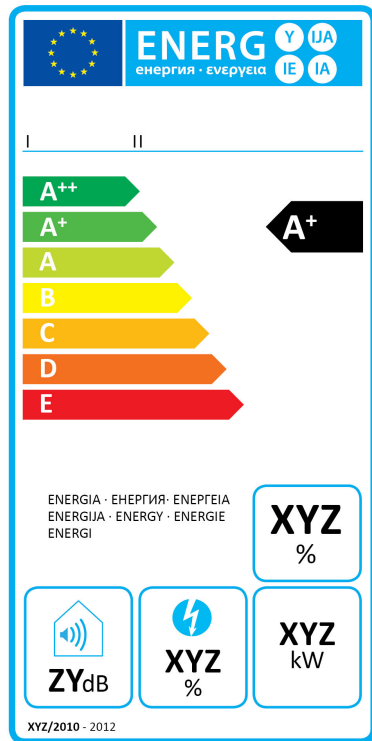


Figure 8: Label 2 for heat pumps, except low-temperature heat pumps

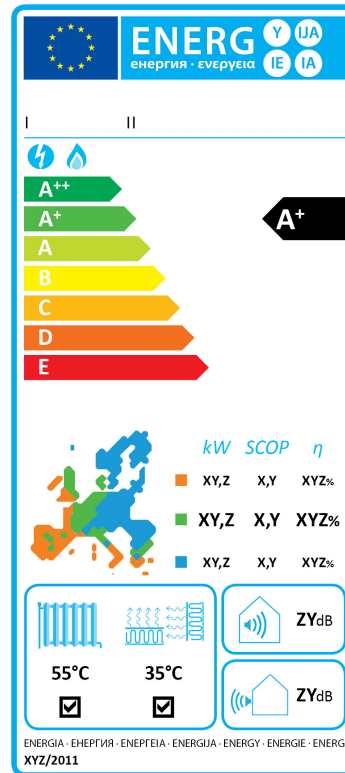


Figure 9: Label 2 for low-temperature heat pumps

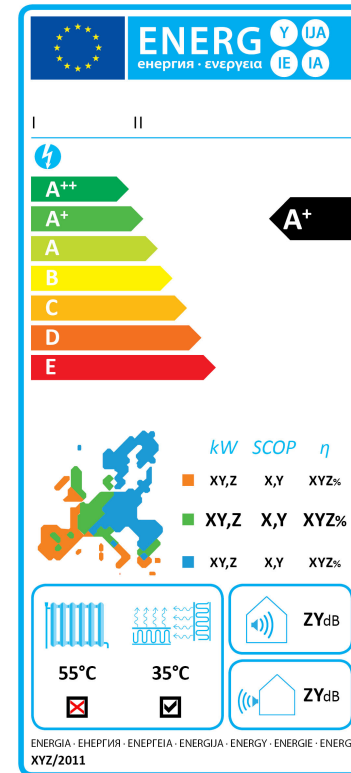


Figure 10: Label 2 for fossil fuel combination water heating

### 3. Label 3

#### (1) Label 3 related to the seasonal space heating energy efficiency

##### (a) Label 3 for conventional boilers is set out in Figure 11.

- (i) The information listed in point 1(1)(a)(i) shall be included in the label.
- (ii) The design aspects of the label for fossil fuel boilers, as related to the space heating energy efficiency shall be in accordance with Figure ...

##### (b) Label 3 for cogeneration boilers is set out in Figure 12.

- (i) The information listed in point 1(1)(b)(i) shall be included in the label.
- (ii) The design aspects of the label for cogeneration boilers, as related to the space heating energy efficiency shall be in accordance with Figure ...

##### (c) Label 3 for heat pumps, except low-temperature heat pumps, is set out in Figure 13.

- (i) The information listed in point 1(1)(c)(i) shall be included in the label.
- (ii) The design aspects of the label for heat pumps, except low-temperature heat pumps, as related to the space heating energy efficiency shall be in accordance with Figure ...

##### (d) Label 3 for low-temperature heat pumps is set out in Figure 14.

- (i) The information listed in point 1(1)(d)(i) shall be included in the label.
- (ii) The design aspects of the label for fossil fuel boilers and cogeneration boilers, as related to the space heating energy efficiency shall be in accordance with Figure ...

#### (2) Label 3 related to the water heating energy efficiency for fossil fuel combination boilers

Label 3 for fossil fuel combination boilers is set out in Figure 15.

TBD, in accordance with label for water heaters

Figure 11: Label 3 for fossil fuel boilers

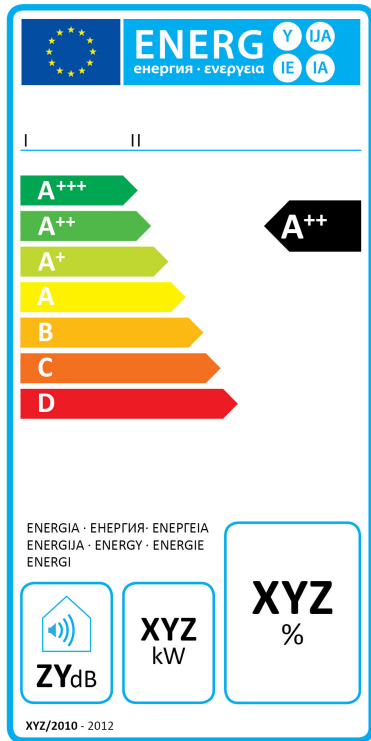


Figure 12: Label 3 for cogeneration boilers

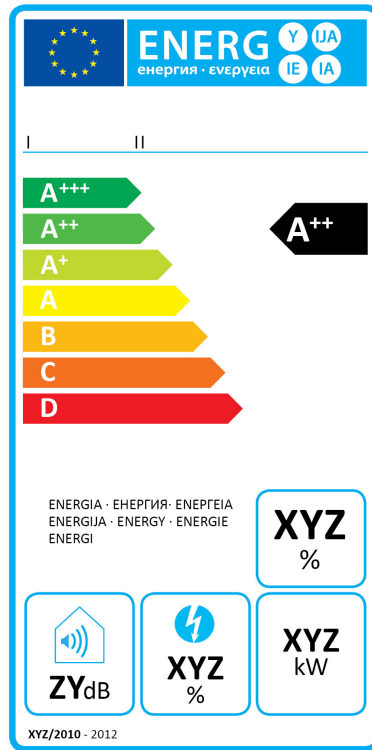


Figure 13: Label 3 for heat pumps, except low-temperature heat pumps

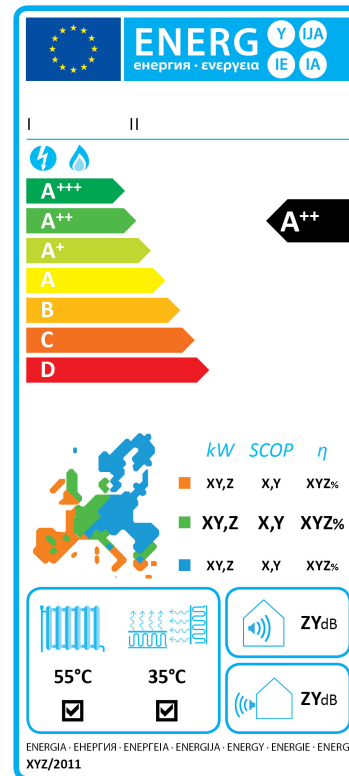


Figure 14: Label 3 for low-temperature heat pumps

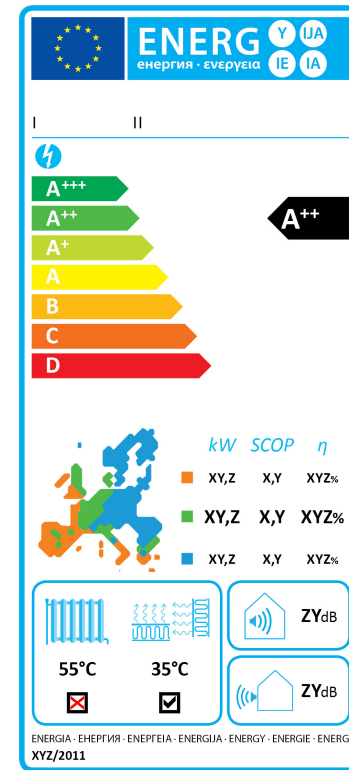


Figure 15: Label 3 for water heating energy efficiency of fossil fuel boilers

**ANNEX III**  
**Product fiche**

1. The information in the product fiche shall be clearly visibly in the following order, and shall be provided in separate sheets together with the product as follows:

(1) Sheet No 1 shall contain the following information:

(a) Fossil fuel boilers and cogeneration boilers

- (i) supplier's name or trademark;
- (ii) supplier's model identifier;
- (iii) rated power;
- (iv) seasonal space heating energy efficiency class, in accordance with point 1 of Annex VI;
- (v) seasonal space heating energy efficiency, multiplied by 100 and rounded up to the first integer and calculated in accordance with Annex VII, and annual energy consumption, rounded up to the first integer and calculated in accordance with Annex VII, described as 'Seasonal space heating energy efficiency "X" % and annual energy consumption "X" kWh, based on reference building conditions, system temperature of 55°C for radiator heat emitters, and night time temperature reduction. Actual seasonal space heating energy efficiency and annual energy consumption will depend on the system configuration and heat losses, such as losses due to distribution of heat.';
- (vi) airborne acoustical noise emissions expressed in dB(A) re 1 pW and rounded to the nearest integer;

(b) cogeneration boilers

- (i) supplier's name or trademark;
- (ii) supplier's model identifier;
- (iii) rated power;
- (iv) seasonal space heating energy efficiency class, in accordance with point 1 of Annex VI;
- (v) seasonal space heating energy efficiency, multiplied by 100 and rounded up to the first integer and calculated in accordance with Annex VII, annual energy consumption, and the electric efficiency, rounded up to the first integer and calculated in accordance with Annex VII, described as 'Seasonal space heating energy efficiency "X" %, annual energy consumption "X" kWh and electric efficiency "X" %, based on reference building conditions, system



temperature of 55°C for radiator heat emitters, and night time temperature reduction. Actual seasonal space heating energy efficiency and annual energy consumption will depend on the system configuration and heat losses, such as losses due to distribution of heat.';

- (vi) airborne acoustical noise emissions expressed in dB(A) re 1 pW and rounded to the nearest integer;
- (c) Heat pumps, with the exception of low-temperature heat pumps
- (i) supplier's name or trademark;
  - (ii) supplier's model identifier;
  - (iii) rated capacity under average climate conditions;
  - (iv) seasonal space heating energy efficiency class, in accordance with point 1 of Annex VI;
  - (v) seasonal space heating energy efficiency, multiplied by 100 and rounded up to the first integer and calculated in accordance with Annex VII and annual energy consumption, rounded up to the first integer and calculated in accordance with Annex VII, described as 'Seasonal space heating energy efficiency “X” %, and annual energy consumption “X” kWh, based on reference building conditions, system temperature of 55°C for radiator heat emitters, and night time temperature reduction. Actual seasonal space heating energy efficiency will depend on climate conditions, the system configuration and heat losses, such as losses due to distribution of heat.';
  - (vi) seasonal space heating energy efficiency and rated capacity under colder and warmer climate conditions, multiplied by 100 and rounded up to the first integer and calculated in accordance with Annex VII described as 'Variation of seasonal space heating energy efficiency between “X” % in colder climate conditions and “X” % in warmer climate conditions, and variation of capacity between “X” kW in colder climate conditions and “X” kW in warmer climate conditions.';
  - (vii) airborne indoor and outdoor acoustical noise, as applicable, emissions expressed in dB(A) re 1 pW and rounded to the nearest integer;
  - (viii) hybrid coefficient of performance, described as 'hybrid coefficient of performance “X”, for the purposes of evaluating the seasonal space heating energy efficiency of combinations of this heat pump with gas/oil-fired boilers';
  - (ix) hybrid heat pump power, described as 'hybrid heat pump power “X” kW, for the purposes of evaluating the seasonal space heating

energy efficiency of combinations of this heat pump with gas/oil-fired boilers';

- (d) Low-temperature heat pumps
  - (i) supplier's name or trademark;
  - (ii) supplier's model identifier;
  - (iii) rated capacity under average climate conditions;
  - (iv) seasonal space heating energy efficiency class, in accordance with point 2 of Annex VI;
  - (v) an indication that the low-temperature heat pump are only suitable for low-temperature heat emitters, described as 'This heat pump is only suitable for low-temperature heat emitters such as floor heat emitters, but is not suitable for use with heat emitters requiring higher system temperatures, such as radiator heat emitters';
  - (vi) seasonal space heating energy efficiency, multiplied by 100 and rounded up to the first integer and calculated in accordance with Annex VII and annual energy consumption, rounded up to the first integer and calculated in accordance with Annex VII, described as 'Seasonal space heating energy efficiency “X” %, and annual energy consumption “X” kWh, based on reference building conditions and system temperature of 35°C for low-temperature heat emitters such as floor heating. Actual seasonal space heating energy efficiency will depend on the system configuration and heat losses, such as losses due to distribution of heat.';
  - (vii) seasonal space heating energy efficiency and rated capacity under colder and warmer climate conditions, multiplied by 100 and rounded up to the first integer and calculated in accordance with Annex VII described as 'Variation of seasonal space heating energy efficiency between “X” % in colder climate conditions and “X” % in warmer climate conditions, and variation of capacity between “X” kW in colder climate conditions and “X” kW in warmer climate conditions.';
  - (viii) airborne indoor and outdoor acoustical noise, as applicable, emissions expressed in dB(A) re 1 pW and rounded to the nearest integer;
  - (ix) hybrid coefficient of performance, described as 'hybrid coefficient of performance “X”, for the purposes of evaluating the seasonal space heating energy efficiency of combinations of this heat pump with gas/oil-fired boilers';
  - (x) hybrid heat pump power, described as 'hybrid heat pump power “X” kW, for the purposes of evaluating the seasonal space heating

energy efficiency of combinations of this heat pump with gas/oil-fired boilers';

(2) Sheet(s) No 2 shall contain the following elements:

(a) Fossil fuel boilers

(i) the elements set out in Figure 1 required for evaluating the seasonal space heating energy efficiency of combinations of fossil fuel boilers with further products, where the following information shall be included:

- I: the value of the seasonal space heating energy efficiency;
- II: values of contributions of storage tanks used for the buffering hot heating water, as set out in Annex VII; *[NB: contributions depend on turndown/modulation characteristics of the boiler; "lower" seasonal performance in non-modulation can be "recovered" by combination with an additional storage tank, cf. working document on interim standards]*
- III: the value of the mathematical expression:  $294/(11 \cdot Prated)$ ;
- IV: the value of the mathematical expression  $115/(11 \cdot Prated)$ ;
- V: the value of the mathematical expression  $Prated/2$ ;
- VI: the value of the mathematical expression  $100/Prated$ ;
- VII: the value of the mathematical expression  $1/Prated$

(ii) the following text: 'The actual energy efficiency will depend on the characteristics of the installation such as, but not limited to (i) low temperature heat emitter such as floor heating, enhancing the seasonal space heating energy efficiency typically by approximately 10 percentage points; (ii) deactivation of the reduction of system temperature during night-time, reducing the seasonal space heating energy efficiency by typically 6 percentage points; (iii) heat losses due to distribution of heat, reducing the seasonal space heating energy efficiency typically by approximately 10 to 15 percentage points.'

(b) Cogeneration boilers

(i) the elements set out in Figure 2 required for evaluating the seasonal space heating energy efficiency of combinations of cogeneration boilers with further products, where the following information shall be included:

- I: the value of the seasonal space heating energy efficiency;
  - II: values of contributions of storage tanks used for the buffering hot heating water, as set out in Annex VII;
  - III: the value of the mathematical expression:  $294/(11*Prated)$ ;
  - IV: the value of the mathematical expression  $115/(11*Prated)$ ;
- (ii) the following text: 'The actual energy efficiency will depend on the characteristics of the installation such as, but not limited to (i) low temperature heat emitter such as floor heating, enhancing the seasonal space heating energy efficiency typically by approximately 10 percentage points; (ii) deactivation of the reduction of system temperature during night-time, reducing the seasonal space heating energy efficiency by typically 6 percentage points; (iii) heat losses due to distribution of heat, reducing the seasonal space heating energy efficiency typically by approximately 10 percentage points to 15 percentage points.'
- (c) Heat pumps, with the exception of low-temperature heat pumps
- (i) the elements set out in Figure 3 required for evaluating the seasonal space heating energy efficiency of combinations of heat pumps with further products, where the following information shall be included:
- I: the value of the seasonal space heating energy efficiency;
  - II: values of contributions of storage tanks used for the buffering hot heating water to the seasonal space heating energy efficiency, as set out in Annex VII;
  - III: the value of the mathematical expression:  $294/(11*Prated)$ ;
  - IV: the value of the mathematical expression  $115/(11*Prated)$ ;
  - V: the value of the difference of seasonal space heating energy efficiencies under warmer and average climate conditions;
  - VI: the value of the difference of the seasonal space heating energy efficiencies under average and colder climate conditions;
- (ii) the following text: 'The actual energy efficiency will depend on the characteristics of the installation such as, but not

limited to (i) low temperature heat emitter such as floor heating, enhancing the seasonal space heating energy efficiency typically by approximately 10 percentage points; (ii) deactivation of the reduction of system temperature during night-time, reducing the seasonal space heating energy efficiency by typically 6 percentage points; (iii) heat losses due to distribution of heat, reducing the seasonal space heating energy efficiency typically by approximately 10 to 15 percentage points.'

(d) Low temperature heat pumps

(i) the elements set out in Figure 4 required for evaluating the seasonal space heating energy efficiency of combinations of low temperature heat pumps with further products, where the following information shall be included:

- I: the value of the seasonal space heating energy efficiency;
- II: values of contributions of storage tanks used for the buffering hot heating water to the seasonal space heating energy efficiency, as set out in Annex VII;
- III: the value of the mathematical expression:  $294/(11 \cdot Prated)$ ;
- IV: the value of the mathematical expression  $115/(11 \cdot Prated)$ ;
- V: the value of the difference of seasonal space heating energy efficiencies under warmer and average climate conditions;
- VI: the value of the difference of the seasonal space heating energy efficiencies under average and colder climate conditions;

(ii) the following text: ' This heat pump is specifically designed to operate low-temperature heat emitters such as floor heating. It must not be used to operate heat emitters requiring a system temperature higher than 35°C, such as radiator heat emitters. The actual energy efficiency will depend on the characteristics of the installation such as, but not limited to heat losses due to distribution of heat, reducing the seasonal space heating energy efficiency typically by approximately 10 to 15 percentage points. '

(3) In addition to Sheets No 1 and 2, the fiche for fossil fuel combination boilers shall include Sheet No 3 for evaluating the water heating energy efficiency of combination boilers with further products; the elements are specified in Figure 5, where the following information shall be included

*[NB: possibly to be adapted to final version of the water heater regulation]*

- I: the value of the water heating energy efficiency  $\eta_{wh}$ ;
- II: the value of the reference energy  $Q_{ref}$  of the maximum load profile;
- III: the value of the mathematical expression  $1,1 * \eta_{wh} - 10$ .

Figure 1: elements of the fiche of fossil fuel boilers as related to the seasonal space heating energy efficiency of their combinations with further products

Seasonal **space heating** energy efficiency of **gas/oil boiler** (%)  ①

---

Storage tank  ②  
 'II': Rating A = 'x' %; Rating B = 'x' %  
 Rating C = 'x' %; Rating D, E, F, G = 'x' %

---

Temperature control  ③  
 Entry from temperature control fiche  
 Class IV = +1% ; Class V = +2% ;  
 Class VI = +2% ; Class VI I = +2,5% ;  
 Class VIII = + 2,5% ; Class IX = +3%

---

Cascade with second gas-/oil-fired boiler  ④  
 Entry from fiche of second boiler  $(\text{input} - 'I') \times 0,1 =$

---

Solar assisted space heating, Entries from fiches of solar panel and storage tank

Collector size, m<sup>2</sup>  Tank volume, m<sup>3</sup>  Collector efficiency  Tank rating A=0,91, B=0,86 C=0,83; D-G=0,81 Tank position outdoor=0,9 indoor=1,0

$(\text{'III'} \times \text{input} + \text{'IV'} \times \text{input}) \times 0,9 \times \text{input} \times \text{input} \times \text{input} =$   ⑤

---

Auxiliary heat pump  ⑥  
 Entries from heat pump fiche; if hybrid heat pump power exceeds 'V' kW, use "'V'"  
 "Hybrid" heat pump coefficient of performance  Air-water: 12 Water-water: 9 Brine-water: 9 "Hybrid" heat pump power

$(0,4 \times \text{input} - 'I' - \text{input}) \times \text{'VI'} \times \text{input} =$

---

Solar assisted space heating AND Auxiliary heat pump  
 Select smaller value  $- 0,5 \times \text{input} \text{ ⑤ OR } - 0,5 \times \text{input} \text{ ⑥} =$   ⑦

---

Seasonal space heating energy efficiency of this configuration (%) =  ⑧

---

Seasonal space heating energy efficiency class of this configuration

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G</b>	<b>F</b>	<b>E</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A</b>	<b>A*</b>	<b>A**</b>	<b>A***</b>
< 51%	≥ 51%	≥ 59%	≥ 67%	≥ 75%	≥ 83%	≥ 91%	≥ 99%	≥ 115%	≥ 131%

---

Gas/oil boiler and auxiliary heat pump combination installed with low temperature heat emitters at 35°C ?  
 Entries from heat pump fiche; if "hybrid" heat pump power exceeds 'V' kW, use "'V'"  ⑧ +  $(50 \times \text{input} \times \text{'VII'}) =$

Figure 2: elements of the fiche for cogeneration boilers as related to the seasonal space heating energy efficiency of their combinations with further products

Seasonal **space heating** energy efficiency of **cogeneration boiler** (%)  ①

---

Storage tank  ②  
 'II': Rating A = 'x' %; Rating B = 'x' %  
 Rating C = 'x' %; Rating D, E, F, G = 'x' %

---

Temperature control  ③  
 Entry from temperature control fiche  
 Class IV = +1% ; Class V = +2% ;  
 Class VI = +2% ; Class VI I = +2,5% ;  
 Class VIII = + 2,5% ; Class IX = +3%

---

Cascade with gas-/oil-fired boiler  ④  
 Entry from fiche of gas/oil boiler  $(\text{[ ]} - \text{'I'}) \times 0,2 = \text{[ ]}$

---

Solar assisted space heating, Entries from fiches of solar panel and storage tank

Collector size, m<sup>2</sup>  Tank volume, m<sup>3</sup>  Collector efficiency  Tank rating A=0,91, B=0,86 C=0,83; D-G=0,81 Tank position outdoor=0,9 indoor=1,0

$(\text{'III'} \times \text{[ ]} + \text{'IV'} \times \text{[ ]}) \times 0,7 \times \text{[ ]} \times \text{[ ]} \times \text{[ ]} = \text{[ ]}$  ⑤

---

Seasonal space heating energy efficiency of this configuration (%) =  ⑥

---

Seasonal space heating energy efficiency class of this configuration

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G</b>	<b>F</b>	<b>E</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A</b>	<b>A*</b>	<b>A**</b>	<b>A***</b>
< 51%	≥ 51%	≥ 59%	≥ 67%	≥ 75%	≥ 83%	≥ 91%	≥ 99%	≥ 115%	≥ 131%



Figure 3: elements of the fiche of heat pumps, except low-temperature heat pumps, as related to seasonal space heating energy efficiency of their combinations with further products

Seasonal **space heating** energy efficiency of **heat pumps** (%) 'I' ①

---

Storage tank buffering heating water  
Entry from storage tank fiche

'II': Rating A = 'x' %; Rating B = 'x' %  
 Rating C = 'x' %; Rating D. E. F. G = 'x' %

   ②

---

Temperature control  
Entry from temperature control fiche

Class IV = +1%; Class V = +2%;  
 Class VI = +2%; Class VII = +2,5%;  
 Class VIII = + 2,5%; Class IX = +3%

   ③

---

Solar assisted space heating  
Entries from fiches of solar panel and storage tank

Collector size, m<sup>2</sup>

Tank volume, m<sup>3</sup>

Collector efficiency

Tank rating  
A=0,91, B=0,86  
C=0,83; D-G=0,81

Tank position  
outdoor=0,9  
indoor=1,0

( 'III' ×    + 'IV' ×    ) × 0,45 ×    ×    ×    =    ④

---

Auxiliary gas/oil boiler  
Entry from fiche of gas/oil boiler

Seasonal space heating energy efficiency

(    - 40 ) × 0,01 =    ⑤

---

Seasonal space heating energy efficiency of this configuration (%) =    ⑥

---

Seasonal space heating energy efficiency class of this configuration in average climate conditions

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
<b>G</b>	<b>F</b>	<b>E</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A</b>	<b>A<sup>+</sup></b>	<b>A<sup>++</sup></b>	<b>A<sup>+++</sup></b>
< 51%	≥ 51 %	≥ 59%	≥ 67%	≥ 75%	≥ 83 %	≥ 91%	≥ 99%	≥ 115%	≥ 131 %

---

Heat pump installed with low temperature heat emitters at 35°C ?

   ⑥ + 25 =   

---

Indication of energy efficiency variation in colder and warmer climate conditions

Warmer:    ⑥ + 'V' =         Colder:    ⑥ - 'VI' =

Figure 4: elements of the fiche for low-temperature heat pumps as related to the seasonal space heating energy efficiency of their combinations with further products

Seasonal **space heating** energy efficiency of **LT heat pump** (%)  ①

---

Storage tank buffering heating water  
Entry from storage tank fiche  ②

---

Temperature control  
Entry from temperature control fiche  ③

---

Solar assisted space heating  
Entries from fiches of solar panel and storage tank

Collector size, m<sup>2</sup>  Tank volume, m<sup>3</sup>  Collector efficiency  Tank rating A=0,91, B=0,86 C=0,83; D-G=0,81 Tank position outdoor=0,9 indoor=1,0

( 'III' ×  + 'IV' ×  ) × 0,45 ×  ×  ×  =  ④

---

Auxiliary gas/oil boiler  
Entry from fiche of gas/oil boiler  ⑤

(  - 40 ) × 0,01 =  ⑤

---

Seasonal space heating energy efficiency of this configuration (%) =  ⑥ +

---

Seasonal space heating energy efficiency class of this configuration in average climate conditions.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G</b>	<b>F</b>	<b>E</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A</b>	<b>A<sup>+</sup></b>	<b>A<sup>++</sup></b>	<b>A<sup>+++</sup></b>
< 76%	≥ 76 %	≥ 84%	≥ 92%	≥ 100%	≥ 108%	≥ 116%	≥ 124%	≥ 140%	≥ 156%

---

Indication of energy efficiency variation in colder and warmer climate conditions  
Warmer:  ⑥ + 'V' =  Colder:  ⑥ - 'VI' =

Figure 5: elements of the fiche of fossil fuel combination boilers related to the water heating energy efficiency of their combinations with further products

**Water heating energy efficiency of gas/oil combination boiler (%)**  ①

---

Solar contribution to water heating  
 Entries from fiches of solar panel and storage tank

$$\frac{220 \times \text{'II'} \times \text{'III'}}{220 \times \text{'II'} + \text{Storage tank energy losses} - \text{Solar contribution to water heating}} - \text{'I'} = \text{②}$$


---

PFHRD =  ③

---

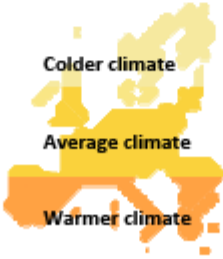
**Water heating energy efficiency in Average climate (%)**  ④

Load profile of combination boiler and water heating energy efficiency class of this configuration in average climate

		G	F	E	D	C	B	A	A <sup>+</sup>	A <sup>++</sup>	A <sup>+++</sup>
S	0	23	26	29	32	35	38	55	72	90	
M	0	27	30	33	36	39	45	62	79	96	
L	0	27	30	34	37	46	56	73	90	107	
XL	0	27	30	34	38	50	62	76	92	112	
XXL	0	28	32	36	40	60	72	84	104	124	
3XL	0	28	32	36	40	64	80	96	110	140	
4XL	0	28	32	36	40	64	86	96	120	150	

---

Indication of variation of solar assisted water heating energy efficiency by climate



④ - 0,2 x ② =

④

④ + 0,4 x ② =

---

## 2. Temperature controls

The information in the product fiche shall be provided clearly visibly in the following order and in separate sheet together with the product as follows:

- (i) supplier's name or trademark;
- (ii) supplier's model identifier;
- (iii) category of temperature controls;
- (iv) temperature controls contribution to seasonal space heating energy efficiency expressed as percentage points.

## 3. Passive flue heat recovery device

The information in the product fiche shall be provided clearly visibly in the following order and in separate sheet together with the product as follows:

- (i) supplier's name or trademark;
- (ii) supplier's model identifier;
- (iii) passive flue heat recovery contribution to water heating energy efficiency expressed as percentage points.

**ANNEX IV**  
**Technical documentation**

1. The technical documentation referred to in Article 3(c) shall include:
- (a) the name and address of the supplier;
  - (b) a general description of the model, sufficient for it to be unequivocally and easily identified;
  - (c) where appropriate, the references of the harmonised standards applied;
  - (d) where appropriate, the other technical standards and specifications used;
  - (e) identification and signature of the person empowered to bin the supplier;
  - (f) technical parameters:
    - (i) for fossil fuel boilers and cogeneration boilers as set out in Table 1, measured and calculated in accordance with Annex VII;
    - (ii) for air-to-water heat pump as set out in Table 2, measured and calculated in accordance with Annex VII.;
    - (iii) for water/brine-to-water heat pump as set out in Table 3, measured and calculated in accordance with Annex VII;
    - (iv) for temperature controls, the contribution to seasonal space heating energy efficiency in percentage points;
    - (v) for passive flue heat recovery devices, the contribution to the water heating efficiency.

Table 1: Technical parameters for fossil fuel boilers and cogeneration boilers

Information to identify the model(s) to which the information relates to:							
Indication if boiler is a condensing/low-temperature/standard fossil fuel boiler							
Indication if boiler is cogeneration boiler: yes/no							
Indicate if boiler is a combination boiler: yes/no							
Note: the number of digits in boxes "value" indicates the required precision of reporting							
Item	Symbol	Value	Unit	Item	symbol	value	unit
Nominal input	Pmax	x,x	kW	Seasonal efficiency	etas	x,x	
Declared useful output At rated input and high temperature regime <sup>2</sup>	Pd4	x,x	kW	Declared useful efficiency Heat input=rated input	Eta4	x,x	-
At 0,30 * rated input and low temperature regime <sup>3</sup>	Pd1	x,x	kW	Heat input=0,30 rated input	Eta1	x,x	-
Auxiliary power consumption	Capacity control: indicate one of three options by stating the turndown ratio td						

Elmin	x,x	kW	Fixed	td	x,XX
Elmax	x,x	kW	Variable	td	x,XX
Fossb	x,x	kW	Staged	td	x,XX
Other items					
Standby heat power	P <sub>standby</sub>	x,x kW			
Pilot flame power	P <sub>ign</sub>	x,x kW			
Emissions of nitrogen oxides	NO <sub>x</sub>	x mg/kWh			
Designated positioning	indoor/outdoor				
<b>Additional information for cogeneration boilers</b>					
<b>[to be completed]</b>					
Declared electric efficiency					
At nominal heat input and high temperature regime	Chp4	x,x			
<b>Additional information for combination boilers</b>					
<b>[TBA in accordance with water heater regulation]</b>					
Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative.				
2= High temperature regime means 60°C system-return temperature (at boiler inlet) and 80°C system-feed temperature (is at boiler outlet)					
3= Low temperature means for condensing boilers at 30°C, for low-temperature boilers at 37°C and for standard boilers at 50°C system-return temperature (at boiler inlet)					

Table 2: Information requirements for air-to-water heat pumps\*\*\*

Information to identify the model(s) to which the information relates to:					
Indication if the heat pump is a low temperature heat pump: yes/no					
Indicate if the heat pump is a combination heat pump: yes/no					
Parameters shall be declared for medium temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameter shall be declared for low-temperature application.					
Note: the number of digits in boxes "value" indicates the required precision of reporting					
Item	Symbol	value	Unit	Item	symbol Value unit
<b>Design load</b>	Pdesignh	x,x	kW	<b>Seasonal efficiency</b>	etas x,x -
Declared capacity* for part load pertaining to outdoor temperature Tj, average climate conditions				Declared Coefficient of performance for part load pertaining to outdoor temperature Tj, average climate conditions	
Tj=-7°C	Pdh	x,x	kW	Tj=-7°C	COPd x,x -
Tj=2°C	Pdh	x,x	kW	Tj=2°C	COPd x,x -
Tj=7°C	Pdh	x,x	kW	Tj=7°C	COPd x,x -
Tj=12°C	Pdh	x,x	kW	Tj=12°C	COPd x,x -
Tj=bivalent temperature	Pdh	x,x	kW	Tj=bivalent temperature	COPd x,x -
Tj=operating limit	Pdh	x,x	kW	Tj=operating limit	COPd x,x -
Tj=-15 °C (if TOL<-20 °C)	Pdh	x,x	kW	Tj=-15°C (if TOL<-20 °C)	COPd x,x -
Declared capacity* for part load pertaining to outdoor temperature Tj, warmer climate conditions				Declared Coefficient of performance for part load pertaining to outdoor temperature Tj, warmer climate conditions	
Tj=2°C	Pdh	x,x	kW	Tj=2°C	COPd x,x -
Tj=7°C	Pdh	x,x	kW	Tj=7°C	COPd x,x -
Tj=12°C	Pdh	x,x	kW	Tj=12°C	COPd x,x -
Tj=bivalent temperature	Pdh	x,x	kW	Tj=bivalent temperature	COPd x,x -
Tj=operating limit	Pdh	x,x	kW	Tj=operating limit	COPd x,x -
Tj=-15 °C (if TOL<-20 °C)	Pdh	x,x	kW	Tj=-15°C (if TOL<-20 °C)	COPd x,x -
Declared capacity* for part load pertaining to outdoor temperature Tj, colder climate condition				Declared Coefficient of performance for part load pertaining to outdoor temperature Tj, colder climate conditions	
Tj=-7°C	Pdh	x,x	kW	Tj=-7°C	COPd x,x -
Tj=2°C	Pdh	x,x	kW	Tj=2°C	COPd x,x -
Tj=7°C	Pdh	x,x	kW	Tj=7°C	COPd x,x -
Tj=12°C	Pdh	x,x	kW	Tj=12°C	COPd x,x -
Tj=bivalent temperature	Pdh	x,x	kW	Tj=bivalent temperature	COPd x,x -
Tj=operating limit	Pdh	x,x	kW	Tj=operating limit	COPd x,x -
Tj=-15 °C (if TOL<-20 °C)	Pdh	x,x	kW	Tj=-15°C (if TOL<-20 °C)	COPd x,x -
Bivalent temperature, average climate cond.	Tbiv	x	°C	Operating limit temperature, average climate cond.	Tol x °C
Bivalent temperature, warmer climate cond.	Tbiv	x	°C	Operating limit temperature, warmer climate cond.	Tol x °C
Bivalent temperature, colder climate cond.	Tbiv	x	°C	Operating limit temperature, colder climate cond.	Tol x °C
Cycling interval capacity	Pcych	x,x	kW	Cycling interval efficiency	COPcyc x,x -

Degradation coefficient**	C <sub>dc</sub>	x,x	-			
Electric power input in power modes other than 'active mode'				Annual energy consumption		
off mode	P <sub>OFF</sub>	x,x	kW	Annual electricity (or gas) consumption, average climate conditions	Q <sub>HE</sub>	X kWh (MJ)/a
thermostat-off mode	P <sub>TO</sub>	x,x	kW	Annual electricity (or gas) consumption, warmer climate conditions	Q <sub>HE</sub>	X kWh (MJ)/a
crankcase heater mode	P <sub>CK</sub>	x,x	kW	Annual electricity (or gas) consumption, colder climate conditions	Q <sub>HE</sub>	X kWh (MJ)/a
<b>Additional information of heat pumps using gaseous fuels</b>						
Gas heat pump electric power consumption	H <sub>paux</sub>	X,x	kW			
Capacity control (indicate one of three options)				Other items		
Fixed	Y/N			Sound power level (indoor/outdoor)	L <sub>WA</sub>	x,x / x,x dB(A)
Staged	Y/N			Global warming potential	GWP	x kg CO <sub>2</sub> eq.
Variable	Y/N			Rated air flow (indoor/outdoor)	-	x / x m <sup>3</sup> /h
				Designated positioning	Indoor/outdoor	
<b>Additional information for combination boilers [TBA in accordance with water heater regulation]</b>						
Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative.					
* = For staged capacity units, two values divided by a slash (/) will be declared in each box in the section "Declared capacity of the unit" and "declared COP" of the unit.						
** = If default Cd=0,25 is chosen then (results from) cycling tests are not required. Otherwise the cycling test value is required.						
*** For multisplit systems, data shall be provided for combinations at capacity ratio of 1.						



Table 3: Information requirements for brine/water-to-water heat pumps\*\*\*

Information to identify the model(s) to which the information relates to:							
Indicate if the heat pump is a combination heat pump: yes/no							
Parameters shall be declared for medium temperature application							
Note: the number of digits in boxes "value" indicates the required precision of reporting							
Item	Symbol	value	Unit	Item	symbol	Value	unit
<b>Design load</b>	P <sub>designh</sub>	x,x	kW	<b>Seasonal efficiency</b>	etas	x,x	-
Declared capacity* for average climate conditions, indoor temperature 20°C				Declared Coefficient of performance at average climate conditions, indoor temperature 20°C			
Part load ratio = 0,88	P <sub>dh</sub>	x,x	kW	Part load ratio = 0,88	COP <sub>d</sub>	x,x	-
Part load ratio = 0,54	P <sub>dh</sub>	x,x	kW	Part load ratio = 0,54	COP <sub>d</sub>	x,x	-
Part load ratio = 0,35	P <sub>dh</sub>	x,x	kW	Part load ratio = 0,35	COP <sub>d</sub>	x,x	-
Part load ratio = 0,15	P <sub>dh</sub>	x,x	kW	Part load ratio = 0,15	COP <sub>d</sub>	x,x	-
Declared capacity* for warmer climate conditions, indoor temperature 20°C				Declared Coefficient of performance for warmer climate conditions, indoor temperature 20°C			
Part load ratio = 1,00	P <sub>dh</sub>	x,x	kW	Part load ratio = 1,00	COP <sub>d</sub>	x,x	-
Part load ratio = 0,64	P <sub>dh</sub>	x,x	kW	Part load ratio = 0,64	COP <sub>d</sub>	x,x	-
Part load ratio = 0,29	P <sub>dh</sub>	x,x	kW	Part load ratio = 0,29	COP <sub>d</sub>	x,x	-
Declared capacity* for colder climate conditions, indoor temperature 20°C				Declared Coefficient of performance for colder climate conditions, indoor temperature 20°C			
Part load ratio = 0,61	P <sub>dh</sub>	x,x	kW	Part load ratio = 0,61	COP <sub>d</sub>	x,x	-
Part load ratio = 0,37	P <sub>dh</sub>	x,x	kW	Part load ratio = 0,37	COP <sub>d</sub>	x,x	-
Part load ratio = 0,24	P <sub>dh</sub>	x,x	kW	Part load ratio = 0,24	COP <sub>d</sub>	x,x	-
Part load ratio = 0,11	P <sub>dh</sub>	x,x	kW	Part load ratio = 0,11	COP <sub>d</sub>	x,x	-
Cycling interval capacity	P <sub>cyh</sub>	x,x	kW	Cycling interval efficiency	COP <sub>cyh</sub>	x,x	-
Degradation coefficient**	C <sub>dc</sub>	x,x	-				
Electric power input in power modes other than 'active mode'				Annual electricity (or gas) consumption, average climate conditions			
off mode	P <sub>OFF</sub>	x,x	kW	Annual electricity (or gas) consumption, warmer climate conditions	Q <sub>HE</sub>	X	kWh (MJ)/a
standby mode	P <sub>SB</sub>	x,x	kW	Annual electricity (or gas) consumption, colder climate conditions	Q <sub>HE</sub>	X	kWh (MJ)/a
thermostat-off mode	P <sub>TO</sub>	x,x	kW				
crankcase heater mode	P <sub>CK</sub>	x,x	kW				
Capacity control (indicate one of three options)				Other items			
fixed	Y/N			Sound power level (indoor/outdoor)	L <sub>WA</sub>	x,x / x,x	dB(A)
staged	Y/N			Global warming potential designated positioning	GWP	x	kgCO <sub>2</sub> eq.
variable	Y/N						

<b>Additional information for combination boilers</b> <b>[TBA in accordance with water heater regulation]</b>	
Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative.
*= For staged capacity units, two values divided by a slash (/) will be declared in each box in the section "Declared capacity of the unit" and "declared COP" of the unit.	
**= If default Cd=0,25 is chosen then (results from) cycling tests are not required. Otherwise the cycling test value is required.	
*** For multisplit systems, data shall be provided for combinations at capacity ration of 1.	

2. Where the information in the technical documentation file for a particular model has been obtained by calculation on the basis of design, or extrapolation from other equivalent model, or both, the documentation
3. Suppliers of fossil fuel boilers and cogeneration boilers shall provide laboratories performing market surveillance checks, upon request, the necessary information on the setting of the unit as applied for the establishment of declared useful output, declared useful efficiency and, where applicable, electric efficiency, and provide contact information for obtaining such information.
4. Suppliers of heat pumps shall provide laboratories performing market surveillance checks, upon request, the necessary information on the setting of the unit as applied for the establishment of declared capacities, SCOP values and service values and provide contact information for obtaining such information.

## ANNEX V

### Information to be provided in the case where end-users cannot be expected to see the product displayed

1. The information referred to in Article 4(b) shall be provided in the following order:
  - (a) the seasonal space heating energy efficiency class, as defined in Annex VI;
  - (b) the rated output or rated capacity, as applicable, in kW, rounded to the first decimal;
  - (c) the seasonal space heating energy efficiency in percent, rounded to the first decimal;
  - (d) in addition for low temperature heat pumps, an indication that the product must be used only with low temperature heat emitters;
  - (e) in addition for combination boilers:
    - (i) the water heating energy efficiency class, as defined in Annex VI;
    - (ii) the maximum load profile
    - (iii) the water heating energy efficiency in percent, rounded to the first decimal.
2. Where other information contained in the product fiche is also provided, it shall be in the form and order specified in Annex II.
3. The size and font in which all the information in this Annex is printed or shown shall be legible.

**ANNEX VI**  
**Energy efficiency classes**

1. Seasonal space heating energy efficiency classes

- (1) The seasonal space heating energy efficiency class of fossil fuel and cogeneration boilers shall be determined on the basis of the seasonal space heating energy efficiency as set out in Table 1.
- (2) The seasonal space heating energy efficiency class of heat pumps, with the exception of low-temperature heat pumps, shall be determined on the basis of the seasonal space heating energy efficiency under average climate conditions, as set out in Table 1.
- (3) The seasonal space heating energy efficiency class of low-temperature heat pumps shall be determined on the basis of the seasonal space heating energy efficiency under average climate conditions, as set out in Table 2.

Table 1: Seasonal space heating energy efficiency classes of boilers, except low-temperature heat pumps

Seasonal space heating energy efficiency class	Seasonal space heating energy efficiency
A+++	$\eta > 130$
A++	$130 \leq \eta < 114$
A+	$114 \leq \eta < 98$
A	$98 \leq \eta < 90$
B	$90 \leq \eta < 82$
C	$82 \leq \eta < 75$
D	$75 \leq \eta < 67$
E	$67 \leq \eta < 59$
F	$59 \leq \eta < 45$
G	$\eta < 45$

(2) Low-temperature heat pumps

The seasonal energy efficiency class of low-temperature heat pumps shall be determined on the basis of its seasonal energy efficiency as set out in Table 2.

Table 2: Seasonal space heating energy efficiency classes of low-temperature heat pumps

Seasonal space heating energy efficiency class	Seasonal space heating energy efficiency
A+++	$\eta > 155$
A++	$155 \leq \eta < 139$
A+	$139 \leq \eta < 123$
A	$123 \leq \eta < 115$
B	$115 \leq \eta < 107$
C	$107 \leq \eta < 100$
D	$100 \leq \eta < 92$
E	$92 \leq \eta < 84$
F	$84 \leq \eta < 70$

G	$\eta < 70$
---	-------------

2. Water heating energy efficiency class

The seasonal energy efficiency class of a boiler shall be determined on the basis of its water heating energy efficiency as set out in Table 3.

Table 3: Water heating energy efficiency classes [NB: possibly to be adapted to final version of water heating regulation]

	XXS	XS	S	M	L	XL	XXL	3XL	4XL
A+++	$\eta > 62$	$\eta > 69$	$\eta > 90$	$\eta > 96$	$\eta > 107$	$\eta > 112$	$\eta > 124$	$\eta > 140$	$\eta > 150$
A++	$53 \leq \eta < 62$	$61 \leq \eta < 69$	$72 \leq \eta < 90$	$79 \leq \eta < 96$	$90 \leq \eta < 107$	$92 \leq \eta < 112$	$104 \leq \eta < 124$	$110 \leq \eta < 140$	$120 \leq \eta < 150$
A+	$44 \leq \eta < 53$	$53 \leq \eta < 61$	$55 \leq \eta < 72$	$62 \leq \eta < 79$	$73 \leq \eta < 90$	$76 \leq \eta < 92$	$84 \leq \eta < 104$	$96 \leq \eta < 110$	$96 \leq \eta < 120$
A	$35 \leq \eta < 44$	$38 \leq \eta < 53$	$38 \leq \eta < 55$	$45 \leq \eta < 62$	$56 \leq \eta < 73$	$62 \leq \eta < 76$	$72 \leq \eta < 84$	$80 \leq \eta < 96$	$86 \leq \eta < 96$
B	$32 \leq \eta < 35$	$35 \leq \eta < 38$	$35 \leq \eta < 38$	$39 \leq \eta < 45$	$46 \leq \eta < 56$	$50 \leq \eta < 62$	$60 \leq \eta < 72$	$64 \leq \eta < 80$	$64 \leq \eta < 86$
C	$29 \leq \eta < 32$	$32 \leq \eta < 35$	$32 \leq \eta < 35$	$36 \leq \eta < 39$	$37 \leq \eta < 46$	$38 \leq \eta < 50$	$40 \leq \eta < 60$	$40 \leq \eta < 64$	$40 \leq \eta < 64$
D	$26 \leq \eta < 29$	$29 \leq \eta < 32$	$29 \leq \eta < 32$	$33 \leq \eta < 36$	$34 \leq \eta < 37$	$34 \leq \eta < 38$	$36 \leq \eta < 40$	$36 \leq \eta < 40$	$36 \leq \eta < 40$
E	$23 \leq \eta < 26$	$26 \leq \eta < 29$	$26 \leq \eta < 29$	$30 \leq \eta < 33$	$30 \leq \eta < 34$	$30 \leq \eta < 34$	$32 \leq \eta < 36$	$32 \leq \eta < 36$	$32 \leq \eta < 36$
F	$20 \leq \eta < 23$	$23 \leq \eta < 26$	$23 \leq \eta < 26$	$27 \leq \eta < 30$	$27 \leq \eta < 30$	$27 \leq \eta < 30$	$28 \leq \eta < 32$	$28 \leq \eta < 32$	$28 \leq \eta < 32$
G	$\eta < 20$	$\eta < 23$	$\eta < 23$	$\eta < 27$	$\eta < 27$	$\eta < 27$	$\eta < 28$	$\eta < 28$	$\eta < 28$

**ANNEX VII**  
**Measurements and calculations**

1. For the purposes of compliance and verification 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 in the Official Journal of European Union, or other reliable, accurate and reproducible method, which takes into account the generally recognised state of the art methods, and whose results are deemed to be of low uncertainty. They shall fulfil all of the following technical parameters.
2. The value of the primary energy factor shall be  $prim = 2,5$ .
3. Fossil fuel boilers and cogeneration boilers
  - (1) The seasonal space heating energy efficiency  $\eta_{s,h}$  shall be calculated as the seasonal steady-state space heating energy efficiency, corrected by contributions accounting for turndown ratio, temperature control, auxiliary electricity consumption, standby heat loss, ignition flame energy consumption, and in addition for cogeneration boilers the seasonal electric efficiency.
  - (2) The annual energy consumption  $QH$  [MJ] shall be calculated the ratio of the reference heating demand and the seasonal space heating energy efficiency.
4. Heat pumps
  - (1) The active-mode coefficient of performance  $SCOP_{on}$  for average, warmer and colder climate conditions shall be calculated on the basis of the part load, electric back-up heating capacity (where required), and bin-specific coefficient of performance ( $COP_{bin}(T_j)$ ) and weighted by the bin-hours the bin conditions occurs, using the following conditions:
    - the heating season for average, warmer and colder climate conditions, as defined in Annex VII, Table 3;
    - reference design conditions, as defined in Annex VII, Table 2;
    - the effects of the degradation of the energy efficiency caused by on/off cycling (if applicable) depending on the type of control of the heating capacity;
  - (2) The reference annual heat demand shall be the full load  $P_{design,h}$  for average, warmer and colder climate conditions, multiplied by 1400 hours/1400 hours/2100 hours for average, warmer and colder climate conditions, respectively.
  - (3) The reference annual energy consumption shall be calculated as the sum of
    - the ratio of the reference annual heat demand and the active-mode coefficient of performance  $SCOP_{on}$ , and



- the energy consumption for thermostat-off, off- and crankcase-heater-mode during the heating season, using time periods as defined in Annex VII, Table 4;
- (4) The seasonal coefficient of performance SCOP shall be calculated as the ratio of the reference annual heat demand, and the reference annual energy consumption.
- (5) The seasonal space heating energy efficiency  $\eta_{SH}$  shall be calculated as the sum of
- the seasonal coefficient of performance SCOP, divided by the primary energy factor except for heat pumps using gaseous fossil fuels, and
  - a correction accounting for temperature controls, expressed as percentage points, and in addition for heat pumps using gaseous fossil fuels, a correction for the gas heat pump auxiliary electricity consumption, expressed as percentage points.
- (6) Annual energy consumption for space heating
- (a) The annual electricity consumption of heat pumps that do not use gaseous fossil fuels is calculated as the ratio of
- the reference annual heat demand, and
  - the seasonal space heating energy efficiency multiplied by the primary energy factor;
- (b) The annual fuel consumption of heat pumps using gaseous fossil fuels is calculated as the ratio of
- the reference annual heat demand, and
  - the seasonal space heating energy efficiency.
- (7) Where the information relating to a specific heat pump model, being a combination of indoor and outdoor unit(s), has been obtained by calculation on the basis of design, and/or extrapolation from other combinations, the documentation should include details of such calculations and/or extrapolations, and of tests undertaken to verify the accuracy of the calculations undertaken, including details of the mathematical model for calculating performance of such combinations, and of measurements taken to verify this model.
5. Water heating energy efficiency of combination boilers [*NB: possibly to be adapted taking into account final water heater regulation*]
- (1) The water heating energy efficiency of a combination boiler shall be calculated as the ratio between  $Q_{ref}$ , and the energy required for its generation, taking also into account effects of hot water distribution and waste heat recovery under the following conditions:

- (a) measurements shall be carried out using the load profiles set out in Table 13;
- (b) measurements shall be carried out using a 24-hour measurement cycle as follows:
  - 00:00 hours to 06:59 hours: no water draw-off;
  - from 7:00 hours: water draw-offs according to the declared load profile;
  - from end of last water draw-off until 24:00 hours: no water draw-off;
- (c) the load profile applied for conformity assessment and declarations shall be the maximum load profile;
- (d) for combination heat pumps the following additional conditions apply:
  - (i) combination heat pumps that do not use ventilation exhaust air as heat source shall be tested under the conditions set out in Table 14;
  - (ii) combination heat pumps which use ventilation exhaust as heat source shall be tested under the conditions set out in Table 15. Where the supplier deems appropriate outdoor air may be used as additional heat source under the conditions set out in Table 14.

Table 1: Standard rating conditions, temperatures in 'dry bulb' air temperature ('wet bulb' indicated in brackets)

Indoor air temperature	Outdoor air temperature
20 (max. 15)	7(6)

Table 2: Reference design conditions for heat pumps, temperatures in 'dry bulb' air temperature ('wet bulb' indicated in brackets) in °C

Season	Indoor air temperature (°C)	Outdoor air temperature (°C)	Bivalent temperature (°C)	Operating limit temperature (°C)
	$T_{in}$	$T_{designh}$	$T_{biv}$	$T_{ol}$
Average		$T_{designh} = -10 (-11)$	max. 2	max. -7
Warmer	20 (15)	$T_{designh} = 2 (1)$	max. 7	max. 2
Colder		$T_{designh} = -22 (-23)$	max. -7	max. -15

Table 3: Heating season bins (j=bin index,  $T_j$ = dry bulb outdoor temperature,  $h_j$ =hours per annum per bin)

HEATING SEASON				
j	$T_j$	Average	Warmer	Colder
#	°C	h <sub>jA</sub>	h <sub>jW</sub>	h <sub>jC</sub>
db				
1 to 8	-30 to -23	0	0	0
9	-22	0	0	1
10	-21	0	0	6
11	-20	0	0	13
12	-19	0	0	17
13	-18	0	0	19
14	-17	0	0	26
15	-16	0	0	39
16	-15	0	0	41
17	-14	0	0	35
18	-13	0	0	52
19	-12	0	0	37
20	-11	0	0	41
21	-10	1	0	43
22	-9	25	0	54
23	-8	23	0	90
24	-7	24	0	125
25	-6	27	0	169
26	-5	68	0	195
27	-4	91	0	278
28	-3	89	0	306
29	-2	165	0	454
30	-1	173	0	385
31	0	240	0	490
32	1	280	0	533
33	2	320	3	380
34	3	357	22	228
35	4	356	63	261
36	5	303	63	279
37	6	330	175	229
38	7	326	162	269
39	8	348	259	233
40	9	335	360	230
41	10	315	428	243
42	11	215	430	191
43	12	169	503	146
44	13	151	444	150
45	14	105	384	97
46	15	74	294	61
		4910	3590	6446

Table 4: Operational hours for heat pumps per functional mode to be used for calculation of electricity or gas consumption

Unit	Heating season	On mode (equivalent hours)	Thermostat-off mode	Off mode	Crankcase heater mode
		$H_{HE}$	$H_{TO}$	$H_{OFF}$	$H_{CK}$
h/annum	Average	1400	179	3672	3851
	Warmer	1400	755	4345	4476
	Colder	2100	131	2189	2944

Table 5: Definition of water heating load profiles:

H	XXS			XS			S			
	Qtap	f	Tm	Qtap	F	Tm	Qtap	f	Tm	TP
	kWh	l/mn	°C	kWh	l/mn	°C	kWh	l/mn	°C	°C
07.00	0,105	2	25				0,105	3	25	
07.05										
07.15										
07.26										
07.30	0,105	2	25	0,525	4	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							0,105	3	25	
09.30	0,105	2	25				0,105	3	25	
10.00										
10.30										
11.00										
11.30	0,105	2	25				0,105	3	25	
11.45	0,105	2	25				0,105	3	25	
12.00	0,105	2	25							
12.30	0,105	2	25							
12.45	0,105	2	25	0,525	4	35	0,315	4	10	55
14.30										
15.00										
15.30										
16.00										
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	0,105	2	25							
19.00	0,105	2	25							
19.30	0,105	2	25							
20.00	0,105	2	25							
20.30				1,05	4	35	0,42	4	10	55
20.45	0,105	2	25							
20.46										
21.00	0,105	2	25							
21.15	0,105	2	25							
21.30							0,525	5	45	
21.30	0,105	2	25							
21.45	0,105	2	25							
Qref	2,1			2,1			2,1			

h	M				L				XL			
	Qtap	F	Tm	TP	Qtap	f	Tm	TP	Qtap	f	Tm	TP
	kWh	l/mn	°C	°C	kWh	l/mn	°C	°C	kWh	l/mn	°C	°C
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
21.30												
21.45												
Qref	5,845				11,655				19,07			

h	XXL				3XL				4XL			
	Qtap	f	Tm	TP	Qtap	f	Tm	TP	Qtap	f	Tm	TP
	kWh	l/mn	°C	°C	kWh	l/mn	°C	°C	kWh	l/mn	°C	°C
07.00	0,105	3	25		11,2	48	40		22,4	96	40	
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		5,04	24	25		10,08	48	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		1,68	24	25		3,36	48	25	
09.30	0,105	3	25									
10.00												
10.30	0,105	3	10	40	0,84	24	10	40	1,68	48	10	40
11.00	0,105	3	25									
11.30	0,105	3	25									
11.45	0,105	3	25		1,68	24	25		3,36	48	25	
12.00												
12.30												
12.45	0,735	4	10	55	2,52	32	10	55	5,04	64	10	55
14.30	0,105	3	25									
15.00	0,105	3	25									
15.30	0,105	3	25		2,52	24	25		5,04	48	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		3,36	24	25		6,72	48	25	
19.00	0,105	3	25									
19.30												
20.00												
20.30	0,735	4	10	55	5,88	32	10	55	11,76	64	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	12,04	48	40		24,08	96	40	
21.30												
21.45												
Qref	24,53				46,76				93,52			

Table 6: Ambient heat source temperatures for heat pumps and combination heat pumps (air source: dry bulb temperature) and humidity by heat transfer medium

Heat source	outdoor air	Brine	Water
Temperature	10,0°C	2,5°C	11,5°C
Humidity	5,5 g/m <sup>3</sup>	Not applicable	

Table 7: Maximum ventilation exhaust air available in m<sup>3</sup>/h<sup>5</sup>

Load profile	XXS	XS	S	M	L	XL	XXL	3XL	4XL
Ventilation waste heat	109	136	128	159	190	870	1021	2943	8830

## 6. Temperature controls

For the purposes of compliance and verification of compliance with the requirements of this Regulation, the categorisation of temperature controls and their contribution to the seasonal space heating energy efficiency shall be made using harmonised standards the reference numbers of which have been published in the Official Journal of European Union, or other reliable, accurate and reproducible method, which takes into account the generally recognised state of the art methods, and whose results are deemed to be of low uncertainty.

## 7. Passive flue heat recovery devices

For the purposes of compliance and verification of compliance with the requirements of this Regulation, the contribution of passive flue heat recovery devices to the water heating energy efficiency shall be made using harmonised standards the reference numbers of which have been published in the Official Journal of European Union, or other reliable, accurate and reproducible method, which takes into account the generally recognised state of the art methods, and whose results are deemed to be of low uncertainty.

---

<sup>5</sup> at temperature of 20°C and humidity of 5,5 g H<sub>2</sub>O/m<sup>3</sup>

## **ANNEX VIII**

### **Verification procedure for market surveillance purposes**

For the purposes of checking conformity with the requirements laid down in Articles 3 and 4, Member States shall apply the following verification procedure:

1. The authorities of the Member State shall test one single unit.
2. The boiler model shall be considered to comply with the requirements set out in Annex I, as applicable, to this Regulation, if its seasonal space heating energy efficiency  $\eta_{\text{SH}}$  is not less than the target value minus 8%, established in accordance with Annex II.

In addition, the combination boiler model shall be considered to comply with the requirements set out in Annex I, as applicable, to this Regulation, if its water heating energy efficiency  $\eta_{\text{WH}}$  does not fall below the target value minus 8%, established in accordance with Annex II.

3. If the result referred to in point 2 is not achieved, the market surveillance authority shall randomly select three additional units for testing.
4. The boiler model shall be considered to comply with the requirements set out in Annex I, as applicable, to this Regulation, if its seasonal space heating energy efficiency  $\eta_{\text{SH}}$  is not less than the target value minus 5%, established in accordance with Annex II.

In addition, the combination boiler model shall be considered to comply with the requirements set out in Annex I, as applicable, to this Regulation, if its water heating energy efficiency  $\eta_{\text{WH}}$  does not fall below the target value minus 5%, established in accordance with Annex II.

5. If the results referred to in point 4 are not achieved, the model shall be considered not to comply with this Regulation.

In addition to the procedure set out in Annex II, Member State authorities shall use reliable, accurate and reproducible measurement and calculation procedures, which take into account the generally recognised state-of-the-art measurement methods, including methods set out in documents the reference numbers of which have been published for that purpose in the Official Journal of the European Union.