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Concept design

Evaluation Guideline

For the Kiwa product certificate for Delivery Sets

Preface Kiwa

This evaluation guideline is put together by the Board of Experts (CWK) of Kiwa, in which relevant parties in the area of delivery sets are represented. This Board also supervises the certification activities and where necessary requires the evaluation guideline to be revised. All references to the Board of Experts in this evaluation guideline pertain to the above mentioned Board of Experts.

This evaluation guideline will be used by Kiwa in conjunction with the Kiwa Regulations for Certification, in which the general rules of Kiwa are laid down by certification.

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Validation

This evaluation guideline has been validated by the Director Certification and Inspection of Kiwa on **Date**

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1 Introduction

1.1 General

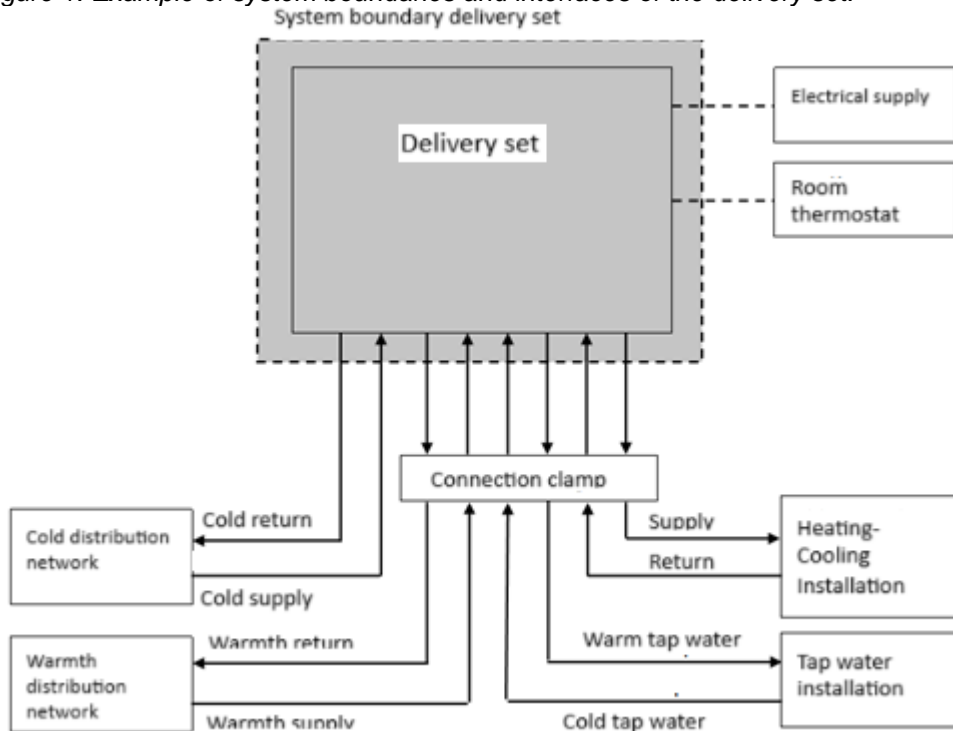
This evaluation guideline includes all relevant requirements which are employed by Kiwa when dealing with applications for the issue and maintenance of a product certificate intended for delivery sets.

For the performance of its certification work, Kiwa is bound to the requirements as included in NEN-EN-ISO/IEC 17065.

1.2 Field of application / scope

The products are intended to be used as individual delivery sets for delivery of heating and/or cooling and/or warm tap water to clients connected to a distribution network, with a maximum thermal power of 100kW and a maximum decreased flow from the distribution network of 3 m³/h.

Figure 1: Example of system boundaries and interfaces of the delivery set.



1.3 Acceptance of test reports provided by the supplier

If the supplier reports from test institutions or laboratories to prove that the products meet the requirements of this evaluation guideline, the supplier shall prove that these reports have been drawn up by an institution that complies with the applicable accreditation standards, namely:

- NEN-EN-ISO/IEC 17020 for inspection bodies;
- NEN-EN ISO/IEC 17021-1 for certification bodies certifying systems;
- NEN-EN-ISO/IEC 17024 for certification bodies certifying persons;
- NEN-EN-ISO/IEC 17025 for laboratories;
- NEN-EN-ISO/IEC 17065 for certification bodies certifying products.

Remark

This requirement is considered to be fulfilled when a certificate of accreditation can be shown, issued either by the Board of Accreditation (RvA) or by one of the institutions with which an agreement of mutual acceptance has been concluded by the RvA. The accreditation shall refer to the examinations as required in this evaluation guideline. When no certificate of accreditation can be shown, Kiwa shall verify whether the accreditation standard is fulfilled.

1.4 Quality declaration

The quality declaration based on this BRL shall be described as a Kiwa product certificate.

A model of the certificate to be issued on the basis of this evaluation guideline has been included for information as Annex.

2 Terms and definitions

2.1 General definitions

In this evaluation guideline, the following terms and definitions apply:

- **Delivery Set:** a device through which energy-transfer to a user for heating and/or cooling between a distribution network and indoor installation or an indoor piping systems takes place.
- **Evaluation guideline (BRL):** the agreements entered into in the Board of Experts Watercycle (CWK) about the subject matter of certification;
- **Certification mark:** a protected trademark of which the authorization of its use is granted by Kiwa to the supplier whose products can be deemed to comply with the applicable requirements on delivery. A label specifically designed for this purpose specifying the quality information about the application of the product may be added, based on the result as laid down in the report issued by Kiwa about the inspection of the prototype;
- **Board of Experts:** the Board of Experts Watercycle (CWK);
- **Inspection tests:** tests carried out after the certificate has been granted in order to ascertain that the certified products continue to meet the requirements recorded in the evaluation guideline;
- **Drinking water:** water intended or intended as well for drinking, cooking or food preparation or other household purposes, with the exception of hot tap water, which is made available to consumers or other customers by means of pipe lines (source Dutch Drinking Water Act);
- **Drinking water installation:** an installation directly or indirectly connected to the public drinking water distribution network of a drinking water company (source Dutch Drinking Water Act);
- **Installation:** configuration consisting of the pipe work, accessories, fittings and appliances;
- **IQC scheme (IQCS):** a description of the quality inspections carried out by the supplier as part of their quality system;
- **Tap water:** water intended for drinking, cooking or food preparation or other household purposes;
Remark: Tap water can refer to drinking water, warm tap water or household water;
- **Supplier:** party responsible for ensuring that the products covered by a certificate continuously comply with the requirements on which certification is based;
- **Private label certificate:** A certificate that only specifies products that are also included in the product certificate of another supplier that has been certified by Kiwa, the only difference being that the products and product information of the private label holder bear a brand name that belongs to the private label holder;
- **Product certificate:** a document in which Kiwa declares that a product may, on delivery, be deemed to comply with the product specifications recorded in the product certificate;
- **Product requirements:** requirements made specific by means of measures or figures, focused on (identifiable) characteristics of products and which contain a limiting value to be achieved that can be calculated or measured in an unequivocal manner;
- **Initial investigation:** The initial assessment of the supplier and the evaluation of the products for the first issue of a certificate;

2.2 Technical definitions

- **Distribution network:** One or more liquid piping systems for delivery of heating and/or cooling to the delivery kit;
- **Solo-water heater:** A device that is built exclusively to heat tap water to a certain temperature independently;
- **Water heater (boiler)** A water heater, built to heat the water present in a storage tank up to a certain temperature and maintain that temperature;
- **Instant water heater (geyser)** A solo water heater, built to heat the flowing water during the tapping up to a certain temperature
- **Combination device:** A device that combines the functions for central heating and water heating and in which both functions are carried out using the same burner system.
- **Application category:** A classification of the device based on its application possibilities, indicated with a number/letter combination;
- **Tap threshold:** The smallest tap water volume flow with which the device delivers warm tap water;
- **Nominal load:** Load under reference conditions according to manufacturer's specifications. In the case of devices with a loading range, both minimum and maximum settings will be considered.
- **CW (Comfort Warm Water) tap flow:** The warm water tap volume flow delivered according to the manufacturer's specifications under reference conditions at a temperature increase of 50 K at the tap water outlet of the device;
- **Tap resistance waterside:** The difference in pressure that occurs between the tap water inlet and outlet connections of the device, when applying the CW flow;
- **Idle state:** The state assumed by the device if there is no cold or warm water delivered by the device for 24 hours;
- **Specific piping length:** The maximum piping length for the kitchen tap point according to the manufacturer's specifications, rounded up to entire meters;
- **Waiting time:** The time required from the start of tapping to achieve a continuous temperature increase of 35 K at the device outlet when applying the prescribed tap flow;
- **Preheating time:** The time required from the start of tapping to achieve a continuous temperature increase of 45 K at the device outlet when applying the CW tap flow;
- **Heating time:** The time required from the start of tapping to achieve a continuous temperature increase of 50 K at the device outlet when applying the CW tap flow;
- **Tapping efficiency** The proportion between the load and the ability of the device for the preparation function of warm tap water;
- **Efficiency of use tap water:** The tapping efficiency under the application of the standard tapping program of the application category in question with central heating function (if present) switched off;
- **Annual efficiency of use tap water:** The efficiency of use for tapping water in combination devices, determined by application of summer as well as winter conditions with regard to the central heating function;
- **Technically identical series:** Technically identical series means that the delivery sets must be composed of main components with the same construction principle (for example: type of heat exchanger, type of electronic controller, type of control valve, existence/non existence of hydraulic separation on central heating, pump, etc.). Example: delivery sets with different control valves or existence/non existence of hydraulic separation of central heating are there not considered as one series. Delivery sets with heat exchangers or control valves of the same type but with different capacities, are considered, however, as one series.

3 Procedure for granting a product certificate

3.1 Initial investigation

The initial investigation to be performed are based on the (product) requirements as contained in this evaluation guideline, including the test methods, and comprises the following:

- type testing to determine whether the products comply with the product and/or functional requirements;
- production process assessment;
- assessment of the quality system and the IQC-scheme;
- assessment on the presence and functioning of the remaining procedures.

3.2 Granting the product certificate

After finishing the initial investigation, the results are presented to the Decision maker (see 9.2) deciding on granting the certificate. This person evaluates the results and decides whether the certificate can be granted or if additional data and/or tests are necessary.

3.3 Investigation into the product and/or performance requirements

Kiwa will investigate the to be certified products against the certification requirements as stated in the certification requirements.

The necessary samples will be drawn by or on behalf of Kiwa.

3.4 Production process assessment

When assessing the production process, it is investigated whether the producer is capable of continuously producing products that meet the certification requirements.

The evaluation of the production process takes place during the ongoing work at the producer.

The assessment also includes at least:

- The quality of raw materials, half-finished products and end products;
- Internal transport and storage.

3.5 Contract assessment

If the supplier is not the producer of the products to be certified, Kiwa will assess the agreement between the supplier and the producer.

This written agreement, which is available for Kiwa, includes at least:

Accreditation bodies, scheme managers and Kiwa will be given the opportunity to observe the certification activities carried out by Kiwa or on behalf of Kiwa at the producer.

4 Product requirements

4.1 General

This chapter contains the requirements the delivery set must meet as well as the determination methods to establish that the requirements are being met. The delivery sets are intended to be used as individual delivery sets for delivery of heating and/or cooling and/or warm tap water to clients connected to the distribution network, with a maximum thermal power of 100kW and a maximum decreased flow from the distribution network of 3 m³/h.

The functional requirements are based on the conditions in accordance with 5.1.1 and 5.1.2, unless specified otherwise.

4.2 Public law requirements

4.2.1 *Suitability for contact with drinking water*

Products and materials which (may) come into contact with drinking water or warm tap water, shall not release substances in quantities which can be harmful to the health of the consumer, or otherwise negatively affect the quality of the water. Therefore, the products or materials shall meet toxicological, microbiological and organoleptic requirements as laid down in the currently applicable "Ministerial Regulation materials and chemicals drinking water and warm tap water supply", (published in the Government Gazette). Consequently, the procedure for obtaining a recognized quality declaration, as specified in the currently effective Regulation, has to be concluded with positive results. Products or materials with a quality declaration¹, issued by a foreign certification institution, are allowed to be used in the Netherlands, provided that the Minister has declared this quality declaration equivalent to the quality declaration as meant in the Regulation.

4.2.2 *Electrotechnical safety*

Applied electronic equipment shall comply with the Low Voltage Directive, which aims to ensure that electrical equipment on the market meets the requirements that provide a high level of protection to the health and safety of persons as well as the Electromagnetic Compatibility Directive, which limits the power of equipment to function satisfactorily in its electromagnetic environment without itself creating electromagnetic disturbances that are inadmissible by other equipment in that environment.²

¹ The "Regulation" (article 16) establishes: "A quality declaration issued by an independent certification institute in another member state of the European Union or another state party to the agreement to the European Economic Area, is equivalent to a recognized quality declaration, to the extent that, to the judgment of the Minister of the first mentioned quality declaration, at least equivalent requirements as referred to in this regulation."

² A "Declaration of Conformity" (CE) must be submitted during the (initial) inspection as evidence.

4.3 Private law requirements

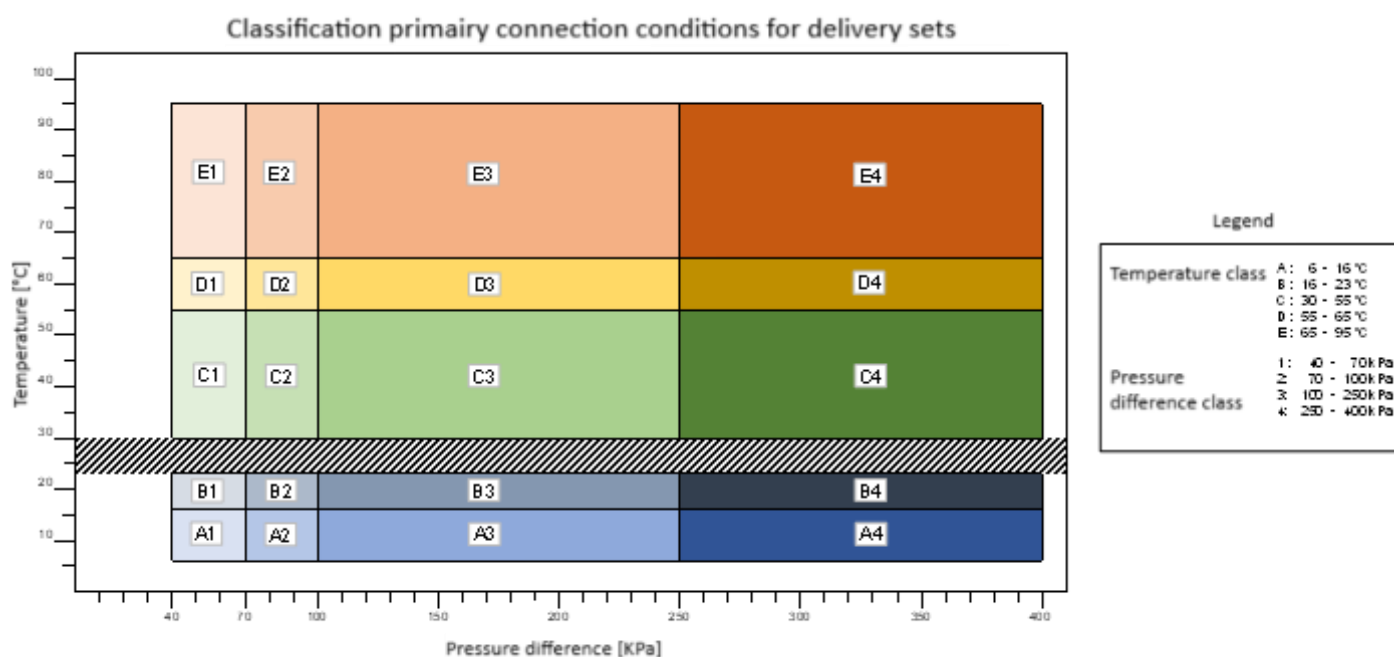
4.3.1 Application category

For admission to a certain application category, the device shall meet all applicable requirements stipulated in these criteria. In principle, the manufacturer will specify beforehand the application category for the device, based on which the correct requirements and testing methods can be applied.

4.3.1.1 Network ranges

The network range indicates the classification of the primary connection conditions. 20 ranges have been defined as per Figure 2. A delivery set can be suitable for multiple, adjacent or non-adjacent types/ranges. A delivery set meets the specified network range(s) if it complies with all functional requirements specified in this document at the extremes of the range(s) in question. In the case of adjacent ranges, the extremes of these combined ranges will be verified. Manual adjustments to settings or configuration of the delivery set are not allowed within the specified range(s).

Figure 2: Network ranges - classification of primary network range conditions



4.3.1.2 Tap water classifications

The tap water classification indicates the classification of the minimal tap flow and tap water temperature. The division in accordance with the application classification is based on the following functional characteristics of the device in question:

1. a tap flow of at least 7.5 l/min. @ 60 °C (with reference to CW4);
2. a tap flow of at least 9.0 l/min. @ 60 °C (with reference to CW5);
3. a tap flow of at least 12.5 l/min. @ 60 °C (with reference to CW6a);
4. a tap flow of at least 16.5 l/min. @ 60 °C (with reference to CW6);

4.3.2 Documentation

The device shall be accompanied by a documentation package with instructions for the installer and the user.

4.3.3 Waterside connections

The connection of the delivery sets that consists of flanges shall comply with the applicable part of NEN-EN1092.

The connections of the delivery set that have been made as straight thread comply with ISO 228-1. The connections of the delivery set that have been made as pipe ends comply with ISO 274.

4.3.4 Tap waterside resistance

The tap waterside resistance that, applying the tap water class, does not exceed the value specified by the manufacturer, with a maximum of 50 kPa in tap water classes 1 and 2. With a maximum of 60 kPa in tap water classes 3 and 4. This will be tested according to section 5.2.

4.3.5 Waiting times

The waiting times start when tapping is begun, determined (measured or calculated) at the tap water outlet of the device and until a continuous temperature increase has been achieved.

Within 10 seconds of starting the tapping, the continuous temperature increase shall be at least 40K. Within 30 seconds of starting the tapping, the continuous temperature increase shall be at least 47K. This will be tested according to section 5.3.

4.3.6 Sound production

The sound production will never exceed 43dB (A) in any of the test conditions. This will be tested according to section 5.4.

4.3.7 Impact resistance of the protective cover

The protective cover must be impact resistant as described in 5.5.

- Bahco test;

The following acceptance criteria apply to this test:

- A dent may have appeared in the protective cover, however, this dent may not lead to the inability of mounting the protective cover;
- The protective cover must be able to be re-assembled in such a way that no internal components of the delivery set can be accessed without tools;
- The protective cover must be able to be sealed again;
- A hole or tear in the protective cover is unacceptable.

4.3.8 Tap water class

In the tap water class, it must be possible to tap continuously for 5 minutes with an average temperature increase of at least 50K. The verified value of the tap water class as per section 5.6 during the test shall not be lower than the value specified by the manufacturer.

4.3.9 Uniformity warm tap water temperature

The temperature of the outflowing water shall not vary more than 3K, with the assumption of an outflow temperature of 60°C. The requirement applies after a stabilization period of 60 seconds after starting the tapping. This will be tested according to section 5.6.

4.3.10 **Determination of the tap threshold**

The tap threshold is determined by an increasing flow according to the test method described in section 5.7 and will be maximum 2 l/min.

4.3.11 **Standstill consumption - Thermal**

Loss of energy in the auto function (heat maintenance setting of the tap water exchanger)

- Without tank - no more than 600 Wh/24h, which is equal to an average of 25 Watt;
- With tank - tank with minimally a B Energy Label.

This will be tested according to section 5.8.

4.3.12 **Standstill consumption - Electrical**

The electric standstill consumption does not exceed 120 Wh/24h, which is equal to an average of 5 Watt for a delivery set without tank. The consumption of electricity in the auto function (heat maintenance position of the tap water exchanger) is determined in accordance with section 5.9.

If there is a tank present, it will be verified if the above requirement is met when the tank has been put out of order (for example due to disconnecting the electricity or to set the setpoint for heat maintenance of the tank below 10°C).

4.3.13 **Electricity consumption during operation**

The maximum values for average electricity consumption are specified below. There is a distinction between direct and indirect delivery sets. The electrical post-heating is not considered in the assessment.

The average electricity consumption during operation is determined in accordance with section 5.10.

	Maximum energy consumption per 24 hours
Direct set (set without hydraulic separator between primary network and central heating side)	75 Wh
Indirect set (set with hydraulic separator between primary network and central heating side)	175 Wh

4.3.14 **Constancy differential pressure**

The differential pressure in case of increasing flow shall not deviate more than approx. 20% between minimum and maximum flow.

- for maximum flow, retain the design flow.
- for minimum flow, retain 10% of the design flow.

This will be tested according to section 5.11.

4.3.15 **Accuracy central heating control**

In the case of a delivery set with a hydraulic separator between the primary network and the home installation, same will dispose of a central heating control.

The central heating control must be able to deliver within 5 minutes a stable continuous central heating supply temperature. The maximum deviation shall not exceed approx. 3°C.

This will be tested according to section 5.12.

4.3.16 Corrosion resistance

The applied materials that enter into contact with drinking water shall be corrosion-resistant or protected against corrosion.
They shall not result in mutual corrosion.

4.3.16.1 Corrosion resistant protective layers

Where applicable, the applied corrosion-resistant protective layers and paint systems shall comply with the requirements of Kiwa evaluation guideline BRL-K759 "Coating systems for drinking water installations".

Remark:

Note: If a coating is applied that is included in a Kiwa product certification agreement in accordance with BRL-K759, this condition is deemed to have been met.

4.3.16.2 Enamel coating

Enamel coating and the cathodic protection to be applied shall comply with DIN 4753 - 3

4.3.17 Rubber sealing materials

Where applicable, rubber sealing materials that will enter into contact with drinking water, shall comply with the requirements of Kiwa evaluation guideline BRL-K17504 "Vulcanized rubber sealing rings for drinking water pipes".
Natural rubbers (NR) and isoprene rubbers (IR) are not allowed.

Remark: Note: If a rubber is applied that is included in a Kiwa product certification agreement in accordance with BRL-K17504, this condition is deemed to have been met.

4.3.18 Heat exchangers

Where applicable, heat exchangers that enter into contact with drinking water shall comply with the requirements of Kiwa evaluation guideline BRL-K656 "Heat exchangers for the direct adjustment of drinking water temperatures".

Remark: Heat exchangers included in a Kiwa product certificate with Watermark will be deemed to have met this requirement.

4.3.19 Metal pipes

Metal pipes that enter into contact with drinking water shall comply with the requirements of Kiwa evaluation guideline BRL-K760 for copper pipes and Kiwa evaluation guideline BRL-K762 for stainless steel pipes.

Remark: Metal pipes included in a Kiwa product certificate with Watermark will be deemed to have met this requirement.

4.3.20 Metal fittings

The connecting ends of compound products that consist of fittings that enter into contact with drinking water, shall comply with the requirements of Kiwa evaluation guidelines BRL-K623; K639 or K640.

Remark: Metal fittings included in a Kiwa product certificate with Watermark will be deemed to have met this requirement.

4.3.21 Hygienic treatment of products in contact with drinking water

The supplier must have a procedure in place that protects the products in such a way that hygiene is ensured during storage and transport.

In addition, the supplier shall inform the customer about the handling of products delivered under a certificate, which come into contact with drinking water and warm tap water, from arriving at the construction site through to the realization and commissioning. The primary reason for providing this information is to contribute to the awareness of the importance of hygienic working as a “prevention measure”.

5 Test methods

5.1 General

All test conditions and settings will be determined or established at the system boundary. For the frame of the system boundary, please see Figure 1.

5.1.1 General test conditions

Test conditions refer to the circumstances offered to the delivery set during the tests. The reference conditions are laid down *in BRL GASKEUR basislabel CV* (Central Heating) for Central Heating Appliances, with the exception of:

- Tap water inlet pressure: 200 kPa (+/- 10 kPa; overpressure);
- Tap water inlet temperature: 10°C (+/- 0.5K);
- Environmental temperature 20°C (+/- 3K);
- Central Heating return temperature primary supply temperature minus 25K, with a minimum of 30°C

5.1.2 General test settings

Test settings refer to the set nominal values of the delivery set that prior to the execution of the test are configured for the delivery set, inasmuch as these settings are not present from factory.

- Pressure difference at secondary side 20 kPa;
- Central heating temperature control primary supply temperature minus 5K;
- Temperature at CW tap flow 60 °C at the tap water outlet from the device;
- Maintenance or auto functions switched on, minimum primary supply temperature minus 5K ($T_{\text{prim}} - 5\text{K}$), with a maximum of 50°C

5.1.3 Primary network conditions

The test are carried out under network conditions that are consistent with the network ranges specified by the manufacturer. In the case of adjacent types/ranges, these can be combined, and the most extreme conditions are tested for these combined types/ranges. By extremes the following pressure difference-temperature combinations are meant.

Testing condition	Pressure difference	Temperature
Minimum	Minimum of the (lowest) network range	Minimum of the (lowest) network range
Maximum	Maximum of the (highest) network range	Maximum of the (highest) network range

Per network range or combination of adjoining network ranges the functional tests are performed twice as follows: 1 time under minimal conditions, 1 time under maximum conditions.

The following example serves for clarification:

The minimum testing condition for delivery sets that comply with Network Ranges C2 and C3, has a temperature of 30°C with a pressure difference of 70kPa. For maximum testing condition 55 °C at 250 kPa must be used. The delivery set must meet the functional requirements of chapter 4.3.1.1 in both the minimum and maximum testing conditions.

5.1.4 Test conditions and measuring equipment

Temperature and flow measurements of the tap water are performed at (the applicable) tap water outlet of the device. This device is provided for that purpose with a fast

opening tap with negligible flow resistance. For its connection to the device, a pipe of no more than 20 cm must be used with a diameter that minimally is equal to the diameter of the device outlet.

Time dependent temperature measurements must be carried out with thermometers with a time constancy of 1 s determined in still water and with a measuring inaccuracy of approx. 0.1 K at the most.

Water flow measurements must be performed with an inaccuracy of no more than approx. 1%.

Pressure difference measurements must be performed with an inaccuracy of no more than approx. 2%.

5.2 Determination tap waterside resistance

According to the specifications in the installation instructions about connections in situations with a (very) low water pressure, a possibly present flow restrictor will be removed or completely opened. The tap water outlet will be provided with a control valve, set to correct in the CW-tap flow. For its connection to the device, a pipe of no more than 20 cm may be used with a diameter that minimally is equal to the diameter of the device outlet. Set the tap water inlet pressure at a pressure of 150kPa (overpressure) in the CW tap flow. Subsequently, determine the pressure difference at the tap water side between the inlet and the outflow connections of the device and verify if section 4.3.4 is being met.

5.3 Waiting times tap water

From the idle state a tapping with a flow of the tap class in question is performed for a duration of 60 seconds. Subsequently it will be verified if the requirement of section 4.3.5 for heating time is being met.

5.4 Sound production

To determine the produced sound emission the standard for the determination of the sounds emission of boilers are used.

The device will be placed in the sound room according to figure A.2 from EN15036-1: 2006, after which the sound emissions will be measured in accordance with ISO 3741-1.

To perform the test, all hydraulic circuits of the heat delivery set will be filled with water. For the hydraulic circuit for district heating, the prescribed pressure difference will be offered.

In none of the defined circumstances the sound production requirement may be exceeded:

- Device in stand-by;
- Device with tap demand and maximum one tap flow;
- Device with central heating demand;
- Transition from stand-by to central heating demand;
- Transition from stand-by to tap demand;
- Transition from central heating demand to tapping demand;
- Transition from tapping demand to central heating demand;

The test are carried out under:

- minimal network conditions of the network range in question.
- design tap water class
- central heating flow of 450 l/h

Subsequently it will be verified if the requirement of section 4.3.6 for sound production is being met.

5.5 Impact resistance and of the protective cover

5.5.1 Bahco test

While being serviced, the protective cover shall be removed. This protective cover will be placed somewhere in the available space. In that case it may occur that a Bahco tool falls on the protective cover. This will be simulated with a free fall test of a defined weight. A weight of 680 grams with measurements as described in figure 1 in ASTM D 6344-98 - Standard Test Method for Concentrated Impacts to Transport Packages, the weight will be positioned above the protective cover, after which it will make a controlled free fall. A test assembly for the controlled free fall is described as well in AMST D-6344-98 (see annex E.3).

Test description:

- The part of the protective cover that is being removed to access the parts of the delivery set, will be placed on a flat surface floor with the outside of the protective cover pointing upwards;
- Subsequently, the weight is dropped from a height of 70 cm above the protective cover onto the center of the protective cover;
- After the test, the damage of the protective cover will be assessed and the protective cover is reinstalled on the delivery set.
- Subsequently, it is evaluated if the acceptance criteria of section 4.3.7 are being met.

5.6 Uniformity warm tap water

The device will be put into operation from the idle state with the flow according to section 5.3.

With the assistance of registration equipment, a period of at least 6 minutes will be registered as of the moment tapping is started.

Verify if the requirements of section 4.3.9 are being met, without taking into consideration a stabilization period of 60 seconds at the beginning of the tapping.

In the following Figure 3 there is an example of the test waiting times during the first minute of tapping, and the uniformity test during the remaining time.

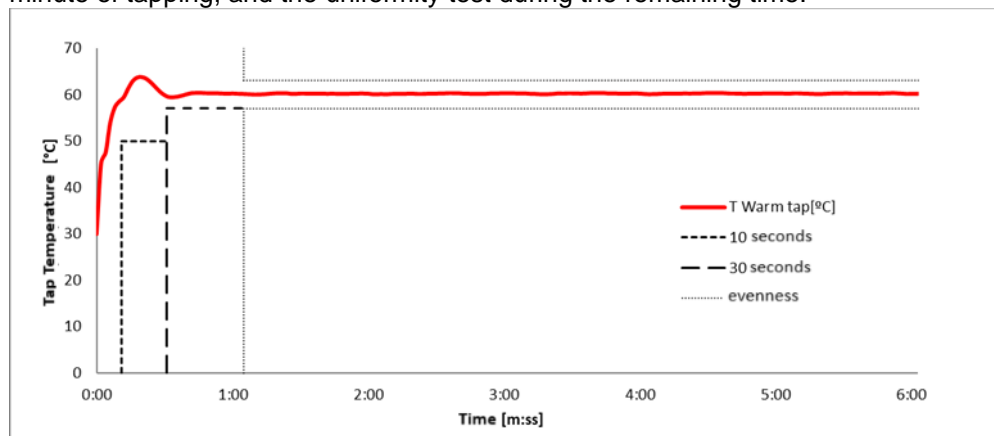


Figure 3: Temperature progression tap water

5.7 Determination of the tap threshold

Perform a tapping according to the settings, in which the flow is phased out and increased again by approx. 0.5 l/min. The flow starts with 3l/m and will be gradually reduced in 3 minutes to 0 l/min, after which the flow is increased gradually in 3 minutes.

The measurements will be performed with the following settings:

	Setting for Measurement
Minimum primary supply temperature	Per class, according to Figure 2
Minimum differential pressure	Per class, according to Figure 2

5.8 Standstill consumption - Thermal

By means of a 24-hours measurement, the standstill consumption of the delivery set is demonstrated. During this measurement no tap water supply or supply to Central Heating take place. The standstill consumption is determined by measuring the energy loss between the primary supply and return during the measuring period. This is done by employing external measuring sensors as well as a thermometer provided by the supplier. The measurement is carried out in the comfort stand.

The measurements will be performed with the following settings:

Setting for Measurement	
Minimum primary supply temperature	Per class, according to Figure 2
Minimum differential pressure	Per class, according to Figure 2
Heat maintenance temperature	Minimum primary supply temperature - 5K with a maximum of 50°C

Electricity consumption of electronic delivery sets is measured as well and converted into average electric power.

The results will be presented in the form of graphics with temperatures, pressure differences, flows and power.

The average thermal registered power during the test will be verified to ensure it meets the requirements of 4.3.11.

5.9 Standstill consumption - Electrical

The average electric registered power (Watt) will be measured over a period of 24 hours. In this period the heat maintenance function of the delivery set is active, and no tap water or central heating are extracted.

The average electric registered power during the test will be verified to ensure it meets the requirements of 4.3.12.

5.10 Electricity consumption during operation

The electricity consumption (Wh) during tap operations (E_{tap}) will be measured during the 24 hours tap pattern NTA8800 Table T.2 -- Basic tap pattern.

The electricity consumption (Wh) during tap operations (E_{tap}) will be measured during the 24 hours central heating pattern in Annex III: Central heating profile

The 24 hours electricity consumption (Wh) during operations ($P_{company}$) will subsequently be determined by the following formula.

$$E_{bedrijf} = E_{tap} + \frac{1}{2} E_{cv}$$

Device with a tank

Devices equipped with a tank will be tested as well in accordance with the above mentioned method. However, the tank has been put out of operation during the test (for example, by disconnecting the electricity or by setting the setpoint for heat maintenance of the tank below 10°C).

Room thermostat connection

If the set has a room thermostat connection, it must be connected and switched using a make-break contact in accordance with the central heating demand in appendix ABCD.

Settings pressure difference central heating supply

The pressure difference for central heating is set in accordance with section 5.1.2.

Setting test temperature central heating

The setting for the central heating is set in accordance with section 5.1.2.

The delivery set will be tested with a central heating return temperature in accordance with section 5.1.1.

5.11 Constancy differential pressure

The pressure difference is measured with the entire flow range, which means that the measurement starts at 0 l/h and the flow is gradually increased during a period of 10 minutes until the design flow is reached. After reaching the design flow, the flow is decreased in approx. 10 minutes to 0 l/h.

By means of two measurements for the minimum and maximum pressure differences applicable to the network ranges, it is checked whether the requirements of section 4.3.14 are being met.

5.12 Accuracy central heating control

During 3 measurements the supply temperature control will be tested by changing the central heating demand through the thermostat control in accordance with the following measuring series scheme. During this measurement, tap water is not operational.

<i>Time (seconds)</i>	<i>Setting central heating (l/h)</i>
0	450
600	0
1200	75
1800	0
2400	200
3000	0

Verification whether the delivery set meets the requirements of section 4.3.15 is carried out.

6 Marking

6.1 General

At least the following marking and indications shall be clearly and permanently indicated on every product:

- name of manufacturer and/or registered trademark;
- (unique) production number;
- model name;
- pressure class distribution network (PN):
- article code;
- tap water class;
- class of water supply network.

6.2 Certification mark

After concluding a Kiwa certification agreement, the certified products shall be permanently and indelibly marked with the certification mark.

For products intended for contact with drinking water:

The Kiwa Water Mark “**KIWA** ”.

7 Requirements in respect of the quality system

This chapter contains the requirements which have to be met by the supplier's quality system.

7.1 Manager of the quality system

Within the supplier's organizational structure, an employee who will be in charge of managing the supplier's quality system must have been appointed.

7.2 Internal quality control/quality plan

The supplier shall have an internal quality control scheme (IQC scheme) which is applied by him.

The following must be demonstrably recorded in this IQC scheme:

- which aspects are checked by the supplier;
- according to what methods such inspections are carried out;
- how often these inspections are carried out;
- in what way the inspection results are recorded and kept.

This IQC scheme should at least be an equivalent derivative of the model IQC scheme as shown in the Annex.

7.3 Control of test and measuring equipment

The supplier shall verify the availability of necessary test and measuring equipment for demonstrating product conformity with the requirements in this evaluation guideline.

When required the laboratory and measuring equipment shall be kept calibrated at specified intervals.

The status of actual calibration of each equipment shall be demonstrated by traceability through an unique ID.

The supplier must keep records of the calibration results.

The supplier shall review the validity of measuring data when it is established at calibration that the equipment is not suitable anymore.

7.4 Procedures and working instructions

The supplier shall be able to submit the following:

- procedures for:
 - dealing with products showing deviations;
 - corrective actions to be taken if non-conformities are found;
 - dealing with complaints about products and/or services delivered;
- the working instructions and inspection forms used.

7.5 Other requirements

The supplier shall be able to submit the following:

- the organisation's organogram;
- qualification requirements of the personnel concerned.

8 Summary of tests and inspections

This chapter contains a summary of the following tests and inspections to be carried out in the event of certification:

- **initial investigation:** tests in order to ascertain that all the requirements recorded in the evaluation guideline are met;
- **inspection test:** tests carried out after the certificate has been granted in order to ascertain whether the certified products continue to meet the requirements recorded in the evaluation guideline;
- **inspection of the quality system of the supplier:** monitoring compliance of the IQC scheme and procedures.

8.1 Test Matrix

Description of requirements	Article no of BRL	Testing within the scope:	
		Pre-certification	Inspection by Kiwa after granting of certificate a,b)
Public law requirements			
Suitability for contact with drinking water	4.2.1	X	X
Electrotechnical safety	4.2.2	X	X
Private law requirements			
Class of application	4.3.1	X	X
Documentation	4.3.2	X	X
Water side connection	Error! Reference source not found.	X	X
Tap water	4.3.4	X	X
Waiting time	4.3.5	X	X
Sound production	4.3.6	X	X
Impact resistance of the protective cover	4.3.7	X	X
Tap water class	4.3.8	X	X
Uniformity warm tap water temperature	4.3.9	X	X
Determination of the tap threshold	4.3.10	X	X
Standstill consumption – Thermal	4.3.11	X	X
Standstill consumption – Electrical	4.3.12	X	X
Electricity consumption during operation	4.3.13	X	X
Accuracy central heating control	4.3.15	X	X
Constancy differential pressure	4.3.14		
Corrosion resistance	4.3.16	X	X
Rubber sealing materials	4.3.17	X	X
Heat exchangers	4.3.18	X	
Metal pipes	4.3.19	X	
Metal fittings	4.3.20	X	
Hygienic treatment of products in contact with drinking water	4.3.21	X	X

Description of requirements	Article no of BRL	Testing within the scope:	
		Pre-certification	Inspection by Kiwa after granting of certificate a,b)
Certification mark			
General	6.1	X	X
Certification mark	6.2	X	X

- a. In case the product or production process changes, it must be, in consultation with supplier and Kiwa, determined whether the performance requirements are still met.
- b. All product characteristics that can be determined within the visiting time (maximum 1 day) are determined by the inspector or by the supplier in the presence of the inspector. The frequency of inspection visits is defined in chapter 9.6 of this evaluation guideline.

8.2 Inspection of the quality system of the supplier

The quality system of the supplier will be checked by Kiwa on the basis of the IQC scheme.

The inspection contains at least those aspects mentioned in the Kiwa Regulations for Certification.

9 Agreements on the implementation of certification

9.1 General

Beside the requirements included in these evaluation guidelines, the general rules for certification as included in the Kiwa Regulations for Product Certification also apply. These rules are in particular:

- the general rules for conducting the pre-certification tests, in particular:
 - the way suppliers are to be informed about how an application is being handled;
 - how the test are conducted;
 - the decision to be taken as a result of the pre-certification tests.
- the general rules for conducting inspections and the aspects to be audited,
- the measures to be taken by Kiwa in case of Non-Conformities,
- the measures taken by Kiwa in case of improper use of Certificates, Certification Marks, Pictograms and Logos,
- terms for termination of the certificate,
- the possibility to lodge an appeal against decisions of measures taken by Kiwa.

9.2 Certification staff

The staff involved in the certification may be sub-divided into:

- Certification assessor (**CAS**): in charge of conducting design and documentation assessments, attestation studies, approvals, assessing applications and reviewing conformity assessments;
- Site assessor (**SAS**): in charge of carrying out external inspections at the supplier's works;
- Decision maker (**DM**): in charge of taking decisions in connection with the pre-certification tests carried out, continuing the certification in connection with the inspections carried out and taking decisions on the need to take corrective actions.

9.2.1 Qualification requirements

The qualification requirements consist of:

- qualification requirements for personnel of a certification body which satisfies the requirements EN ISO / IEC 17065, performing certification activities
- qualification requirements for personnel of a certification body performing certification activities set by the Board of Experts for the subject matter of this evaluation guideline

Education and experience of the concerning certification personnel shall be recorded demonstrably.

Basic requirements	Evaluation criteria
Knowledge of company processes Requirements for conducting professional audits on products, processes, services, installations, design and management systems.	<i>Relevant experience: in the field</i> SAS, CAS : 1 year DM : 5 years inclusive 1 year with respect to certification Relevant technical knowledge and experience on the level of: SAS : High school CAS, DM : Bachelor

Basic requirements	Evaluation criteria
Competence for execution of site assessments. Adequate communication skills (e.g. reports, presentation skills and interviewing technique).	SAS: Kiwa Audit training or similar and 4 site assessments including 1 autonomic under review.
Execution of initial examination	CAS: 3 initial audits under review.
Conducting review	CAS: conducting 3 reviews

Technical competences	Evaluation Criteria
Education	General: Education in one of the following technical areas: <ul style="list-style-type: none"> • Civil Engineering; • Engineering. • LAC- Lead Auditor Course
Testing skills	General: <ul style="list-style-type: none"> • 1 week laboratory training (general and scheme specific) including measuring techniques and performing tests under supervision ; • Conducting tests (per scheme).
Experience - specific	CAS <ul style="list-style-type: none"> • 1 complete application self-reliant (to be evaluated by PM) • 3 complete assessments of the production site (excl. the initial audit of a production location) under the direction of a CAS • 2 initial assessment of the production site under supervision by PM SAS <ul style="list-style-type: none"> • 3 inspection visits together with a qualified SAS • 2 inspection visits conducted self-reliant (evaluated by PM)
Skills in performing witnessing	PM Internal training witness testing

Legenda:

- Certification assessor (**CAS**);
- Decision maker (**DM**);
- Product manager (**PM**);
- Site assessor (**SAS**).

9.2.2 Qualification

The qualification of the Certification staff shall be demonstrated by means of assessing the education and experience to the above mentioned requirements. In case staff is to be qualified on the basis of deflecting criteria, written records shall be kept.

The authority to qualify staff rests with the:

- **PM:** qualification of **CAS** and **SAS**;
- management of the certification body: qualification of **DM**.

9.3 Report initial investigation

The certification body records the results of the initial investigation in a report.

This report shall comply with the following requirements:

- completeness: the report provides a verdict about all requirements included in the evaluation guideline;
- traceability: the findings on which the verdicts have been based shall be recorded and traceable;
- basis for decision: the **DM** shall be able to base his decision on the findings included in the report.

9.4 Decision for granting the certificate

The decision for granting the certificate shall be made by a qualified Decision maker which has not been involved in the pre-certification tests. The decision shall be recorded in a traceable manner.

9.5 Layout of quality declaration

The product certificate shall be in accordance with the model included in the Annex.

9.6 Nature and frequency of third party audits

The certification body shall carry out surveillance audits on site at the supplier at regular intervals to check whether the supplier complies with his obligations. The Board of Experts decides on the frequency of audits.

At the time this BRL entered into force, the frequency of audits amounts 2 audit(s) on site per year for suppliers with a quality management system in accordance with ISO 9001 for their production, which has been certified by an acknowledged body (in accordance with ISO/IEC 17021) and where the IQC scheme forms an integral part of the quality management system.

In case the supplier is not in possession of any product certificate (issued by Kiwa or any other accredited certification body), the frequency is increased to 3 visits for the duration of one year. If during this year no structural non conformities are observed the audit frequency will 2 annually.

The audit program on site shall cover at least:

- the product requirements;
- the production process;
- the suppliers IQC scheme and the results obtained from inspections carried out by the supplier;
- the correct way of marking certified products;
- compliance with required procedures;
- handling complaints about products delivered.

For suppliers with a private label certificate the frequency of audits amounts to one audit per year. These audits are conducted at the site of the private label certificate holder. The audits are conducted at the site of private label holder and focussed on the aspects inserted in the IQC scheme and the results of the control performed by the private label holder. The IQC scheme of the private label holder shall refer to at least:

- the correct way of marking certified products;
- compliance with required procedures for receiving and final inspection;
- the storage of products and goods;
- handling complaints.

The results of each audit shall be recorded by Kiwa in a traceable manner in a report.

9.7 Non conformities

When the certification requirements are not met, measures are taken by Kiwa in accordance with the sanctions policy as written in the Kiwa Regulation for Certification. The Sanctions Policy is available through the “News and Publications” page on the Kiwa website ["Kiwa Regulation for Certification"](#).

9.8 Report to the Board of Experts

De certification body shall report annually about the performed certification activities. In this report the following aspects are included:

- mutations in number of issued certificates (granted/withdrawn);
- number of executed audits in relation to the required minimum;
- results of the inspections;
- required measures for established Non-Conformities;
- received complaints about, of third parties, certified products.

9.9 Interpretation of requirements

The Board of Experts may record the interpretation of requirements of this evaluation guideline in one separate interpretation document.

10 Titles of standards

10.1 Public law rules

BJZ2011048144	Regeling van de Staatssecretaris van Infrastructuur en Milieu ¹
29 juni 2011	
adapted in 2017	
2014/35/EU	Low voltage guideline
2014/30/EU	EMC-Guideline

10.2 Norms / normative documents:

Number	Title	Version*
NEN-EN-ISO/IEC 17020	Conformity assessment - General criteria for the operation of various types of bodies performing inspection	
NEN-EN ISO/IEC 17021	Conformity assessment - Requirements for bodies providing audit and certification of management systems	
NEN-EN-ISO/IEC 17024	Conformity assessment - General requirements for bodies operating certification of persons	
NEN-EN-ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories	
NEN-EN-ISO/IEC 17065	Conformity assessment - Requirements for bodies certifying products, processes and services	
BRL-K623	Plumbing fittings for capillary and/or thread connections to copper	
BRL-K639	Fittings with compression ends for use with copper tubes	
BRL-K640	Fittings to be tightened with matching compression tool, compression- and push fit fittings	
BRL-K656	Heat exchangers intended for the indirect heating of drinking water	
BRL-K759	Coating systems for drinking water applications	
BRL-K760	Copper tubes	
BRL-K762	Steel pipes for the transport of drinking water	
BRL-K17504	Certification of vulcanised rubber products for cold and hot drinking water applications	
ISO-228-1	Pipe threads where pressure-tight joints are not made on the threads – Part 1: Dimensions tolerances and designation	
ISO 274	Waste fittings for sanitary appliances	
ISO 3741-1	Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Precision methods for reverberation test rooms	
DIN 4753-3	Water heaters, water heating installations and storage water heaters for drinking water – Part 3: Corrosion protection on the water side by	
EN 489	District heating pipes – Bonded single and twin pipe systems for buried hot water networks	2009
	Joint assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene	
EN 15036-1	Heating boilers - Test regulations for airborne noise emissions from heat generators - Part 1: Airborne noise emissions from heat generators	2006
NEN-EN 1092	Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated	
NTA 8800	Energy performance of buildings – proving methods – from 01-01-2020	
ASTM D 6344-98	Standard Test Method for Concentrated Impacts to Transport	

*) If no date of issue is indicated in this column, the current version of the document shall apply.

¹ Valid from 1 July 2017

I Model certificate (example)



CERTIFICATE

Product certificate
KXXXXXXX/0X

Issued

Replaces

Page 1 of 1

Name product

STATEMENT BY KIWA

With this product certificate, issued in accordance with the Kiwa Regulations for Certification, Kiwa declares that legitimate confidence exists that the products supplied by

Name customer

as specified in this product certificate and marked with the Kiwa[®]-mark in the manner as indicated in this product certificate may, on delivery, be relied upon to comply with Kiwa evaluation guideline

BRL-xxxx "xxxxxxxxxxxxxxxxxxxxxxxxx" dated [dd-mm-yyyy]

inclusive amendment sheet dated dd-mm-yyyy.

Name Director
Kiwa

Publication of this certificate is allowed.

Advice: consult www.kiwa.nl in order to ensure that this certificate is still valid.

Kiwa Nederland B.V.
Sir Winston Churchilllaan 273
P.O.Box 70
2280 AB RIJSWIJK
The Netherlands
Tel. +31 88 998 44 00
Fax +31 88 998 44 20
info@kiwa.nl
www.kiwa.nl

Company
Name customer
Address customer

Phone number
Fax number
www.
Email

Certification process consists of initial and regular assessment of:

- quality system
- product

140410

II Model IQC-scheme (example)

Inspection subjects	Inspection aspects	Inspection method	Inspection frequency	Inspection registration
Raw materials or materials supplied: <ul style="list-style-type: none"> inspection raw materials 				
Production process, production equipment, plant: <ul style="list-style-type: none"> procedures instructions equipment release of product 				
Finished-products				
Measuring and testing equipment <ul style="list-style-type: none"> measuring equipment calibration 				
Logistics				

III CV-profile

No	Time h/min	Duration [min]	CV-flow dm ³ /uur	application
1	6.00	180	300	Heating
2	9.10	10	100	Heating
3	9.30	10	100	Heating
4	9.50	10	100	Heating
5	10.10	10	100	Heating
6	10.30	10	100	Heating
7	10.50	10	100	Heating
8	11.10	10	100	Heating
9	11.30	10	100	Heating
10	11.50	10	100	Heating
11	12.10	10	100	Heating
12	12.30	10	100	Heating
13	12.50	10	100	Heating
14	13.10	10	100	Heating
15	13.30	10	100	Heating
16	13.50	10	100	Heating
17	14.10	10	100	Heating
18	14.30	10	100	Heating
19	14.50	10	100	Heating
20	15.10	10	100	Heating
21	15.30	10	100	Heating
22	15.50	10	100	Heating
23	16.10	10	100	Heating
24	16.30	10	100	Heating
25	16.50	10	100	Heating
26	17.10	10	100	Heating
27	17.30	10	100	Heating
28	17.50	10	100	Heating
29	18.00	120	300	Heating
30	20.10	10	100	Heating
31	20.30	10	100	Heating
32	20.50	10	100	Heating
33	21.10	10	100	Heating
34	21.30	10	100	Heating
35	21.50	10	100	Heating
36	22.10	10	100	Heating
37	22.30	10	100	Heating
38	22.50	10	100	Heating

To clarify the time inscription: Timestamp 9.10 means 9 hours and 10 minutes