BRL K14040

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concept design

Evaluation Guideline

for the Kiwa product certificate for
Taps for delivery of hot or boiling water

Preface

This evaluation guideline has been accepted by the Kiwa Board of Experts Water cycle (CWK), in which all relevant parties in the field of Taps for delivery of hot or boiling water are represented. The Board of Experts also supervises the certification activities and where necessary requires the evaluation guideline to be revised. All references to 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. This regulation details the method used by Kiwa for conducting the necessary investigations prior to issuing the product certificate and the method of external control.

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Binding declaration
This evaluation guideline has been declared binding by Kiwa on Date

Contents

1 Introduction

1.1 General

This evaluation guideline includes all relevant requirements which are adhered to by Kiwa as the basis for the issue and maintenance of a certificate for taps for delivery of hot or boiling water.

For the performance of its certification work, Kiwa is bound to the requirements as included in NEN-EN-ISO/IEC 17065 “Conformity assessment - Requirements for bodies certifying products, processes and services”.

1.2 Field of application / scope

This Guideline specifies the constructional, safety requirements and methods of test for water dispensing units for domestic purposes for use as single or multiple delivery points and to deliver cold, blended, warm (up to 65°C) and hot (over 90°C) or boiling water.
The delivery point delivering hot or boiling water is not suited for washing the body or hands.
The units are designed to be continuously connected to drinking water installations with a water pressure between 100kPa and 1000kPa. However, the recommended limits for correct operation are a dynamic pressure between 100kPa and 500kPa

This specification covers dispensing units that heat a stored volume of water, heat the water instantaneously or are a combination of both and any heat source. The design maybe of remote operation or designed for use by persons with reduced mobility or sensory capability.

The products may additionally incorporate the provision to dispense chilled or sparkling water and have an integrated dispensing means or are supplied with a separate dispenser for mounting remotely from the heating appliance.

1.3 Acceptance of test reports provided by the supplier

If the supplier provides 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 to be issued by Kiwa is 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 I.

2 Terms and definitions

In this evaluation guideline, the following terms and definitions are applicable:

Actual volume: The measured volume of the water stored in a storage type or combined type water storage vessel in liters.

Board of Experts: the Board of Experts “Water Cycle” (CWK).

Cold water: water intended or partly intended for drinking, cooking or food preparation or other domestic purposes with a temperature not exceeding 25°C.

Combined storage / instantaneous type appliance: An appliance that incorporates a vessel that stores water at a temperature lower than the dispensing temperature and a separate heating device that boosts the water temperature to the dispensing temperature as the lower temperature stored water flows through it.

Dispensing device: The means by which water is dispensed from the appliance. This may be integrated into the appliance itself or be mounted remotely from the appliance but hydraulically and/or electrically connected to the appliance.

(Dispensing) Unit: an unit able to deliver cold, blended, warm and hot or boiling water. The unit consist of a facility to heat water to temperatures over 90°C and incorporate single or multiple delivery points.

Drinking water: water intended or partly intended for drinking, cooking or food preparation or other domestic purposes, but does not include hot water, and is made available by pipeline to consumers or other customers.

Evaluation Guideline (BRL): the agreements made within the Board of Experts on the subject of certification.

Hot water: water intended or partly intended for drinking, cooking or food preparation or other domestic purposes, which is heated over 90°C, before it is made available for those applications.

Inspection tests: 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.

Instantaneous type appliance: An appliance that heats the cold water as it flows through the heating device raising it to the dispensing temperature

IQC scheme (IQC): a description of the quality inspections carried out by the supplier as part of his quality system.

Manufacturer: any natural or legal person who manufactures a product or has a product designed or manufactured, and places it on the market under his own name or trademark.

Maximum design pressure (Rated pressure): The maximum pressure to which the appliance heating vessel is designed to be subjected in normal use

Maximum inlet pressure: The maximum cold water inlet pressure that the appliance can be supplied with.

Maximum operating temperature: The maximum temperature that the appliance can be set to deliver under normal operating conditions.

Normal operation: Operation of the unit after installation in accordance with the manufacturer's instructions.

Pre-certification tests: tests in order to ascertain that all the requirements recorded in the evaluation guideline are met.

Product certificate: a document in which Kiwa declares that a product may, on delivery, be deemed to comply with the product specification recorded in the product certificate.

Rated volume: The volume of the water stored in a storage type or combined type water storage vessel in liters as specified by the manufacturer.

Supplier: the party that is responsible for ensuring that the products meet and continue to meet the requirements on which the certification is based.

Storage type appliance: An appliance that incorporates a vessel that heats and stores a volume of water ready for dispensing

Unvented (closed) appliance: An appliance with a heating vessel, where the contents are not vented to atmosphere and are subjected to the inlet water pressure when the dispenser outlet is closed.

Vented appliance: An appliance with a heating vessel, that is permanently open to atmosphere and the flow of cold water into the appliance is controlled by a valve on the inlet cold water supply such that when closed the vessel is only subject to the pressure created by the head of water acting on the vessel.

Warm water: water intended or partly intended for drinking, cooking or food preparation or other domestic purposes with a maximum temperature of 65°C, before it is made available for those applications.

3 Procedure for granting the quality declaration

3.1 Pre-certification tests

The pre-certification tests to be performed are based on the (product) requirements as contained in this evaluation guideline, including the test methods, and comprise of, depending on the nature of the product to be certified, 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 quality declaration

After finishing the pre-certification tests, the results are presented to the Decision maker (see 10.2) deciding on granting of the certificate. This person evaluates the results and decides whether the certificate can be granted or if additional data and/or tests are necessary.

4 Requirements

This chapter contains the requirements the products have to fulfil. These requirements will form part of the technical specification of the products, as included in the certificate.

4.1 Regulatory requirements

4.1.1 Requirements to avoid deterioration of the quality of 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 negatively affect the quality of the drinking 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 and materials with a quality declaration[1], e.g. issued by a foreign certification institute, 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.

4.1.2 Electric characteristics and requirements

All products are legally required to comply with applicable electrical safety requirements such as LVD, EMC etc. and must function correctly on a 220-240V, 50Hz supply

As a minimum, it is suggested that products shall comply with the relevant aspects of:

Electrical requirements.
All water heaters shall comply with the relevant IEC 60335 group of standards.

Direct Water heaters shall comply with the latest edition of EN 60335-2-15 for heaters above boiling point and EN 60335-2-21 for all others.

Electrical Immersion heaters shall comply with the latest edition of EN 60335-2-73 unless tested as part of the completed water heaters.

Electrical water heaters shall have a thermostat and incorporate a non-self-resetting thermal cut out to EN 60730-2-9

EMC requirements are given in the latest version of the following standards:
EN55014-1 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission
EN55014-2: Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Immunity
EN61000-3-2: Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

[1] A quality declaration issued by an independent certification institute in another member state of the European Community 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, is fulfilled the at least equivalent requirements as meant in the Regulation materials and chemicals drinking water- and warm tap water supply.

EN61000-3-3: Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection

The use of a suitable electrical test house is recommended to enable manufacturers to meet their legal obligations and to enable their products to be placed on the market.

The appliance and dispensing device (if separate from the appliance) must be electrically safe.
Demonstration of electrical safety compliance can be shown by approval of the appliance and dispensing device to relevant electrical safety standards.
Depending on appliance type these may include EN 60335-1, EN60335-2-15, EN60335-2-21, EN60335-2-35.

Kiwa reserves the right to investigate the origin of the declarations presented by the applicant and to request further information if deemed necessary.

4.2 General product requirements

4.2.1 Operation

The operation of the high temperature water dispenser shall include a means of preventing inadvertent dispensing of high temperature water.

> **Note**
> It is advised to differentiate the operation from the operation of a standard hot or cold tap or dispenser. Preferably, dispensing of very high temperature water shall not be possible with a single operation (for example a simple turn of an actuating member) to begin flow. The function of the high temperature dispenser should be clear to the user and not easily confused with other standard water dispensing apparatus, taps, valves, etc.

The acceptance of the way of operating is at the discretion of the testing body.

4.2.2 Functions

The tapware shall be actuated as intended by the manufacturer i.e. as described in the manufacturer's instructions.
The tapware shall be tested so that all functions declared in the manufacturer's instructions are verified. The requirements of this standard are satisfied if all functions are completed satisfactorily.

This includes the performance of units capable of delivering pre-set volume(s).

4.2.3 Temperature indication

The control device or tap shall be designed in such a way that it is clear to users that it dispenses high temperature hot water. This can be done by means of a special operation and/or clear identification by means of a scale or symbols or colours or any combination thereof.
The acceptance of the way of indication is at the discretion of the testing body.

4.2.4 Design and construction

4.2.4.1 General remarks

The design and construction of components without defined dimensions permit various design solutions to be adopted by the manufacturer.

4.2.4.2 Dimensional characteristics

Dimensions of the hot water taps shall be as specified in EN817, chapter 6.

Remark
For units where the dispenser of hot or boiling water is separated, the requirements of table 4 and table 5 apply in particular.

4.2.4.3 Inspection / cleaning access

Where the appliance has been provided with a means for internal inspection, instructions how to clean shall be defined by the manufacturer.

4.2.4.4 Draining

Units with a capacity over 10 liter or 15 kg when filled with water shall be capable of being drained when installed. The method of draining shall be detailed in the manufacturer's instructions. The drain point may be incorporated in the water inlet pipework provided instruction is given how to do this in the instruction manual.

4.2.4.5 Backflow prevention

Where required, a device to prevent backflow conforming to the EN 1717 shall be factory fitted or be delivered alongside to be fitted. If non-return valves are used, they shall comply with EN13959.

4.2.4.6 Surface temperatures of dispensers

When tested according to 5.2, the surface temperature of the actuating means shall not exceed a temperature of 45°C.
At the same time accessible surfaces of the unit, when installed in accordance with the manufacturer's instructions, shall not reach excessive temperatures during normal operation. The surfaces, with the exception of those areas in the immediate vicinity of the outlet, shall not exceed a temperature of 65°C.

Unless as result of dispensing hot or boiling water, steam shall not be emitted from the appliance in normal operation.

4.2.5 Heater requirements

4.2.5.1 General

Direct Water heaters shall comply with the latest edition of EN 60335-2-15 for heaters above boiling point and EN 60335-2-21 for all others.

Electrical Immersion heaters shall comply with the latest edition of EN 60335-2-73 unless tested as part of the completed water heaters.

4.2.5.2 Heater capacity

Units that heat a stored volume of water may be provided with a vented (open) or unvented (closed) heater.
When tested according to 5.3, the rated volume of the heater shall not exceed

- 50 liters for vented heaters,
- 15 liters for unvented heaters

The actual volume shall be within 5% of the rated volume stated by the manufacturer.

4.2.5.3 Insulation

The heating vessel shall be suitably insulated to minimize heat loss and power usage when hot drinking water is not being drawn from the appliance. Insulation materials used must not be adversely affected by contact with hot surfaces.

4.2.5.4 Temperature control

The heating unit shall be supplied with a suitable means controlling the stored and/or dispensing water temperature. The control may be electro-mechanical or electronic and may control at a factory set fixed temperature or be adjustable over a range of temperatures up to the maximum operating temperature.

4.2.5.5 Over temperature protection (for storage water heaters only)

Units shall be fitted with one or more non-self-resetting energy cut-outs conforming to EN 60730-2-9 connected to the heat source to ensure that the heat input is interrupted in the event of failure of the control thermostatic function

4.2.5.6 Over pressure protection

Units with unvented heaters shall be factory fitted or supplied with to be fitted, on the cold water inlet, with either

- an expansion group conforming to EN 1488,
- an expansion valve conforming to EN 1491 in combination with a check valve complying with EN 13959
- a means of control the expansion of water (e.g. expansion vessel or bubble top).

Where required, a pressure reducing valve conforming to EN 1567 shall be used.

4.2.5.7 Stored water temperature

Under normal operating operations, the water temperature of water stored in the unit shall be at least 55°C.

In case of special circumstances (e.g. an ECO mode), the temperature may drop below 55°C for a longer period. However, the unit shall be automatically thermal disinfected at start-up before the unit becomes operational again.

4.2.6 Accessories and components

The components used in the units shall comply with the, for this components, applicable evaluation guideline and/or European Standard(s).

The following evaluation guidelines apply for the various components:

- BRL-K617 “Aerators”,
- BRL-K622 “flexible connecting hoses”,
- BRL-K629 “Anti-pollution check valves, family E, type A, B, C and D,
- BRL-K14025 “Extractable outlets for sink and basin mixers”,
- BRL-K14026 “ Extractable shower hoses for sanitary tapware”.

In case the components are used at temperatures exceeding the working temperature specified in the evaluation guideline, they shall be tested at the maximum temperature applicable.

4.3 Product specific- and performance requirements

4.3.1 General

The dispenser of cold and/or blended water shall comply with the following clauses of the appropriate EN Standard (e.g. EN200, EN816, EN817, EN15091 and others).

- Dimensional characteristics
- Leak tightness characteristics
- Pressure resistance characteristics
- Hydraulic characteristics
- Mechanical strength characteristics
- Mechanical endurance characteristics

4.3.2 Exposed surface conditions

Visible chromium plated surfaces and Ni-Cr coatings shall comply with the requirements of EN 248.

Plastic coatings shall after a test according to 5.4, meet;

- EN 248, article 7.1.1 in relation to the corrosion resistance,
- EN-ISO 2409, table 1, class 0 or 1 in respect of the adherence

4.3.3 Requirements hot or boling water dispenser

4.3.3.1 Leak tightness characteristics

a) upstream of the obturator and of the obturator:
   When tested according 5.5.4 throughout the duration of the test there shall be no leakage or seepage through the walls and there shall be no leakage of the obturator, i.e. at the outlet.
b) downstream of the obturator
   When tested according 5.5.5 throughout the duration of the test there shall be no leakage or seepage through the walls.

4.3.3.2 Pressure resistance characteristics – mechanical performance under pressure

a) upstream of the obturator – obturator in the closed position
   When tested according 5.5.6 throughout the duration there shall be no permanent deformation of any part of the unit.
b) downstream of the obturator – obturator in the open position
   When tested according 5.5.7 throughout the duration there shall be no permanent deformation of any part of the unit.

4.3.3.3 Mechanical endurance of the control device

The mechanical endurance of the control device is tested to 5.6 at the maximum operating temperature. After testing, the control device shall comply with the leak tightness requirements given in 4.3.3.1 and there shall be no failure of any component.

4.3.4 Resistance against high temperature

After the thermal cycling test according clause 5.7, the unit shall comply with the leak tightness characteristics as described in 4.3.1 and 4.3.3.

4.3.5 Outlet temperature

When tested according to 5.8 and operated according to the manufacturer instructions, the maximum temperature at the outlet to be measured shall be within 2 degrees of the value claimed by the manufacturer.

4.3.6 Usable hot water capacity

When tested according to 5.9 and operated according to the manufacturer instructions, the usable hot water capacity shall be at least 95% of the volume claimed by the manufacturer.

4.3.7 Mechanical endurance of swivel spouts to dispend hot or boiling water

When tested according to 5.10, during the test there shall be:

- no deformation or fracture of the swivel spout;
- no deformation or fracture of the device connecting the spout to the body;
- no leakage of the assembly.

At the end of the test, the spout shall be comply with the leak tightness characteristics as described in 4.3.3.

4.3.8 Flow rate

When tested to 5.11, for water to be dispensed at a temperature over 65°C, a minimum flow rate of 1 l/min applies.

4.3.9 Marking label resistance.

When for the marking of the units a marking label is used, the label shall comply with the label resistance requirements as stated in EN 60335-1, Clause 7.14.

5 Test methods

5.1 General

This chapter contains the test methods for taps for delivery of hot or boiling water in order to determine compliance to the requirements as specified in chapter 4.

All tests are to be conducted at an ambient temperature of 20 ± 5°C and with water supplied with a temperature of 15 to 20°C, unless specified differently.

The outlet water temperature is to be measured with a type J, type T or type K thermocouple, with a maximum response time of 0.3 s and an accuracy of 0.5K. This thermocouple shall be positioned within a distance of 10 mm of the actual outlet of the dispensing water.

5.2 Determination of surface temperature

5.2.1 General

This clause describes the test methods that shall be carried out to determine the surface temperature of the various components of complete unit during normal operation.

5.2.2 Apparatus

A hydraulic test circuit capable of supplying water at the, according to the manufacturer's instructions, required pressures and temperature and maintaining them throughout the duration of the test(s).

The surface temperature is to be measured with type J, type T or type K thermocouple, with a maximum response time of 0.3 s and an accuracy of 0.5K, attached to a data recorder, using a recording frequency 1 measurement per second,

5.2.3 Procedure

a) Install and commission the product as per the manufactures instructions.
b) Supply water with a pressure of (0.3 ± 0,02) MPa [(3.0 ± 0.2)] bar
c) If the system has adjustable temperature, set the heater temperature to the maximum setting permitted by the user.
d) **For a multifunction tap only** Turn on the cold water only until water exits the spout end. Note: this fills the outer spout with cold water in the case the spout has multiple pathways.
e) Turn on the power to the heater to begin heating.
   Wait at least 1 hour to allow the heater to heat and all components of the system to reach ambient room temperature. Allow the water in the spout to become ambient temperature also.
f) Securely attach the probes using self-adhesive aluminum thermal tape to the tap in the following locations:
   - Point 1: The "boiled water" actuator (for example handle or switch) at the point nearest to its connecting point to the dispenser.
   - Point 2: The "gripping" point of the swivel spout, not closer than 5 cm of the actual outlet.
   - Point 3: where the test house considers the maximum surface temperature may be located, not closer than 5 cm of the actual outlet.
g) With the data recorders running follow the cycle test below:
   - Wait until the heater has switched off the heating element at the end of its heating (hysteresis) cycle
   - Dispense 300 ± 15 ml of hot water,
   - Wait 5 to 6 seconds.

- Repeat this cycle to the end of the stated total capacity of the heater or when the outlet temperature of the water has been decreased with 5K.

h) Review the data and note the maximum temperature across all tests for points 1, 2 and 3:

5.3 Determination of heater capacity

5.3.1 Apparatus

For determining the heater capacity a suitable measuring or calculation technique with an accuracy of ± 1% shall be used.

5.3.2 Procedure

The actual volume shall be determined for each heater model in a manufacturer's product. This may be done by weighing the heater empty and full of water to the level achieved during normal operation and calculating the volume of the water.

5.4 Determination of the adherence and durability of plastic coatings

5.4.1 Test installation and appliances

For the determination of the adherence and the durability of the plastic coating, first the test pieces have to be conditioned in a bath of which the water is automatically maintained at the temperature required.
The appliances used for the determination of the adherence are to be according to EN-ISO 2409.

5.4.2 Test piece

At least two mixer bodies or two control elements, but the number of test pieces must be such that the surface to be tested is at least 10 000 mm².

5.4.3 Test requirements

During the conditioning of the test pieces:

- the water in the bath shall be 93 ± 3°C:

5.4.4 Procedure

a) Put the test pieces in the water bath for 1 hour.
b) Cool the test pieces down to ambient temperature.
c) Determine the adherence of one test piece according to NEN 5337-6.2.
d) With the remaining test pieces it is to be determined whether they comply with EN 248.

5.5 Leaktightness and pressure resistance characteristics

5.5.1 General

This clause describes the test methods that shall be carried out to verify the leak tightness and pressure resistance characteristics of the hot or boiling water dispenser only.

5.5.2 Principle

The principle of the test consists of checking under cold water pressure the leak tightness and pressure resistance of:

- the obturator
- the hot or boiling water dispenser

5.5.3 Apparatus

A hydraulic test circuit capable of gradually supplying the required static and dynamic pressures and of maintaining them throughout the duration of the test(s).

5.5.4 Leaktightness upstream of the obturator and of the obturator

5.5.4.1 Procedure

a) Connect the hot or boiling water dispenser to the test circuit;
b) with the outlet orifice open, and the obturator closed;
c) apply to the inlet of the dispenser a water pressure of 1.6 times the PN of the heater and maintain it for (60 ± 5) s.; during this period, if applicable, move the temperature control device(s) over its full operating range.

5.5.5 Leaktightness downstream of the obturator with the obturator open

5.5.5.1 Procedure

a) Connect the hot or boiling water dispenser to the test circuit;
b) with the outlet orifice artificially closed, and the obturator open;
c) apply to the inlet of the dispenser a water pressure of (0,4 ± 0,02) MPa [(4,0 ± 0,2) bar] and maintain it for (60 ± 5) s. During this period, if applicable, move the temperature control device over its full operating range;
d) reduce gradually the pressure to (0,02 ± 0,002) MPa [(0,2 ± 0,02) bar] and maintain it for (60 ± 5) s.

5.5.6 Mechanical behaviour upstream of the obturator – obturator(s) in the closed position

5.5.6.1 Procedure

a) Connect the hot or boiling water dispenser to the test circuit;
b) with the obturator closed; apply at the inlet a static water pressure of 2 times the PN of the heater and maintain it for (60 ± 5) s;
c) check whether there is permanent deformation in any part of the dispenser upstream of the obturator.

5.5.7 Mechanical behaviour downstream of the obturator – obturator in the open position

5.5.7.1 Procedure

a) Connect the hot or boiling water dispenser to the test circuit;
b) open the obturator fully;
c) apply at the inlet a dynamic water pressure of (0,4 ± 0,02) MPa [(4,0 ± 0,2) bar] and maintain it for (60 ± 5) s;
d) check whether there is permanent deformation in any part of the dispenser downstream of the obturator.

5.6 Mechanical endurance of the control device for hot- or boiling water

5.6.1 conditions

The test is carried out operating the tapware in accordance with the manufacturer's instructions set at the highest possible hot water temperature. Tapware is to be tested as supplied.
The sample under test may be connected to an external hot- or boiling water supply.

5.6.2 Procedure

a) Mount the unit on the test machine and connect in accordance with the manufacturer's instructions.
b) Supply water at a static pressure of (0,3 ± 0,05) MPa ((3 ± 0,5) bar).
c) Open the hot water dispenser using its normal mode of operation and leave it in that position for (10 ± 1)s.
d) Close the hot water dispenser using its normal mode of operation and leave it in that position for (15 ± 1)s.
e) repeat c) and d) 50.000 times. The test may be interrupted allowing the heater to recover when the outlet temperature has dropped by more than 5K compared to the set temperature.
f) For the duration of the test, no component shall break and the device shall continue to operate. After the total amount of cycles, verify that, when tested as specified in 5.2 and 5.3, closure and leak tightness is maintained.

5.7 Resistance against high temperature

5.7.1 Test sample

A complete unit, installed according to the manufacturer's instructions. During the test the control device for dispensing hot water shall be in the open position.

5.7.2 Procedure

a) Connect the unit to a system able to produce the following conditions:
   - maintaining supplying water at a dynamic pressure of (0,1 ± 0,01) MPa ((1 ± 0,1) bar).;
   - supplying water at a temperature of (20 ± 5)°C for 5 min and then water at a temperature of (93 ± 3) °C for 5 min as one cycle.
b) After 4000 cycles stop the test.

5.8 Determination maximum outlet temperature

5.8.1 Test sample

A complete unit, installed according to the manufacturer's instructions.

5.8.2 Procedure

a) Connect the unit to the test rig according to the manufacturer's instructions,
b) supply water at a dynamic pressure of (0,3 ± 0,03) MPa (3 ± 0,3) bar)
c) Turn on the power to begin heating
   If the system has adjustable temperature, set the heater temperature to the maximum setting permitted by the user.
   Wait at least 1 hour to allow the water to heat and all components of the system to reach ambient room temperature
d) Wait until the heater has switched off the heating element at the end of its heating (hysteresis) cycle
e) Within 30 seconds after switching off the heating element, open the hot water dispenser and start recording the water temperature.
f) Stop recording when the water temperature is decreasing
g) Determine highest temperature measured.

5.9 Determination usable hot water capacity

5.9.1 Test sample

A complete unit, installed according to the manufacturer's instructions.

5.9.2 Procedure

a) Connect the unit to the test rig according to the manufacturer's instructions,
b) supply water at a dynamic pressure of (0,3 ± 0,03) MPa ((3 ± 0,3) bar
c) Turn on the power to begin heating
   Wait at least 1 hour to allow the water to heat and all components of the system to reach ambient room temperature
d) Wait until the heater has switched off the heating element at the end of its heating (hysteresis) cycle
e) Open the dispenser and start collecting the water, when the (increasing) water temperature reaches the value stated by the supplier.
f) Stop collecting the water when the (decreasing) water temperature reaches the value stated by the supplier
g) Determine the amount of water collected

5.10 Determination mechanical endurance of swivel spouts to dispense hot or boiling water

5.10.1 General

This clause describes a method that shall be carried out to test the mechanical endurance of swivel spouts to dispense hot or boiling water and specifies the corresponding test criteria.

5.10.2 Apparatus

- Automatic machine, capable of swiveling the spout at a rate of (15 ± 1) cycles per minute;
- water supply circuit with water at a temperature of (90 ± 2)°C with a pump or a similar device, for supplying the required pressure;
- mass of (1 ± 0,1) kg if the spout is < 200 mm , or sufficient to apply a bending moment of (2 ± 0,25) Nm if the spout is >200 mm.

5.10.3 Procedure

a) Mount the dispenser on the machine and connect the inlet to the supply circuit;
b) with the dispenser closed, adjust the static water pressure to (0,4 ± 0,05) MPa [(4 ± 0,5) bar];
c) open the dispenser fully and adjust the flow rate to (1 ± 0.1) l/min by restricting the outlet;
d) subject the spout to a test of 80 000 cycles, each cycle comprising a movement of the spout through an arc of 120° in both directions or, if there is a stop, over 90% of the available travel.

5.11 Determination of flow rate

5.11.1 Test sample

A complete unit, installed according to the manufacturer's instructions.

5.11.2 Procedure

h) Connect the unit to the test rig according to the manufacturer's instructions,
a) Supply water at a dynamic pressure of (0,3 + 0,03) MPa (3 + 0,3) bar)
b) Turn on the power to begin heating
   Wait at least 1 hour to allow the water to heat and all components of the system to reach ambient room temperature
c) Open the dispenser.
d) Measure the flow rate.

6 Marking

6.1 General

The units shall be marked with following indelible marks and indications:

- name or logo of the manufacturer (visible after installation)
- data or code indicating the date of production;
- model indication.
- The rated capacity in litres
- The maximum design (rated) pressure in Mega Pascals (MPa)

> **NOTE:**
> The rated pressure may also be given in bar in addition to the value in Mega Pascal. Where this is done the pressure in bar shall be in brackets after the value in Mega Pascal

The heater must be marked in line with CE requirements

6.2 Certification mark

After concluding a Kiwa certification agreement, the certified products shall, beside the marks indicated in the respective standards, be indelible marked with :
"Kiwa  " or "Kiwa  ".

The location of the certification mark is to be decided in consultation between Kiwa and the manufacturer.

6.3 Other markings

The cold water inlet and warm water outlet shall be identified as such. Identification can be by words, arrows indicating direction of flow, colours or a combination of any of these methods. Where colours are used "BLUE" should denote the cold inlet, "RED" should denote the warm water outlet.

7 Instructions to be supplied with the unit

7.1 General

Each unit shall be supplied with a set of instructions that detail the following:

- Installation (see Clause 7.2)
- Maintenance (see Clause 7.3)
- Servicing (see Clause 7.3)
- Use / operation (see Clause 7.4)

These instructions may be supplied as a single combined manual or as a separate manual for each element or by any combination of the required elements

Instructions shall comply with the following aspects

- they must be supplied in a clearly printed for with each product or be freely available online at all times.
- clearly written in plain language where possible and in the language of the country of sale.
- any performance claims such as temperature must refer to the maximum water temperature.
- any performance claims, such as capacity of draw off, should be in a standardized unit of volume, temperature and time. For example: 30 ‘cups’ per hour can be misleading.
- must show the energy use of the appliance to heat and maintain the temperature of the water to the maximum stated temperature.
- the minimum and maximum operating pressures must be included in a standardized unit (for example Bar, PSI, kPa) and therefore refer to the possible need for separate pressure reducing valves.
- must explain the commissioning and testing procedure on installation.
- show all legally required safety notices.
- state the product is not to be used by minors or persons with reduced capacity without supervision.
- show any installation prerequisites or restrictions.

7.2 Installation instructions

For each unit the installation instructions shall contain as a minimum the following:

a) Technical data including as a minimum:
   - Maximum design (rated) pressure in Pascal (and bar if necessary)
   - Maximum inlet pressure in Pascal (and bar if necessary)
   - Maximum operating temperature
   - Actual storage volume of hot water
   - Electrical current rating in Amps
   - Electrical supply voltage in Volts
   - Symbol for the nature of electrical supply

b) Location, type and, where appropriate, nominal diameter of hydraulic connections. This information may be supplied on a diagram of the unit

c) Instructions on the correct way to mount the unit, including clearance distances required for servicing access and correct operation

d) A statement with the substance of the following:

   This product is intended to be used in household and similar applications such as:
   - Staff kitchen areas in shops, offices and other working environments
   - By clients in hotels, motels and other residential type environments
   - Bed and breakfast type environments

7.3 Maintenance and service instructions

For each unit the maintenance and service instructions shall contain as a minimum the following:

a) Instructions on how to isolate the unit both electrically and hydraulically
b) Instructions on how to access internal parts
c) A diagram or diagram detailing the important parts and features of the unit
d) The location of the draining means and how to drain the unit. Appropriate warning should be given that the water contained within or dispensed from the appliance may be of very high temperature
e) A list of essential maintenance operations and how to carry them out
f) A fault finding table, flow chart or matrix with relevant servicing operations and how to carry them out
g) Contact details of the manufacturer or suppliers service department or authorized servicing agents
h) A list of spare parts available and appropriate diagrams to detail their location on the appliance
i) Details of how to clean the unit casing / outer surfaces

7.4 Operating instructions

For each unit the operating instructions shall contain as a minimum the following:

a) Instructions on the safe operation and use
b) An explanation of the user controls, operating means, visual indicators and symbols used
c) Advice on what to do in the event of a product malfunction
d) Contact details of the manufacturer or supplier

8 Requirements in respect of the quality system

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

8.1 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.

8.2 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 producer;
- 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 Annex II.

8.3 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 equipment shall be kept calibrated (e.g recalibration at interval).
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.

8.4 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.

8.5 Other requirements

The supplier shall be able to submit the following:

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

9 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.

9.1 Test matrix

Description of requirement	Article no. of BRL	Tests within the scope of:	
		Pre-certification	Supervision by Kiwa after granting of certificate [a,b)]
Requirements to avoid deterioration of the quality of drinking water	4.1.1	X	X
Electric characteristics and requirements	4.1.2		
Operation	4.2.1	X	X
Temperature indication	4.2.3	X	
Design and construction	4.2.4	X	
Heater requirements	4.2.5	X	
Accessories and components	4.2.6	X	X
Exposed surface conditions	4.3.2	X	
Leak tightness characteristics	4.3.3.1	X	X
Pressure resistance characteristics – mechanical performance under pressure	4.3.3.2	X	X
Mechanical endurance of the control device	4.3.3.3	X	X
Resistance against high temperature	4.3.4	X	X
Outlet temperature	4.3.5	X	X
Usable hot water capacity	4.3.6	X	
Mechanical endurance of swivel spouts to dispend hot or boiling water	4.3.7	X	X
Flow rate	4.3.8	X	X
Marking label resistance.	4.3.9	X	
Marking	6	X	X
Instructions to be supplied with the unit	7	X	

a) In case the product or production process changes significantly, it must be determined whether the performance requirements are still met.

[b] During the inspection tests, the inspector verifies the products on basis of a selection from the above mentioned product requirements. The frequency of inspection visits is defined in chapter 10.6 of this evaluation guideline.

9.2 Inspection of the quality system

The quality system 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.

10 Agreements on the implementation of certification

10.1 General

Beside the requirements included in these evaluation guidelines, the general rules for certification as included in the Kiwa Regulations for 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.

10.2 Certification staff

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

- Certification assessor (**CAS**): in charge of carrying out the pre-certification tests and assessing the inspectors' reports;
- 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.

10.2.1 Qualification requirements

The following qualification requirements have been set by the Board of Experts for the subject matter of this evaluation guideline (see Table 3):

Table 3 – Qualification requirements of certification staff.

Basis requirements	Evaluation criteria
Knowledge of company processes Requirements for conducting professional audits on products, processes, services, installations, design and management systems.	*Relevant experience: in the field* **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 (MBO) **CAS, DM** : Bachelor (HBO)
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.

Basis requirements	Evaluation criteria
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: • Civil Enginereing; • Enginering.
Testing skills	**General:** • 1 week laboratory training (general and scheme specific) including measuring techniques and performing tests under supervision ; • Conducting tests (per scheme).
Experience - specific	**CAS** • 3 complete applications (excluding the initial assessment of the production site) under the direction of the **PM** • 1 complete application self-reliant (to be evaluated by **PM**) • 3 initial assessments of the production site under the direction of the **PM** • 1 initial assessment of the production site self-reliant (witnessed by **PM**) **SAS** • 5 inspection visits together with a qualified **SAS** • 3 inspection visits conducted self-reliant (witnessed by **PM**)
Skills in performing witnessing	**PM** Internal training witness testing

Legenda:
- Certification assessor (**CAS**)
- Decision maker (**DM**)
- Product manager (**PM**)
- Site assessor (**SAS**)

10.2.2 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**.

10.3 Report initial investigation

The certification body records the results of the pre-certification tests 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.

10.4 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.

10.5 Layout of quality declaration

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

10.6 Nature and frequency of third party audits

The certification body shall carry out 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 production of the supplier is not certified against ISO 9001, the frequency of the audits on site may be increased to 3 per year.

The audit program on site shall cover at least:

- the product requirements;
- the production process at the place of manufacturing;
- 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.

For suppliers with a private label certificate the frequency of audits amounts to 1 audit per two years. These audits are conducted at the site of the private label certificate holder. The audits are focussed on the aspects inserted in the IQC scheme and the results of the control performed by the private label holder with respect 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.

10.7 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 page on the Kiwa website.

10.8 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 certified products.

10.9 Interpretation of requirements

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

11 Titles of standards

11.1 Public law rules

BJZ2011048144 29 juni 2011	Regeling van de Staatssecretaris van Infrastructuur en Milieu[1]

11.2 Standards / normative documents

Number*	Title
EN-ISO 9001	Quality management systems - Requirements
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-K617	Aerators
BRL-K622	flexible connecting hoses
BRL-K629	Anti-pollution check valves, family E, type A, B, C and D
BRL-K14025	Extractable outlets for sink and basin mixers
BRL-K14026	Extractable shower hoses for sanitary tapware
EN 248	Sanitary tapware – General specification for electrodeposited coatings of Ni-Cr
EN 1488	Building valves – Expansion groups – Tests and requirements
EN 1491	Building valves – Expansion valves – Tests and requirements
EN 1567	Building valves – Water pressure reducing valves and combination water pressure reducing valves – Requirements and tests
EN1717	Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow
EN13959	Anti-pollution check valves – DN6 to DN250 inclusive family E, type A, B, C and D
EN 55014-1	Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission
EN 55014-2	Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Immunity
EN 60335-1	Household and similar electrical appliances – Safety – Part 1: General requirements
EN 60335-2-15	Household and similar electrical appliances – Safety – Part 2-15: Particular requirements for appliances for heating liquids
EN 60335-2-21	Household and similar electrical appliances – Safety – Part 2-21: Particular requirements for storage water heaters
EN 60335-2-35	Household and similar electrical appliances – Safety – Part 2-35: Particular requirements for instantaneous water heaters
EN 60335-2-73	Household and similar electrical appliances – Safety – Part 2-73: Particular requirements for fixed immersion heaters
EN 60730-2-9	Automatic electrical controls for household and similar use – Part 2-9: Particular requirements for temperature sensing controls
EN 61000-3-2:	Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)
EN 61000-3-3	Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage
EN-ISO 2409	Paints and varnishes – Cross-cut test

*) Remarks:

[1] Valid from 1 July 2017

- *for specific products, not all requirements listed in the table are relevant (e.g. organoleptic aspects for products used in the first steps of the water treatment process).*
- *the latest version is valid*

I Model Certificate (informative)

Product certificate
KXXXXXX/0X

Issued

Replaces

Page *1 of 1*

CERTIFICATE

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 "xxxxxxxxxxxxxxxxxxxxxxxxxf" dated [dd-mm-yyyy]

inclusive amendment sheet dated dd-mm-yyyy.

Luc Leroy
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.
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2280 AB RIJSWIJK
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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

II Model IQC Scheme (informative)

Inspection subjects	Inspection aspects	Inspection method	Inspection frequency	Inspection registration
Raw materials or materials supplied: • incoming goods inspection raw materials • incoming goods inspection semi-finished products				
Production process, production equipment, plant: • procedures • working instructions • equipment • material • surface				
Finished-products • closing • water-tightness				
Measuring and testing equipment • measuring equipment • calibration				
Logistics • marking • traceability • protections				