

BRL-K604

2022-01-07

Evaluation Guideline

for the Kiwa product certificate for
Stop- and connecting cocks



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Preface

This evaluation guideline has been accepted by the Kiwa Board of Experts Watercycle (CWK), in which all relevant parties in the field of stop- and connecting cocks 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.

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The use of this evaluation guideline by third parties, for any purpose whatsoever, is only allowed after a written agreement is made with Kiwa to this end.

Binding declaration

This evaluation guideline has been declared binding by Kiwa on 2022-01-07

Contents

1	Introduction	4
1.1	General	4
1.2	Field of application / scope	4
1.3	Acceptance of test reports provided by the supplier	4
1.4	Quality declaration	5
2	Terms and definitions	6
2.1	Definitions	6
3	Procedure for granting a product certificate	8
3.1	Initial investigation	8
3.2	Granting the product certificate	8
3.3	Investigation into the product and/or performance requirements	8
3.4	Production process assessment	8
3.5	Contract assessment	8
4	Requirements	9
4.1	General	9
4.2	Regulatory requirements	9
4.3	Product requirements	9
5	Test methods	17
5.1	Determination of the adherence and durability of plastic coatings	17
5.2	Preparation for stop cocks with stuffing box	17
5.3	Test for resistance to high volumes of flow	17
5.4	Test for closure and watertightness	18
5.5	Test for resistance against high temperature	18
5.6	Test for resistance to forces and moments	19
5.7	Durability test	20
6	Coding	22
7	Marking	23
7.1	General	23
7.2	Certification mark	23
8	Requirements in respect of the quality system	24
8.1	Manager of the quality system	24

8.2	Internal quality control/quality plan	24
8.3	Control of test and measuring equipment	24
8.4	Procedures and working instructions	24
8.5	Other requirements	24
9	Summary of tests and inspections	25
9.1	Test matrix	25
9.2	Inspection of the quality system of the supplier	26
10	Agreements on the implementation of certification	27
10.1	General	27
10.2	Certification staff	27
10.3	Report initial investigation	29
10.4	Decision for granting the certificate	29
10.5	Layout of quality declaration	29
10.6	Nature and frequency of third party audits	29
10.7	Non conformities	30
10.8	Report to the Board of Experts	30
10.9	Interpretation of requirements	30
11	Titles of standards	31
11.1	Public law rules	31
11.2	Standards / normative documents	31
I	Model certificate (example)	32
II	Model IQC-scheme (example)	34

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 certificate for products used for stop- and connecting cocks.

This guideline replaces the evaluation guideline BRL-K604, dated 01-12-2018. The quality declarations issued and based on that guideline will remain valid.

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 evaluation guideline applies to:

- stop cocks with disc, with a nominal diameter up to DN100,
- other stop cocks with a nominal diameter up to DN50,
- connecting cocks with a nominal diameter up to DN15.

Stop- and connecting cocks are designed to be used in tap water installations with a maximum working pressure of 1000 kPa and a water temperature with a maximum of 65°C. Using the products in water installations with a water temperature up to 90°C is possible. However, this may influence the durability of some parts and the contact temperature of the operating device.

Stop- and connecting cocks can be distinguished in the following designs ¹;

- stop cocks with disc;
- stop cocks with membrane;
- stop cocks with plug;
- stop cocks with ball;
- stop cocks with gate;
- stop cocks with central, eccentric and doubly eccentric revolving closing element;
- connecting cocks.

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

¹ other designs than those mentioned are possible.

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.

2 Terms and definitions

2.1 Definitions

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

- **Board of Experts:** the Board of Experts Watercycle (CWK).
- **Certification mark:** a protected trademark of which the authorization of the use is granted by Kiwa, to the supplier whose products can be considered to comply on delivery with the applicable requirements and possibly with quality information on the application of the product is added by a specially designed label which is based on the result, as stated in the report issued by Kiwa on the inspection of the prototype.
- **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.
- **Drinking water installation:** an installation direct or in-direct connected to the public drinking water distribution network of a drinking water company (source Dutch drinking water act).
- **Evaluation Guideline (BRL):** the agreements made within the Board of Experts on the subject of certification.
- **Warm tap water:** water intended or partly intended for drinking, cooking or food preparation or other domestic purposes, which is heated before it is made available for those applications.
- **Installation:** configuration consisting the pipe work, fittings and appliances.
- **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.
- **IQC scheme (IQCS):** a description of the quality inspections carried out by the supplier as part of his quality system.
- **Initial investigation:** 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.
- **Private Label Certificate:** A certificate that only pertains to products that are also included in the certificate of a 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 requirements:** requirements made specific by means of measures or figures, focussing on (identifiable) characteristics of products and containing a limiting value to be achieved, which can be calculated or measured in an unequivocal manner.

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

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 10.2) 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 Requirements

4.1 General

This chapter contains the requirements that stop- and connecting cocks have to fulfil.

4.2 Regulatory requirements

4.2.1 *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 declaration¹, 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.

4.3 Product requirements

4.3.1 *Chemical and mechanical requirements*

4.3.1.1 *Corrosion resistance*

The applied materials shall be corrosion resistant or protected against corrosion. The materials used may not have an adverse effect on each other.

4.3.1.2 *Metallic protection layers*

Applied metallic anticorrosive protection layers shall fulfil the requirements of EN 248.

4.3.1.3 *Plastic coatings*

After a test according to article 5.1 of this evaluation guideline, the coating shall meet;

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

4.3.2 *Seals*

Seals are divided into:

a. *static seals*

- between the bonnet and the body;
- between removable seat and body.

b. *dynamic seals*

- for the passage of the spindle;
- between the ball and the body (in ball valves).

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.

4.3.2.1 *Static seals*

Seals should be safeguarded against being displaced¹.

- Seal between bonnet and body
One of the following materials shall be used for the seal between the bonnet and the body:
 - soft copper;
 - hard fiber;
 - rubber.
- Seals between removable seat and body
At least one of the following rings shall be used for the seal between the removable seat and the body:
 - soft-copper;
 - rubber (o-rings);
 - PTFE (Teflon).

4.3.2.2 *Dynamic seals*

- Seals for the passage of the spindle
One of the following seals can be used to seal the passage of the spindle:
 - stuffing box;
 - rubber O-ring;
 - comparable low-friction ring(s).
- Seal between ball and body
For seals between the ball and the body (in ball valves) O-rings or profiled rings shall be used.

4.3.2.3 *Seals with stuffing box and gland*

In stop cocks with a stuffing box, a gland shall be used to ensure that the pressure on the packing in the stuffing box is equal. The gland must be designed so that it can be displaced to enable the packing in the stuffing box to be replaced. The wrench flats on the gland shall be at least 3 mm high.

If a loose wrench is used, the stop cock should still be able to be used if the gland has just been removed from the packing recess. The wall thickness of the packing recess shall be at least 2 mm for stop cocks up to and including DN25 and 2,5 mm for other stop cocks.

The internal diameter of the gland and the diameter of the bore in the floor of the recess should be at least 0.2 mm larger than the diameter of the spindle with stop cocks up to and including DN25 and 0.4 mm for larger stop cocks.

4.3.3 *Operation*

4.3.3.1 *Operation mechanism*

The handle or hand wheel to operate the valve shall be attached without tangible play. If a clamp or click fitting is applied, the pull-off strength shall lie between 50 N and 200 N.

Table 1 shows the minimum required length of the handle or diameter of the hand wheel. This does not apply to connecting cocks.

¹ This requirement can be fulfilled by seating sealing rings in a recess, or by finishing one of the pressure edges of the ring at an angle of at least 2° inwards.

4.3.3.2 *Spindle (irrelevant to connecting cocks)*

The spindle can be of a non-rising or a rising design. The transmission thread shall be self-braking and have an external diameter of at least 10 mm. It may have a single or double pitch of between 2 and 4 mm.

4.3.3.3 *Closing direction*

The stop- and connecting cocks shall close by turning clock wise.

4.3.3.4 *Rotation operation mechanism*

Valves furnished with a gear handle shall compete a turn of at least 270° to close the ball valve from a complete open position.

Valves provided with an actuator, shall have a provision for manual operation in case of an emergency.

4.3.3.5 *Dust cover (only applicable for connecting cocks)*

Connecting cocks may be fitted with a dust cover. This shall be removable. Cocks fitted with a dust cover shall be able to be operated without the necessity of specialist tools. The dust cover may also be used to operate the cock.

4.3.4 ***Drainage connections***

Stop- and connecting cocks may be fitted with two drainage connections for drainage cocks. These must be fitted opposite each other on the outlet side of the closing mechanism. The internal thread shall be G $\frac{1}{4}$, according to ISO 228-1 with a minimum thread length of 7 mm (minimum length threaded end 8 mm). The culvert shall be at least 6 mm and the external diameter at least 17 mm.

4.3.5 ***Dimensions and end joints stop cocks with disc or ball***

The requirements in respect of construction and design which stop cocks with disc or ball shall meet have been laid down in the following standards:

EN 1213 Building valves – Copper alloy stop valves for potable water supply in buildings – Tests and requirements.

EN 13828 Building valves - manual operated ball valves of copper alloys and stainless steel for potable water supply in buildings - test procedures and requirements.

4.3.6 ***Dimensions and end joints other stop- and connecting valves***

4.3.6.1 *Nominal diameter*

The nominal diameter (DN) of the stop cocks shall meet Table 1.

4.3.6.2 *End joints stop cocks*

Stop cocks shall have two of the following end joints:

- internal thread;
- external thread;
- press-, compression- or push-in joints;
- secured union nut;
- flange.

The stop cock can be fitted with similar or different end joints.

In Table 1 the threads to be used and the external diameters of the pipes for the fittings are specified.

Table 1 - End joint dimensions

	Length handle / diameter hand wheel	joint thread				width pressure area	compression joints external diameter copper pipes
		internal	external	External with shoulder	union nut		
DN	mm	ISO 7-1	ISO 7-1	ISO 228-1	ISO 228-1	mm	mm
10	≥40	Rp 3/8	R 3/8	G 3/8	G 1/2	3	12
15	≥40	Rp 1/2	R 1/2	G 1/2	G 3/4	3	15/18
20	≥60	Rp 3/4	R 3/4	G 3/4	G 1	3	22
25	≥60	Rp 1	R 1	G 1	G 1 1/4	3	28
32	≥70	Rp 1 1/4	R 1 1/4	G 1 1/4	G 1 1/2	4	35
40	≥70	Rp 1 1/2	G 1 1/2	G 1 1/2 or 1 3/4	G 2	4	42
50	≥70	Rp 2	G 2	G 2 or G 2 3/8	G 2 1/2	4	54

4.3.6.3 End joints of connecting cocks

Connecting cocks shall be fitted with the following types and sizes of end joints, or combinations of these:

- In- or external capillary soldered joint 10 mm or 12 mm;
- compression joints for copper pipes with an external diameter of 10 or 12 mm;
- internal or external threaded joints. G 3/8 or G 3/8A respectively;
- secured union nut with a G 3/8 thread.

If one of the end joints is one of the above mentioned, the other may be one of the following:

- internal or external capillary soldered joint with a diameter of 15 mm.
- compression joint for a copper pipe with an external diameter of 15 mm;
- internal or external thread (G 1 1/2 or G 1 1/2A respectively);
- secured union nut with a G 1 1/2 thread.

Cocks whose design only allows them to be used as connecting cocks may be fitted with end joints in sizes suitable for specific applications.

Connecting cocks may at one side be furnished with an integrated flexible connecting hose. This hose shall be connected indissoluble to the connecting cock and comply with the requirements as mentioned in the evaluation guideline BRL-K622 "Flexible connecting hoses".

4.3.6.4 Construction end joints

a. Threaded joints

Threads shall comply with ISO 7-1 or ISO 228-1.

The length of the thread and the total length of end joints with an external thread shall comply with evaluation guideline BRL-K623.

b. Press-, compression- or push-in joints

Connecting ends provided with press-, compression- or push-in joints shall meet the requirements as included in the Kiwa evaluation guideline BRL-K640.

c. End joints with a secured union nut

The usable thread length after fitting shall meet the minimum requirements laid down in Kiwa evaluation guideline BRL-K623.

The end joints shall be cylindrical for a length at least equal to the depth of the union nut, measured from the ends of the pressure areas for the packing. The width of the pressure areas for the packing and the threads used shall be conform Table 1.

d. Flanged joints

Stop cocks fitted with flanged joints shall be conform to DIN 2501, part 1.

4.3.7 Construction and design for stop cocks with disc or ball

The requirements regarding the construction and shape of stop cocks with ball have been laid down in the following standard:

EN 13828 Building valves - manual operated ball valves of copper alloys and stainless steel for potable water supply in buildings - test procedures and requirements.

4.3.8 Construction and shape other stop- and connecting cocks

4.3.8.1 Body wall thickness

The wall thickness of brass or bronze bodies shall meet at least table 2.

Table 2 - Minimum wall thickness

DN size	Wall thickness (in mm)	
	cast W min*)	hot pressed W min*)
<10**)	1,0	1,0
10**)	1,2	1,1
15	1,4	1,2
20	1,6	1,4
25	1,8	1,5
32	1,9	1,6
40	2,2	1,8
50	2,3	2,0

*) Minimum wall thickness W is applicable for the entire body

**) Connecting cocks

4.3.8.2 Wrench flats

The minimal height of the wrench flats shall be conform evaluation guidelines BRL-K623.

4.3.8.3 Direction of flow

In closed position the passage of the spindle shall not be subjected to the pressure load upstream of the obturator.

4.3.8.4 *The seal fitting*

If the seal is fitted by means of thread, this thread shall not come into contact with the water.

a. *Fastening of the disc (only applicable for stopcocks with disc)*

The control spindle shall be revolving in respect to the disc. If a raising control spindle is applied the axial tolerance between disc and spindle should not exceed 0,2 mm. Tolerance shall be extant when the stop cock is full open and the control spindle, when in the position "full open" the disc is loosen, guided for at least 4 mm. If the disc washer is removed the control thread of the spindle shall be fully operational in the position "completely closed", so that the stop valve can be opened as usual.

b. *Fastening of the pressure piece (only applicable for stop cocks with membrane)*

The pressure piece shall only be moved in the axial direction corresponding with the direction of the spindle.

c. *Fastening of the plug (only applicable for stop cocks with plug)*

The plug is allowed to move in axial direction only, corresponding with the spindle.

4.3.9 **Functional requirements and test methods for stop cocks with disc**

4.3.9.1 *General*

The functional requirements and test methods for stop cocks with disc have been laid down in the following standard:

EN 1213 Building valves – Copper alloy stop valves for potable water supply in buildings – Tests and requirements

Hereby shall be remarked that when conducting the test according EN 1213, article 7.3.1, the required pressure shall gradually be applied to the valve within 15 seconds.

4.3.9.2 *Durability*

In addition to what has been mentioned in EN 1213, article 7.5, the sample under test shall also be submitted to 5000 cycles with water with a temperature of $65 \pm 3^{\circ}\text{C}$.

Valves with a nominal diameter bigger then DN20 shall be tested in accordance to EN 1213, article 7.5 with water with a maximum temperature of 30°C , followed by 5000 cycles with water with a temperature of $65 \pm 3^{\circ}\text{C}$. During this test the valve shall be closed with a closing torque of 5 Nm.

4.3.9.3 *Resistance against high temperature*

After a long period in one position, the stop cock shall be able to open or close without jamming. This must be tested according to article 5.5 of this BRL. After testing, the stop cock shall comply with 4.3.11.2 and the torque needed to open and close the stop cock completely shall not exceed 10 Nm. During or after these tests no damage may occur.

4.3.10 Functional requirements and test methods stop cocks with ball

4.3.10.1 General

The functional requirements and additional testing methods for stopcocks with ball are regulated in the following standard:

EN 13828 Building valves - manual operated ball valves of copper alloys and stainless steel for potable water supply in buildings - test procedures and requirements.

4.3.10.2 Durability

In the contrary to what has been mentioned in EN 13828, article 7.6 and table 14, the 10.000 cycles shall be carried out with water with a temperature of $20 \pm 3^\circ\text{C}$, followed by 5000 cycles in with water with a temperature of $65 \pm 3^\circ\text{C}$.

4.3.10.3 Resistance against high temperature

After a long period in one position, the stop cock shall be able to open or close without jamming. This must be checked according to section 5.5. After testing in accordance with 5.5 the stop cock shall be opened completely with a torque of maximum 10 Nm. After the stop cock is opened and closed one time completely, the stop cock shall comply with 4.3.11.2. During or after these tests no damage may occur.

4.3.11 Functional requirements other stop- and connecting cocks

4.3.11.1 Flow rate

a. Flow rate stop cocks

The flow rate of straight-through stop cocks (if applicable) shall, at a pressure loss of 100 kPa and with the stop cock completely open, at least comply with Table 3.

The flow rate of angle stop cocks shall be at least 75% of the flow required for the straight version.

Table 3 - Flow rate at a pressure loss of 100 kPa (l/s)

DN	Stop cock with membrane or plug	other stop cocks
15	0,84	1,7
20	1,95	3,1
25	2,8	5,6
32	4,2	9,4
40	8,4	12,5
50	12,5	21

b. Flow rate connecting cocks

The flowrate of the connecting cock, with the cock completely open and with a loss of pressure of 100 kPa, shall be at least 0.3 l/s.

c. Resistance to high volumes of flow (only applicable for connecting cocks)

The connecting cocks shall be resistant to high volumes of flow. This shall be determined as described in section 5.3. During and after this test, the cock shall comply with the requirements 4.3.11.2 regarding closure and watertightness.

4.3.11.2 Closure and watertightness

After the tests described in section 5.4, the stop cock shall show no leakage or any sign of damage, and should not allow any water to pass when it is in the closed position.

4.3.11.3 Resistance to high temperatures

After a long period in one position, the stop cock shall be able to open or close without jamming. This must be tested according to article 5.5. After testing, the stop cock shall comply with 4.3.11.2 and the torque needed to open and close the stop cock completely shall not exceed 10 Nm. During or after these tests no damage may occur.

4.3.11.4 Resistance to forces and moments

a. Resistance to forces and moments on the operation mechanism

During the test described in section 5.6.1 the operation mechanism and/or stop cock shall show no fractures or deformations. After the tests, the stop cock shall comply with 4.3.11.2.

b. Resistance to forces and moments on the end joints

End joints shall show no fractures or deformations as a result of the tests described in section 5.6.2. After these tests, the stop cock shall comply with 4.3.11.2.

4.3.11.5 Durability

The operation mechanism and its connection shall show no fractures or deformations as a result of the tests described in section 5.7. After the tests, the stop cock shall comply with 4.3.11.2.

5 Test methods

5.1 Determination of the adherence and durability of plastic coatings

5.1.1 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 ISO 2409.

5.1.2 Test piece

At least two valve 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.

5.1.3 Test conditions

During the conditioning of the test pieces:

- the water in the bath shall be $90 \pm 3^\circ\text{C}$;
- the ambient temperature shall be $20 \pm 10^\circ\text{C}$.

5.1.4 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.

5.2 Preparation for stop cocks with stuffing box

If a stuffing box is applied as a spindle seal, the packing shall be put under pressure before the following tests are carried out:

- durability;
- resistance to forces and moments on the stem;
- sealing and watertightness.

5.2.1 Apparatus

To adjust the stuffing box, the stop cock shall be installed in a test apparatus in which the correct pressure can be obtained with a flow of water.

Before the test all air shall be expelled from the apparatus.

The water pressure shall be measured with a precision meter according to NEN 927.

5.2.2 Method

- a. Open the stop cock 50%, fill it with water and close off the outlet end.
- b. Apply and maintain a pressure of 1000 kPa to the stop cock.
- c. Loosen the gland until it starts to leak.
- d. Tighten the gland to the point at which the leak stops.

5.3 Test for resistance to high volumes of flow

5.3.1 Test conditions

During this test, the following conditions shall be fulfilled:

- the pressure on the inlet side of the cock shall be 1000 kPa;

- the water temperature shall not exceed 30°C.

5.3.2 Method

Carry out 5 consecutive cycles. Each cycle shall consist of the following:

- a. open the connecting cock with a rotation frequency of 0.5 ± 0.2 Hz;
- b. close the connecting cock with a rotation frequency of 0.5 ± 0.2 Hz.

5.4 Test for closure and watertightness

5.4.1 Apparatus

To test the closure and watertightness of the stop- or connecting cock, it shall be installed in a test apparatus in which the correct pressure can be obtained with a flow of water.

Before the test all air shall be expelled from the apparatus. The water pressure shall be measured with a precision manometer according to NEN 927.

5.4.2 Test piece

The test shall be carried out on a sample which was not submitted to other tests.

5.4.3 Methods

5.4.3.1 Testing the closure

- a. Open the stop- or connecting cock and fill it with water.
- b. Close the stop- or connecting cock.
- c. Apply during 5 s a clockwise moment of 2 Nm for stop cocks up to DN 25, respectively 4 Nm for stop cocks larger than DN 25 and 1 Nm for connecting cocks.
- d. Gradually apply an inlet pressure of 1600 kPa within 15 s and maintain this pressure for 60 s.
- e. Decrease the pressure to 20 kPa, if an O-ring is used for the seal, and maintain this for a further 60 seconds.

5.4.3.2 Testing the watertightness

- a. Open the stop- or connecting cock and fill it with water.
- b. After expelling all the air, close the outlet side.
- c. Gradually apply an inlet pressure of 1600 kPa within 15 s and maintain this pressure for 60 s.
- d. Decrease the pressure to 20 kPa if O-rings are applied and maintain this for 60 s.

5.5 Test for resistance against high temperature

5.5.1 Apparatus

In order to execute the examination of the jamming of the closing device the stop- or connection cock must be installed in a test installation in which the required pressure can be obtained with water.

Before the examination the test installation must be de-aerated. The water pressure must be measured with a precision manometer according to NEN 927.

5.5.2 Test piece

The test shall be carried out on a sample which was not submitted to other tests.

If a stuffing box is used as a spindle seal, the packing shall be adjusted according to article 5.2.

5.5.3 Test conditions and methods

5.5.3.1 Requirements

During the examination the following conditions shall be fulfilled:

- the water temperature shall be $90 \pm 3^\circ\text{C}$
- the static pressure with the stopcock in closed position shall be 1600 kPa.

5.5.3.2 Method in closed position

- a. Rinse the stop cock with water.
- b. Close the stop cock (up to DN25) with a torque of 2 Nm. Stop cocks larger than DN 25 shall be closed with a torque of 4 Nm.
- c. Gradually apply a pressure of 1600 kPa to the inlet side within 15 s and maintain this pressure.
- d. Place the stop cock for 240 hours in a bath with water with a temperature of $90 \pm 3^\circ\text{C}$.
- e. Cool down the stop cock at ambient temperature ($20 \pm 5^\circ\text{C}$) and reduce the pressure to ambient pressure.
- f. Open the stop cock completely and measure the maximum required torque.

5.5.3.3 Method in open position

- a. Open the stop cock (up to DN25) with a torque of 2 Nm. Stop cocks larger than DN 25 shall be opened with a torque of 4 Nm.
- b. Place the stop cock for 240 hours in a bath with water with a temperature of $90 \pm 3^\circ\text{C}$.
- c. Cool down the stop cock at ambient temperature ($20 \pm 5^\circ\text{C}$) and reduce the pressure to ambient pressure.
- d. Rinse the stop cock with water.
- e. Close the stop cock completely and measure the maximum required torque.

5.6 Test for resistance to forces and moments

5.6.1 Operating mechanism

5.6.1.1 Apparatus

To test the resistance of the operating mechanism to forces and moments, the stop- or connecting cock shall be installed in a test apparatus in which the required moment can be obtained on the mechanism.

5.6.1.2 Test piece

For the test, a cock is required in which the flexible seal is replaced by a brass one so that the operating mechanism is in effect in the same position as in its normal closed position.

If a stuffing box is used for the spindle seal, it should be adjusted as described in 5.2.

5.6.1.3 Method

- a. Close the stop- or connecting cock.
- b. Apply a clockwise moment to the operating mechanism perpendicular to the spindle for a period of 60 s. See **Error! Reference source not found.** for the applicable moment.
- c. Open the stop- and connection cock fully.
- d. Apply an anticlockwise moment to the operating mechanism perpendicular to the spindle for a period of 60 s. See **Error! Reference source not found.** for the applicable moment.

Table 4 – Test moments

DN	moment (in N·m)		
	closure	opening	on the end joints
connecting cocks	5	5	50
10	5	5	50
15	10	10	70
20	15	10	100
25	20	10	150
32	25	10	200
40	30	10	350
50	35	10	600

5.6.2 End joints

5.6.2.1 Apparatus

To test the resistance of the end joints to forces and moments, the stop- or connecting cock shall be installed in a test apparatus in which the required moment to be obtained on the relevant components.

5.6.2.2 Test piece

For this test, a stop- or connecting cock is required in which the end joints are fitted, if necessary, with auxiliary fittings to enable the required moments to be obtained on the relevant components.

Remark

For threaded end joints without wrench flats, an auxiliary fitting consisting of a thread with wrench flats shall be used. End joints with a bore hole for capillary soldering can, if necessary, be fitted with cylindrical auxiliary fittings to simplify installation in the test apparatus.

5.6.2.3 Method

- Connect one end of the test piece to the test apparatus, using an auxiliary fitting if necessary.
- Apply a moment to the open end for a period of 60 seconds in the same plane as the centre line of the end joints. See Table 4 for the applicable moment.
- Apply a moment to threaded end joints in a plane at right angles to the centre line of the end joint. See Table 4 for the applicable moment.

5.7 Durability test

5.7.1 Apparatus

To test the durability of the stop- or connecting cock, the sample shall be installed in a test rig in which it can be submitted to a continuous test process.

5.7.2 Test piece

The durability test shall be performed on a sample that has not been submitted to other tests.

If a stuffing box is used as a spindle seal, this shall be adjusted as described in section 5.2.

If the spindle seal of this type of stop cock leaks during the durability test, the gland shall be tightened to the point at which a seal is obtained at a water pressure in the stop cock of 400 kPa.

5.7.3 Test procedure

5.7.3.1 Test conditions

During the durability test of the stop- or connecting cock:

- The water shall flow in the direction as indicated on the cock (if applicable);
- The water temperature shall not exceed 30°C;
- With the stop- or connecting cock fully open, the flow rate shall be at least 0.08 l/s;
- The static pressure on the closed stop- or connecting cock shall not exceed 400 kPa.

5.7.3.2 Method

Carry out 10.000 consecutive cycles. Each cycle shall consist of the following actions:

- a. Open the stop- or connecting cock with a rotation frequency of 0.5 Hz until it is 80% open;
- b. Maintain this position for 5 seconds;
- c. Close the the stop- or connection cock with a rotation frequency of 0.5 Hz;
- d. Apply for a period of 5 seconds a moment of 3 Nm for stop cocks up to DN 25, respectively 5 Nm for stop cocks larger then DN 25 and 1 Nm for connecting cocks;
- e. Maintain this position for 5 seconds.

Carry out 5.000 consecutive cycles on the same test sample according to (a) up to and including (e), with a water temperature of $65 \pm 3^\circ\text{C}$.

6 Coding

Stop- and connecting cocks manufactured according to these requirements are indicated with a code, consisting of the name, the nominal diameter, the connection of the inlet side, respectively the outlet side and the eventual presence of drainage connections.

The following symbols are used:

A	end joint with internal threads;
B	end joint with external threads;
C	end joint with capillary solder;
F	end joint with flange;
KF	end joint with compression joint;
IF	end joint with push-in joint;
WM	end joint with (secured) union nut;
S	body with drainage connections.

Example for coding of a straight stop cock with disc with a nominal diameter of DN 15, an internal thread on the inlet side (A), a union nut on the outlet side (WM) and with drainage connections on the body (S) would have the following code:
Straight stopcock with disc - **DN 15 - A - WM - S.**

7 Marking

7.1 General

The marking requirements for stop cocks with valve or ball are in accordance with the standards:

EN 1213 Building valves – Copper alloy stop valves for potable water supply in buildings – Tests and requirements.

EN 13828 Building valves - manual operated ball valves of copper alloys and stainless steel for potable water supply in buildings - test procedures and requirements.

Valves furnished with drainage connections shall also be marked with a flow direction indicator.



Other stop- and connecting cocks shall be marked clearly visible and indelible with the following:

- On the housing:
 - Flow direction;
 - Nominal diameter;
 - Company name or mark.
- On the head part (if applicable):
 - Company name or mark.
- On the nut of the compression fitting (if applicable):
 - Company name or mark;
 - Nominal diameter.

7.2 Certification mark

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

For products which come in contact with drinking water:

The Kiwa Water Mark “Kiwa ”. or the abbreviated wordmark .

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 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.

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. re-calibration 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-K604	Tests within the scope of:	
		Pre-certification	Inspection by Kiwa after granting of certificate a,b)
Materials			
Requirements to avoid deterioration of the quality of the drinking water	4.2.1	X	X
Chemical and functional requirements	4.3.1	X	X
Construction and design			
seals	4.3.2	X	X
operation	4.3.3	X	X
drainage connections	4.3.4	X	X
dimensions and end joints stop cocks with disc or ball	4.3.5	X	X
Dimensions and end joints other stop- and connecting valves	4.3.6	X	X
Construction and design for stop cocks with disc or ball	4.3.7	X	
Construction and design for other stop- and connecting cocks	4.3.8	X	
• body wall thickness		X	X
• wrench flats		X	X
• direction of flow		X	
• fastening of the sealing element		X	X
Functional requirements			
Stop cocks with disc	4.3.9		
• EN1213 requirements		X	X
• Durability		X	
• Resistance to high temperatures		X	
Stop cocks with ball	4.3.10		
• EN13828 requirements		X	X
• durability		X	
• resistance against high temperature		X	
Other stop- and connecting cocks	4.3.11		
• flow capacity		X	
• resistance to high volumes of flow		X	

Description of requirement	Article no. of BRL-K604	Tests within the scope of:	
		Pre- certification	Inspection by Kiwa after granting of certificate a,b)
• closure and watertightness		X	X
• resistance to high temperatures		X	
• resistance to forces and moments		X	X
• durability		X	
Marking			
• general	7.1	X	X
• certification mark	7.2	X	X

- a) In case the product or production process changes, 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 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.

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 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.
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"> • 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: <ul style="list-style-type: none"> • 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 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.

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 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 audits 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 an ISO 9001 certificate (issued by Kiwa or any other accredited certification body), the frequency is increased to 3 visits for the duration of one year.

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 two years. 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.

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 through the “News and publications” page on the Kiwa website “Kiwa Regulation for Certification”.

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 Milieu¹

11.2 Standards / normative documents

Number	Title
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-K622	Flexible connection hoses
BRL-K623	Fittings, couplings and parts for solder and screw joints with copper pipes
BRL-K640	Compression-, press- and push fittings
DIN 17440	Nichtrostende Stähle. Technische Lieferbedingungen für Blech, warmband und gewalzte Stäbe für Druckbehälter, gezogen Draht und Schmiedstücke
DIN 2501 Teil 1	Flangesche, Connection sizes Anschlussmasse.
DIN 7737	Schichtpressstoff-Erzeugnisse; Vulkanfiber, Typen
ISO 228-1	Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designations
ISO 7-1	Pipe threads where pressure-tight joints are made on the threads - Part 1: Dimensions, tolerances and designations
NEN 1006	General regulations drinkingwater installations
NEN 927	Pressure gauges. Examining and calibrating
NEN 5337	Paints and varnishes - Cross-cut test
NEN-EN 248	Sanitary tapware – General specification for electrodeposited Ni-Cr coatings
ISO 2409	Paints and varnishes — Cross-cut test
NEN-EN 10088.3	Stainless steels - Part 3: Technical delivery conditions for semi-finished products, bars, rods and sections for general purposes
NEN-EN 1213	Building valves – Copper alloy stop valves for potable water supply in buildings – Tests and requirements
NEN-EN 13828	Building valves - Manual operated ball valves of copper alloys and stainless steel for potable water supply in buildings - test procedures and requirements

Waterwerkblad Drinkwaterinstallaties WB 2.2 A

Kiwa-Regulations for Product certification

In this BRL is referred to the version in force, unless something else is mentioned.

¹ Valid from 1 July 2017

I Model certificate (example)



CERTIFICATE

Product certificate Kxxxxx/01



Issued xxxx-xx-xx
Replaces -
Page 1 of 2

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 certificate holder

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-K xxx "xxxxxxxxxxxxxxxx", dated xx-xx-xxxx.

Name Director
Kiwa

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

Company
Name
Address
Telephone
Internet

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

20070101

Certification process
consists of initial and
regular assessment of:

- quality system
- product

Name Product

Technical specification

The products mentioned below belong to this product certificate;

products

APPLICATION AND USE

Scope / limits for correct use

MARKING

The Kiwa®-mark products are marked with ...

Place of the mark:

- place

Compulsory specifications:

- a;
- b;
- c;
- d.

RECOMMENDATIONS FOR CUSTOMERS

Check at the time of delivery whether:

- the supplier has delivered in accordance with the agreement;
- the mark and the marking method are correct;
- the products show no visible defects as a result of transport etc.

If you should reject a product on the basis of the above, please contact:

- name
- and, if necessary,
- Kiwa Nederland B.V.

Consult the supplier's processing guidelines for the proper storage and transport methods.

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"> • incoming goods inspection raw materials • incoming goods inspection semi-finished products 				
Production process, production equipment, plant: <ul style="list-style-type: none"> • procedures • working instructions • equipment • material • surface 				
Finished-products <ul style="list-style-type: none"> • closing • water-tightness 				
Measuring and testing equipment <ul style="list-style-type: none"> • measuring equipment • calibration 				
Logistics <ul style="list-style-type: none"> • marking • traceability • protections 				