

BRL K17701

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Evaluation Guideline

for the Kiwa product certificate for
manifolds for warm water and chilled water



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Kiwa preface

This Evaluation Guideline is drawn up by the Board of Experts Central Heating at Kiwa, in which relevant parties in the field of manifolds for wall/floor cooling and/or heating installations are represented. This Board of Experts also guides the performance of certification and adjusts this Evaluation Guideline where necessary. Wherever the term 'Board of Experts' is used in this Evaluation Guideline, the above-mentioned Board of Experts is meant.

This Evaluation Guideline will be used by Kiwa in conjunction with the Kiwa Regulations for Product Certification in which Kiwa's general rules for certification are established.

This Evaluation Guideline only describes manifolds with components connected directly to the manifold. Components such as centrally controlled thermostats and piping systems are not described in this Evaluation Guideline.

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Binding declaration

This evaluation guideline is declared binding by Kiwa as of 07-05-2021

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1 Introduction

1.1 General

The requirements stated in this Evaluation Guideline are used by Kiwa for processing an application and maintaining product certificates for manifolds for warm water and chilled water¹.

For the performance of certification activities, the certification bodies are bound to the requirements established in the chapter "Requirements for certification bodies".

1.2 Application area

The manifold can be connected to a heat and/or cold source.

Remark: In this Evaluation Guideline, every stated pressure always refers to overpressure (e.g. "6 bar" means "6 bar overpressure").

Heating:

The manifolds are intended for use in underfloor heating systems for warm water distribution at a design pressure (= maximum operating pressure) of 3, 6 or 10 bar under the conditions stated in table 1.

Table 1: Temperature profile for 50 years

	Class 4		Class 5		Safety factor / temperature (plastic manifold housing)
	Temperature [°C]	Lifetime [Years]	Temperature [°C]	Lifetime [Years]	
T _{cold}	20	2.5 years	20	14 years	1.25
T _{operating}	40	20 years	60	25 years	1.5
	+ 60	+ 25 years	+ 80	+ 10 years	
T _{max}	70	2.5 years	90	1 years	1.3
T _{malfunction}	100	100 hours	100	100 hours	1.0
Remark: the temperature profile indicated is derived from class 4 and class 5 according to NEN-ISO 10508 for 50 years.					

Cooling:

The manifolds are intended for use in cooling systems with water or water/antifreeze mixtures at a design pressure of 3, 6 or 10 bar. The water/antifreeze ratio depends on the minimum design temperature.

¹ Further referred to as manifolds

1.3 Acceptance of the test reports provided by the supplier

If the supplier submits reports from testing bodies or laboratories to show that the requirements of the Evaluation Guideline have been met, it will need to be demonstrated that this was drawn up by a body that meets the applicable accreditation standard, namely:

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

The body is regarded to meet these criteria when an accreditation certificate can be provided that has been issued by the Dutch Accreditation Council (*RvA*) or an accreditation body with which the RvA has concluded a mutual acceptance agreement.

This accreditation must be relevant to the investigation required for this Evaluation Guideline.

If no accreditation certificate can be provided, the certification body will verify for itself whether the accreditation standard has been met, or conduct the respective investigation itself or have such investigation conducted.

1.4 Product certificate

The quality declarations to be issued on the basis of this Evaluation Guideline are indicated as a Kiwa product certificate.

The model of the product certificate has been included as an appendix to this Evaluation Guideline.

2 Terminology

2.1 Definitions

The following terms and definitions apply in this Evaluation Guideline:

- **Evaluation Guideline (BRL):** the agreements made within the Board of Experts about the subject of certification;
- **Board of Experts:** the “Kiwa CV” Board of Experts;
- **Supplier:** the party that is responsible for ensuring that products constantly meet the requirements on which the certification is based;
- **IQC scheme:** Internal Quality Control scheme, a description of the quality inspections performed by the supplier as part of its quality system;
- **Product requirements:** concrete requirements in terms of dimensions or numbers focusing on the (identifiable) characteristics of products and stating a limiting value to be achieved that can be calculated or measured unambiguously;
- **Initial investigation:** the assessment to determine that all the requirements stated in the Evaluation Guideline have been met;
- **Surveillance inspection:** the assessment carried out after the certificate has been granted to determine that the certified products continue to meet the requirements stated in the Evaluation Guideline;
- **Product certificate:** a document in which Kiwa declares that, on delivery, a product may be deemed to comply with the product specifications stated in the certificate;
- **Private label certificate:** A product certificate that only specifies products that are included in the product certificate for another producer certified by Kiwa, with the only difference that the products and product information from the private label holder are provided with a brand name that belongs to the private label holder;
- **Installation:** assembly of pipes, appendages, fittings and appliances;
- **Drinking water installation:** an installation that is directly or indirectly connected to the distribution network of a drinking water company (source Drinking Water Act);
- **Manifold: floor/wall cooling and/or heating unit** with which a medium can be distributed over outlets in a regulated way.

2.2 Terminology and definitions in relation to service conditions

- **Lifetime:** The time during which the pipe must function with a certain operating temperature;
- **Water temperature during operation ($T_{\text{operating}}$):** The temperature of the water in a manifold under service conditions;
- **Maximum water temperature (T_{max}):** The highest temperature of the water occurring in a manifold under operating conditions for a short period of the service life;
- **Malfunction temperature ($T_{\text{malfunction}}$):** The highest temperature occurring in a manifold under abnormal conditions, for example due to faults, for a short time duration (maximum 20 hours per 10 years);
- **Cold water temperature (T_{cold}):** Temperature of the cold water with a maximum of 25 °C. A water temperature of 20 °C is used for the calculation of the design pressure;
- **Design pressure (p_D):** The allowable overpressure that may occur in the pipe under continuous use for 10 years;
- **Temperature profile:** The incidental temperatures that occur for a certain time over 10 years;
- **Safety factor/temperature:** A coefficient with a value greater than or equal to 1 that takes into account the service conditions and the characteristics of the components of the piping system that are not covered with NEN-EN-ISO 9080 analysis of the plastic housing.

3 Procedure for obtaining a quality declaration

3.1 Initial investigation

The initial investigation will take place on the basis of the (product) requirements, including determination methods, stated in this Evaluation Guideline and, depending on the nature of the product to be certified, includes:

- type testing to determine whether the products meet the product and/or performance requirements;
- the assessment of the production process;
- the assessment of the quality system and the IQC scheme;
- an assessment for the presence and the functioning of the other required procedures.

3.2 Certificate issuing

After completion of the initial investigation the results are presented to the decision maker (see). This person assesses the results and determines whether the certificate can be issued or that additional data and/or tests are necessary before the certificate can be issued.

4 Product requirements and test methods

4.1 General

This chapter includes the requirements that the manifolds must meet, as well as the test methods to determine that the requirements are met.

4.2 Requirements under public law.

CE marking applicable to a part of the components that fall under the area of application, the following Directives apply.

- Directive 2014/35/EU: on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits;
- Directive 2014/30/EU: on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast);
- Directive 2009/125/EC: establishing a framework for the setting of ecodesign requirements for energy-related products;
- Directive 2005/32/EC: establishing a framework for the setting of ecodesign requirements for energy-using products.

4.3 Requirements under private law

4.3.1 *Technical product information*

The technical product information for each type of manifold must be available stating at least the following aspects:

- Name of the product;
- Purpose of the product;
- Area of application;
- Installation instructions (see 4.3.2);
- Use and maintenance instructions;
- List of components specifying:
 - Component name
 - Component article number / supplier
 - Component materials
- Maximum temperature and maximum operating pressure.

4.3.2 *Installation instructions*

The producer must provide installation instructions. The instructions must be drawn up in the Dutch language and at least contain specific directions for adjusting the manifold. Instructions must also be present with regard to storage and transport, handling temperature, etc.

4.3.3 *Medium*

Manifolds that meet the requirements in the Evaluation Guideline are suitable for water or a mixture of water with max. 50% antifreeze, for example glycol, monoethylene glycol or propylene glycol.

4.3.4 *Chemical and mechanical requirements*

4.3.4.1 *Steel*

Steel must satisfy:

NEN-EN10219-1: Cold formed welded structural hollow sections of non-alloy and fine grain steels - Part 1: Technical delivery conditions

4.3.4.2 *Stainless steel*

Stainless steel must contain at least 13% chrome in accordance with NEN-EN 10088-3.

4.3.4.3 *Copper and copper alloys*

Copper and copper alloys must satisfy:

- NEN-EN 1982 Copper and copper alloys - Ingots and castings;
- NEN-EN 12163 Copper and copper alloys - Rods for general purposes;
- NEN-EN 12164 Copper and copper alloys - Rods for free machining purposes;
- NEN-EN 12165 Copper and copper alloys - Wrought and unwrought forging stock;
- NEN-EN 12168 Copper and copper alloys - Hollow rods for free machining purposes;
- NEN-EN 12420 Copper and copper alloys - Forgings
- NEN-EN 16313 Connections for heating and cooling appliances - Detachable connection with outside threaded pipe G 3/4 A and inside cone

4.3.4.4 *Plastics*

Service life manifold housing:

The plastics used must have a service life of at least 50 years at the applied design pressure and temperature profile in table 1. This must be determined according to the same test method as described in NEN-EN-ISO 9080.

There are 2 options:

- On the material by test pieces in pipe form on the basis of hoop stress
- On the product on the basis of pressure according the method describe in Annex IV

Oxygen permeability:

The oxygen permeability must be lower than 0.13 mg O₂/m².day at 40 °C in combination with 20 metres of KOMO certified pipe, determined according to the same test method as described in NEN-ISO 17455.

4.3.4.5 *Other materials*

If materials other than those indicated are used, these must have at least equivalent specifications.

4.3.4.6 *Rubber for elastic sealing elements*

Rubber must meet the requirements as stated in NEN-EN 681-1, types .WB, WD and WF.

4.3.5 **Corrosion resistance**

If they are not resistant against corrosion, the materials used must be covered with a protective coating and may not have the potential to cause contact corrosion with other parts. See corrosion table appendix III

4.3.5.1 *Metallic coatings*

Metallic, corrosion resistant coatings must meet the requirements set in NEN-EN248.

4.3.5.2 *Plastic coatings*

After a test according to 5.1, plastic coatings must meet the requirements of:

- NEN-EN 248, article 7.1.1 regarding resistance to corrosion;
- NEN-EN-ISO 2409, table 1, class 0 or 1 regarding adhesion;
- NEN-EN-ISO 4624: Paints and varnishes - Pull-off test for adhesion.

4.3.6 Structural requirements for the components

4.3.6.1 Connection ends

- Screw threads must meet the requirements of NEN-EN-ISO 7-1 or ISO 228-1.
- The functional requirements for compression fittings for copper pipes must meet BRL-K639;
- The functional requirements and corresponding testing methods for metal/plastic compression or push-fit fittings to be used in plastic pipe systems are laid down in the following Kiwa evaluation guidelines:
 - BRL 5601, PE
 - BRL 5602, PE-RT
 - BRL 5603, PE-X
 - BRL 5604, PB
 - BRL 5605, PB
 - BRL 5606, PE-X
 - BRL 5607, PE-RT
 - BRL 5610, PE-X/Al
 - BRL 5611, PE-RT/Al
 - BRL 5612, PP
- The functional requirements for closing compression fittings with a corresponding clamping device for metal tubes, as well as corresponding testing methods are laid down in the Kiwa evaluation guideline BRL-K774.

4.3.7 Functionality

4.3.7.1 Watertightness

In a test according to 5.1, the manifold may not show any leakage or any sign of damage after 1 hour.

4.3.7.2 Circulation pump (optional)

Circulation pumps must satisfy EuP with EEI requirement <0.23 and IP class CE documentation: declaration of performance (DoP)

4.3.7.3 Flow meters (optional)

If the flow meter is provided with a scale division, the deviation of flow meters in a test according to NEN-EN-ISO 4064-2, article 7.4.4 at the nominal volume stream may not be more than ± 1 scale division.

4.3.7.4 Check valves

The functional requirements for check valves must satisfy BRL-K602 or BRL-K629.

4.3.7.5 Stop valves

The functional requirements for stop valves must satisfy BRL-K604 or BRL-K602.

4.3.7.6 Venting of manifolds

Manifolds must be provided with vent ports.

4.3.7.7 Draining of manifolds

The functional requirements for drain valves must satisfy BRL-K613 with the exception of article 4.3.7.

4.3.7.8 Maximum temperature safeguard (optional)

To prevent the maximum water temperature being exceeded, the manifolds must be provided with a safeguard that automatically switches off to protect the whole system. In a test according to 5.2 the maximum temperature safeguard must switch off at a temperature that is lower than or equal to the maximum water temperature (T_{\max}) + 5 K.

4.3.7.9 *Heat exchanger (optional)*

The functional requirements for heat exchangers must satisfy BRL-K656.

5 Test methods

This chapter includes the determination methods with which the manifolds must be tested to determine that the requirements are met.

5.1 Watertightness

5.1.1 Set up

To test the closure and seal, the manifold, provided with the components supplied, must be included in a testing appliance with which the required pressures can be obtained with the addition of water. The appliance must be completely free of air for the test. It must be possible to measure the water pressure with a precision manometer according to NEN 927.

5.1.2 Test piece

A new test sample.

5.1.3 Operating procedure

- a. Mount the appendages belonging with the manifold to the manifold.
- b. Fill the manifold with water.
- c. After venting completely, close the outlet openings.
- d. Gradually load the manifold with a pressure up to $1.5 p_D$ within 15 s and maintain this final pressure for 1 hour.

5.2 Switching off maximum temperature thermostat

5.2.1 Set up

To test the closure and seal, the maximum temperature thermostat must be included in a testing appliance with which the required temperatures can be obtained with the addition of water. The appliance must be free of air for the test. The temperature must be able to be measured with a calibrated thermometer accurate to $\pm 1^\circ\text{C}$.

5.2.2 Test piece

A new test sample

5.2.3 Operating procedure

- a. Mount the maximum temperature thermostat to the test installation.
- b. Fully vent the test installation.
- c. Adjust the maximum temperature thermostat to the temperature stated by the supplier.
- d. Increase heat with a maximum heating speed of 5 K/min until the maximum temperature thermostat switches off.
- e. Note the temperature at which it switches off and compare this value to the desired value from 4.3.7.8.

6 Marks

6.1 General

The following marks and indications must be applied clearly and legibly on every product:

- manufacturer's name and/or registered trademark;
- production date or coding;
- type designation.

6.2 Certification mark

After issuing a Kiwa certification agreement, the certification mark below must also be applied indelibly on the housing of the manifold and the packaging.

KIWA LTV CV

This mark also applies to components mounted on the manifold housing that are included in the certificate and the technical product information (§ 4.3.1).

7 Requirements for the quality system

This chapter states the requirements that the supplier's quality system must meet.

7.1 Manager of the quality system

Within the organizational structure an employee must be appointed who is in charge of managing the quality system.

7.2 Internal quality control / quality plan

The supplier must have an internal quality control scheme (IQC scheme) that it uses.

This IQC scheme must demonstrably establish:

- what aspects are inspected by the producer;
- the methods applied to perform these inspections;
- how often these inspections are performed;
- how the inspection results are registered and archived.

This IQC scheme must at least be an equivalent derivative of the model IQC scheme given in the appendix.

7.3 Management of laboratory and measurement equipment

The supplier must determine what laboratory and measurement equipment are necessary on the basis of this Evaluation Guideline to demonstrate that the product meets the set requirements.

When necessary, the laboratory and measurement equipment must be calibrated at specified intervals.

The supplier must assess and register the validity of the aforementioned measurement results when the calibration shows that the laboratory and measurement equipment does not function correctly.

The respective measurement equipment must be provided with an identification with which the calibration status can be determined.

The supplier must register the results of the calibrations.

7.4 Procedures and work instructions

The supplier must be able to provide:

- procedures for:
 - handling products with deviations;
 - corrective measures for deficiencies found;
 - handling complaints about products and/or services provided;
- the work instructions and inspection forms used.

7.5 Other requirements for the quality system

The supplier must be able to provide:

- the diagram of the organisational structure;
- the qualification requirements for the staff involved.

8 Summary of testing and inspection

The summary of what is to be done for the certification is given below:

- **Initial investigation:** the investigation to determine that all the requirements stated in the Evaluation Guideline have been met;
- **Surveillance inspection:** the assessment carried out after the certificate has been granted to determine that the certified products continue to meet the requirements stated in the Evaluation Guideline; this also indicates the frequency with which surveillance inspections must be conducted by the certification body (CB);
- Inspection of the quality system: inspection for compliance of the IQC scheme and the procedures

8.1 Test matrix

Requirement description	BRL article	Assessment in the framework of	
		Initial investigation	Inspection after certificate issuing ^{a), b)}
Requirements under public law.	4.2	X	X
Requirements under private law			
Technical product information	4.3.1	X	X
Installation instructions	4.3.2	X	
Chemical and mechanical requirements			
Steel ^{c)}	4.3.4.1	X	X
Stainless steel ^{c)}	4.3.4.2	X	X
Copper and copper alloys ^{c)}	4.3.4.3	X	X
Plastics: ISO 9080 ^{c)}	4.3.4.4	X	
Plastics: oxygen permeability ^{c)}	4.3.4.4	X	
Other materials ^{c)}	4.3.4.5	X	X
Rubber for elastic seal elements ^{c)}	4.3.4.6	X	X
Corrosion resistance ^{c)}	4.3.5	X	X
Metallic coatings ^{c)}	4.3.5.1	X	
Plastic coatings ^{c)}	4.3.5.2	X	
Structural requirements for the components			
Connection ends	4.3.6.1	X	X
Functionality			
Watertightness	4.3.7.1	X	X
Circulation pump ^{c)}	4.3.7.2	X	X
Flow meters ^{c)}	4.3.7.3	X	X
Check valves ^{c)}	4.3.7.4	X	X

Requirement description	BRL article	Assessment in the framework of	
		Initial investigation	Inspection after certificate issuing ^{a), b)}
Stop valves ^{c)}	4.3.7.5	X	X
Vent ports	4.3.7.6	X	X
Drain valves	4.3.7.7	X	X
Maximum temperature safeguard	4.3.7.8	X	X
Heat exchanger ^{c)}	4.3.7.9	X	
Marks			
General	6.1	X	X
Certification mark	6.2	X	X

- a) In case of significant changes to the product or production process, to be assessed by Kiwa, it must be determined again whether the product still satisfies the performance requirements.
- b) During the inspection visit, the inspector checks the products on the basis of a selection from the product requirements marked above. The frequency of inspection visits is defined in section 9.6 of this Evaluation Guideline.
- c) If part of the manifold

8.2 Evaluation of the quality system

The producer's quality system will be evaluated by Kiwa.

This assessment includes at least the aspects that are stated in the Kiwa Regulations for Product Certification.

9 Agreements about implementing certification

9.1 General

Aside from the requirements that are laid down in this Evaluation Guideline, the general rules for certification laid down in the Kiwa Regulations for Product Certification also apply.

In particular, these are:

- The general rules for performing the initial investigation, to be distinguished in:
 - the way in which suppliers are informed about processing an application;
 - execution of the investigation;
 - decision based on the performed investigation;
- The general rules with regard to the execution of inspections and the inspection aspects to be employed;
- The measures to be taken by the certification body in the event of non-conformities;
- The measures to be taken by the certification body in the event of illegitimate use of certificates, certification marks, icons and trademarks.
- The rules for termination of the certificate;
- The possibility of lodging appeal against decisions or measures made by the certification body.

9.2 Certification staff

The staff involved in certification can be divided into:

- Certification Experts: in charge of the performance of the initial evaluation and the assessment of the reports by inspectors;
- Inspectors: in charge of the performance of the external inspection at the supplier;
- Decision makers: in charge of taking decisions based on initial evaluations performed, continuation of certification based on inspections done and decisions about the need to take corrective measures.

9.2.1 Qualification requirements

The qualification requirements are made up of:

- Qualification requirements for the staff performing the certification at a certification body that satisfy the requirements set in NEN-EN-ISO/IEC 17065;
- Additional quality requirements for the staff performing the certification at a certification body that are set by the Board of Experts for the subject of this Evaluation Guideline.

Training and experience of the certification staff involved must be demonstrably established.

	Certification expert (CAS)	Inspector (SAS)	Decision maker
Education General	<ul style="list-style-type: none"> • Relevant Techn. Bachelor professional and intellectual level • Internal training certification and Kiwa policy • Training audit skills 	<ul style="list-style-type: none"> • Techn. Intermediate vocational professional and intellectual level • Internal training certification and Kiwa policy • Training audit skills 	<ul style="list-style-type: none"> • Bachelor professional and intellectual level • Internal training certification and Kiwa policy • Training audit skills
Education – Specific	<ul style="list-style-type: none"> • training focused on Evaluation Guidelines • specific courses and training (knowledge and skills) 	<ul style="list-style-type: none"> • training focused on Evaluation Guidelines • specific courses and training (knowledge and skills) 	<ul style="list-style-type: none"> • not applicable unless specific requirements are set by Board of Experts

	Certification expert (CAS)	Inspector (SAS)	Decision maker
Experience – General	<ul style="list-style-type: none"> • 1 year of relevant work experience with minimum 4 investigations of which 1 full pre-certification evaluation independently under supervision 	<ul style="list-style-type: none"> • 1 year relevant work experience with minimum 4 investigations of which 1 independently under supervision 	<ul style="list-style-type: none"> • 4 years of work experience of which at least 1 year with regard to certification
Experience – Specific	<ul style="list-style-type: none"> • knowledge of Evaluation Guideline at detail level and 2 investigations relevant to the specific Evaluation Guideline or to Evaluation Guidelines that are related to each other 	<ul style="list-style-type: none"> • knowledge of Evaluation Guideline at detail level and 2 investigations relevant to the specific Evaluation Guideline or to Evaluation Guidelines that are related to each other 	<ul style="list-style-type: none"> • knowledge of the main points of the specific Evaluation Guideline

9.2.2 Qualification

Certification staff must be demonstrably qualified by checking their training and experience against the aforementioned requirements. If qualification is done based on other criteria, this must be recorded in writing.

The authority to qualify lies with:

- Decision makers: qualification of certification experts and inspectors
- Management of the certification body: qualification of decision makers.

9.3 Initial evaluation report

The certification body records the findings of the initial evaluation in a report. The report must satisfy the following requirements:

- Completeness: the report makes a statement about all the requirements set in the Evaluation Guideline;
- Traceability: the findings on which statements are based must be recorded in a traceable way;
- Basis for decision: the person deciding on certificate issuing must be able to base their decision on the findings laid down in the report.

9.4 Decision about issuing the certificate

The decision about issuing the certificate must be made by a decision maker who is qualified for this and who was not personally involved in the initial investigation. The decision must be recorded traceably.

9.5 Execution form of quality declaration

The product certificate must be drawn up in accordance with the model given in the appendix.

9.6 Nature and frequency of external inspections

The certification body must conduct inspections at the supplier's site for compliance with its obligations. The Board of Experts decides on the inspection frequency to be used.

Upon this Evaluation Guideline taking effect, the frequency is set at 2 inspection visits per year for suppliers that have a quality management system according to ISO 9001 for their production that is certified by an accredited body (according to ISO/IEC 17021) and where the IQC scheme is an integrated part of the quality management system.

In the case that the supplier is not certified for the production (of similar products) (either by Kiwa or another accredited certification body), the frequency is increased to 3 inspection visits per year for the duration of 1 year.

For suppliers with a private label certificate, the frequency of inspections with regard to the products included in the certificate is set at

1 inspection visit every 2 years. These inspections are conducted at the private label holder and are focused on the quality aspects to be included in an IQC scheme and the results of the inspections conducted on it by the certificate holder. The IQC of the private label holder must at least apply to:

- The correct way of marking the certified products;
- The compliance with the required procedures for site acceptance testing and factory acceptance testing;
- The storage of products and goods;
- Handling complaints about products delivered.

The entirety of the inspections to be performed by the certification body will at least apply to:

- The product specifications established in the certificate;
- The production process of the products;
- The IQC scheme of the supplier and the results of the inspections performed by the supplier;
- The correct way of marking the certified products;
- Adherence to the required procedures.

The findings of every inspection performed will be traceably recorded by Kiwa in a report.

9.7 Report of the Board of Experts

The certification body reports at least annually about the certification work done. The following subjects must be addressed in this report:

- Changes to number of certificates (new/expired);
- Number of inspections performed in relation to the established frequency;
- Results of the inspections;
- Measures imposed in case of shortcomings;
- Complaints received from third parties about certified products.

9.8 Non conformities

In case of failure to meet the requirements, measures are taken by Kiwa according to the sanction policy, which is published on the Kiwa service portal (www.kiwa.nl) for the respective Evaluation Guideline.

9.9 Interpretation of requirements

The Board of Experts may lay down the interpretation of requirements set in this Evaluation Guideline in one separate interpretation document.

10 List of stated documents

10.1 Regulations under public law

Directive 2014/35/EU: on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits;

Directive 2009/125/EC: establishing a framework for the setting of ecodesign requirements for energy-related products;

Directive 2014/30/EU: on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast);


Directive 2005/32/EC: establishing a framework for the setting of ecodesign requirements for energy-using products and amending Council Directive 92/42/EEC and Directives 96/57/EC and 2000/55/EC

10.2 Standards/normative documents

Number	Title
BRL 5601	PE* plastic piping systems intended for underfloor heating
BRL 5602	PE-RT plastic piping systems intended for underfloor heating
BRL 5603	PE-X plastic piping systems intended for underfloor heating
BRL 5604	PB plastic piping systems intended for underfloor heating
BRL 5605	PB plastic piping systems intended for heating installations: radiator connections
BRL 5606	PE-X plastic piping systems intended for heating installations: radiator connections
BRL 5607	PE-RT plastic piping systems intended for heating installations: radiator connections
BRL 5610	PE-X/Al plastic piping systems intended for heating installations: radiator connections
BRL 5611	PE-RT/Al plastic piping systems intended for heating installations: radiator connections
BRL 5612	PP plastic piping systems intended for underfloor heating
BRL-K602	Valves and other appendages for tap water transport and distribution system
BRL-K629	non-return valves
BRL-K639	Fittings with compression ends for use with copper tubes
BRL-K640	Compression and push fit fittings as part of appliances
BRL K656	Heat exchangers for indirect heating of drinkwater
NEN-EN 248	Sanitary tapware - General specification for electrodeposited coatings of Ni-Cr.
NEN-EN 1151	Pumps - Rotodynamic pumps - Circulation pumps having a rated power input not exceeding 200 W for heating installations and domestic hot water installations - Part 1: Non-automatic circulation pumps, requirements, testing, marking
NEN-EN 1074-3	Valves for water supply - Fitness for purpose requirements and appropriate verification tests - Part 3: Check valves
NEN-EN 1982	Copper and copper alloys - Ingots and castings
NEN-EN 10088-3	Stainless steels - Part 3: Technical delivery conditions for semi- finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes
NEN-EN 12163	Copper and copper alloys - Rods for general purposes
NEN-EN 12164	Copper and copper alloys - Rods for free machining purposes
NEN-EN 12165	Copper and copper alloys - Wrought and unwrought forging stock

NEN-EN 12168	Copper and copper alloys - Hollow rods for free machining purposes
NEN-EN 12420	Copper and copper alloys - Forgings
NEN-EN 13959	Anti-pollution check valves - DN 6 to DN 250 inclusive family E, type A, B, C and D
NEN-EN 16313:2013	Connections for heating and cooling appliances - Detachable connection with outside threaded pipe G 3/4 A and inside cone
NEN-EN-ISO 1167-1	Thermoplastics pipes, fittings and assemblies for the conveyance of fluids - Determination of the resistance to internal pressure
NEN-EN-ISO 2409	Paints and varnishes - Cross-cut test
NEN-EN-ISO 4064-2	Water meters for cold potable water and hot potable water - Part 2: Test methods
NEN-EN-ISO 4624	Paints and varnishes - Pull-off test for adhesion
NEN-EN-ISO 9001	Quality Managementsystem - requirements
NEN-EN-ISO 9080	Plastics piping and ducting systems - Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation

I Certificate model

Certificaat	Product certificate KXXXXXX/OX	
	Issued	
	Replaces	
	Page 1 of 2 Manifolds	
	STATEMENT BY KIWA With this product certificate issued in accordance with the Kiwa Regulations for Product Certification, Kiwa declares that it has legitimate confidence that upon delivery, the products supplied by Supplier name that are specified in this certificate and provided with the certification mark indicated under "Marks", meet the requirements set in BRL-K17701: "manifolds for wall/floor cooling and/or heating installations" dated YYYY-mm-dd.	
	Kiwa Director Kiwa	
	This certificate may be made public. Advice: consult www.kiwa.nl to determine whether this certificate is valid.	
Kiwa Nederland B.V. Sir W. Churchillaan 273 PO Box 70 2280 AB RIJSWIJK Tel. +31 (0)70 414 44 00 Fax +31 (0)70 414 44 20 www.kiwa.nl	Certificate holder/Supplier Tel. Fax www. Email	Certification process consists of initial and periodic assessment of: <ul style="list-style-type: none">• quality system• product

II Model IQC scheme

SCHEME INTERNAL QUALITY CONTROL	Producer :	Page no. : 1
	Address :	Number of pages : :
	Production location address :	Appendices:
<u>Area(s) of application</u>		
<u>Quality control</u> Number of employees in quality department : Number of employees in day shift : Number of employees in night shift :		<u>Work instructions and/or quality manual</u> Work instructions and procedures are registered as follows: If no inspections are performed during the night, the quality procedure is followed.
<u>Spot check system</u> System used:		<u>Complaints procedure</u> The complaints procedure is laid down in
<u>Archiving the inspection data</u> All inspection data will be archived for a minimum of year(s).		<u>Corrective measures</u> The corrective measures procedure is laid down in

Agreements/explanation

Signature of the producer:

Date:

A. Pipes and fittings supplied				Page no. : 2
A.1 Receipt Data upon receipt per delivery with regard to date, producer, type and quantity are recorded in the following way:				
A.2 Acceptance test				
What is checked	Criteria for check	How check is done	Inspection frequency	Registration method

Special agreements/explanation:

B. Check of packaging, storage and transport of the end product The instructions for packaging, storage and transport are stated in appendix.....				Page no. : 3
What is checked	Criteria for check	How check is done	Inspection frequency	Registration method
B.1 Packaging				
B.2 Storage				
B.3 Transport				

C. Supply to Installers			Page no. : 4
What is checked	Criteria for check	Inspection frequency	Registration method




Special agreements/explanation:

E. Complaints procedure The complaints procedure is laid down in Quality Manual procedure	Page no. : 5
E.1 Receipt of the complaint	
E.2 Investigation of the cause	
E.3 Settlement of the complaint	

Special agreements/explanation:

III Corrosion table

Material (cover) component	Steel (galvanised)	Nickel/Steel (nickel plated)	Copper/steel (copper plated)	Brass/Steel (brass plated)	Aluminium	Steel (Dacromet/Deltatone)	Stainless steel (A2/A3; A4/A5)
Screw Material (cover)							
Steel (galvanised)	+	-	-	-	●	+	-
Steel (nickel plated)	-	+	+	●		-	+
Steel (copper plated)	-	+	+	●	-	-	●
Steel (brass plated)				+			
Brass							
WIROX®	+	-	-	-	+	+	-
Aluminium		-	-		+	●	-
Steel (Dacromet/Deltatone)	+	-	-		●	+	-
Stainless steel (A2/A3; A4/A5)	●	+	+	●	●	●	+

 Intensive contact corrosion
  No significant contact corrosion
  No contact corrosion

IV Determination long term strength plastics manifold housing

Due to the construction of the plastics manifold housing it is not always practical possible to use the standard method for ISO 9080. To determine the lifetime of 50 years for a plastics manifold housing a method is derived from the ISO 9080 on the basis of the temperature profile (class 4 and 5) according ISO 10508 for 50 years.

The manifold housing (smallest module) will be filled with water and tested as a complete construction on pressure at 2 temperatures (see table IV.1) according the general accepted principle of Arrhenius (ISO 9080).

Per temperature a minimum of 30 data points¹⁾ are required for the regression line, evenly distributed over the test time:

- A minimum of 5 data points between 10 - 100 hours
- A minimum of 5 data points between 100 - 1000 hours
- A minimum of 5 data points between 1000 - 7000 hours
- A minimum of 4 data points above 7000 hours
- A minimum of 1 data point above 10.000 hours

The calculation of the regression line is performed according the 4-parameter (and if applicable 3-parameter) model of ISO 9080.

The minimum test times in table IV.1 are valid for the operating temperature at the concerning class and the associated higher (extrapolation) temperature needed for the extrapolation factor at the operation temperature after 50 years.

Table IV.1 Minimal test times

	Class 4+ 5	
	Temperature (°C)	Minimal test time (hour)
Operation temperature	60	10.000
Extrapolation temperature	110	10.000

The minimum requirement for the pressure is the design pressure based on the LPL value after 50 year at the relevant temperature class.

The testing of the manifold housing will be performed in water or in air depending on the plastics material.

¹⁾ datapoint : the point in time at which the test piece shows a failure at a certain stress / pressure and temperature