BRL K536 part K 15-11-2017

Evaluation Guideline

for the Kiwa Technical approval with product certificate for multilayer piping systems PE-X/AI, PE-RT/AI, PP-R/AI and PP-RCT/AI intended for transport of hot and cold drinking water inside buildings



Trust Quality Progress

Preface

This evaluation guideline has been accepted by the Kiwa Board of Experts CWK, in which all relevant parties in the field of multilayer piping systems PE-X /Al, PE-RT/Al, PP-R/Al and PP-RCT/Al intended for transport of hot and cold drinking water inside buildings 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 Product Certification. This regulation details the method used by Kiwa for conducting the necessary investigations prior to issuing the product certificate and the method of external control.

Based on the assessment of the product according to this evaluation guideline and including the assessment of the quality control of the production process on the production location, a certificate is issued for products used for transport of hot and cold drinking water inside buildings.

This evaluation guideline is to be assessed by the CKW least every 5 years, but at the latest on September 2022.

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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.

Declared binding

This evaluation guideline has been validated by Kiwa on Date 15-11-2017

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1 Introduction

1.1 General

This evaluation guideline includes all relevant requirements which are adhered to by Kiwa when dealing with applications for the issue and maintenance of a certificate for "multilayer piping systems PE-X/AI, PE-RT/AI, PP-R/AI and PP-RCT/AI intended for transport of hot and cold drinking water inside buildings".

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".

Whenever a more specific Kiwa evaluation guideline is issued for a product then mentioned in this document, the more specific Kiwa evaluation guideline supersedes this overall Kiwa evaluation guideline for products used for transport of hot and cold drinking water inside buildings.

1.2 Field of application

This guideline is applicable for products belonging to a multilayer piping systems of PE-X/AI, PE-RT/AI, PP-R/AI and PP-RCT/AI which is intended to be applied for hot and cold drinking water installation inside building at a design pressure of 8 or 10 bar (maximum operating pressure).

Remark:

Each pressure mentioned in this evaluation guideline is defined as overpressure. (So, with "10 bar" a "10 bar overpressure" is meant).

The application class covered by this guideline is listed in Table 1.

Table 1: Temperature profile during 50 years

	Temperature [°C]	Lifetime	Design coefficient
T operation	70	49 years	1,5
T _{max}	80	1 year	1,3
T malfunction	95	100 hours	1,0

Note: This temperature profile is in accordance with application class 2 of EN-ISO 21003-1.

All systems which satisfy the conditions specified in Table 1 shall also be suitable for the conveyance of cold water for a period of 50 years at a temperature of 20 °C and a design pressure of 8 or 10 bar.

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 17025 for laboratories;
- NEN-EN-ISO/IEC 17065 for certification bodies certifying products.

Remark:

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

1.4 Quality declaration

The quality declarations to be issued by Kiwa are described as Kiwa product certificates. A model of the certificate to be issued on the basis of this evaluation guideline has been included for information as Annex I.

2 Terms and definitions

For the purposes of this Guideline, the terms given in EN-ISO 21003-1, CEN/ISO/TS 21003-7 and the "General Rules for Product Certification (GRPC)" apply. Also in this evaluation guideline the following terms and definitions are applicable:

Board of Experts: the Board of Experts "Water Cycle" (CWK).

Board of Stakeholders (BoS): the stakeholders managing the harmonization aspects as described with the GRPC (see below).

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

General Rules of Product Certification (GRPC): a document which describes the intention to and procedure for implementing product certification on the basis of European standards dealing with plastic piping systems in the fields of drinking water in combination with hygienic requirements of the European member-states notified to the European Commission.

Product Evaluation Guideline (PEG): the mechanical requirements for certification of multilayer piping systems PE-X/AI, PE-RT/AI, PP-R/AI and PP-RCT/AI intended for transport of hot and cold drinking water inside buildings in accordance with EN-ISO 21003 Multilayer piping systems for hot and cold water installations inside buildings.

initial investigation: tests in order to ascertain that all the requirements recorded in the evaluation guideline are met. In international standards also referred to as type testing or initial tests.

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

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.

Piping system: the total of pipes and fittings as well as optionally sealings, expansion pieces, transition fittings (thread adaptors) and other piping components.

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.

Technical approval with product certificate: a document in which Kiwa declares that a (plastic) piping system may, on delivery, be deemed to comply with the product specifications recorded in the (technical approval with) product certificate.

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

Material abbreviations:

PE-X Cross-linked polyethylene.

PE-RT Polyethylene of raised temperature resistance.

PP-R

Polypropylene random copolymer.
Polypropylene random crystallinity temperature. **PP-RCT**

3 Procedure for granting the quality declaration

3.1 Initial investigation

3.1.1 Technical approval-with-product certificate

For the purpose of obtaining the technical approval-with-product certificate the certification institute will perform an investigation. The certification institute shall determine that the applicant is able to continuously manufacture products which meet the requirements in this guideline. The initial investigations consist of:

- Assessment of the internal quality system
- Determination and assessment of the performance in the application of the specified piping system
- Assessment of the by the applicant provided or to provide documents in relation to the internal quality assurance to check if the with the products assembled piping system meets the performance requirements as laid down in this guideline.
- Assessment of the processing instructions and the terms of the application.

3.1.2 Product certificate

For the purpose of obtaining the product certificate the certification institute will perform an investigation. The certification institute shall determine that the applicant is able to continuously manufacture products which meet the requirements in this guideline. The initial investigations consist of:

- Assessment of the internal quality system of the applicant
- Inspection of the production and the finished product to determine if the product meets the requirements.
- Determination of the product characteristics (of the constituent products) as laid down in the guideline.

3.2 Granting the quality declaration

After finishing the initial investigation the results are presented to the Decision Maker (see clause 8) deciding on granting of the certificate. This person evaluates the results and decides whether the certificate can be granted or additional data and/or tests are necessary.

4 Requirements

4.1 General

The pipes, fittings and joints of the piping system as specified in clause 1.2 "Field of application" shall be tested with regards to their proper functioning.

4.2 Testing and inspection

For the certification according to this guideline the Product Evaluation Guideline (PEG) shall be followed. The latest version of the PEG can be found on: www.1Kiwa.com.

5 Marking

5.1 General

For the marking the Product Evaluation Guideline (PEG) shall be followed. The latest version of the PEG can be found on: www.1Kiwa.com.

5.2 Certification mark

The products are marked with the Kiwa-mark.

Marking of the fittings

The minimum required marking on the fittings shall be:

- **KIWA §** or on small products **§** or **KK** or **KK**

if marking on fitting is not possible KIWA and only on the smallest packaging unit (after approval by Kiwa).

Location of the marks: on every fitting.

The realization of the marks is as follows: clear, durable and indelible.

The smallest packaging unit of the fittings are provided with at least the following information: KIWA

Location of the marks: on every package.

The realization of the marks is as follows: clear, durable and indelible.

Marking on the pipes

The minimum required marking on the pipes shall be:

- Or for smaller diameters (after approval by Kiwa)

Location of the marks: on every pipe at intervals of not more than 2 m. The realization of the marks is as follows: clear durable and indelible.

6 Quality system requirements

6.1 General

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

6.2 Manager of the quality system

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

6.3 Internal quality control (quality plan)

The supplier shall have and use an Internal Quality Control scheme (IQC).

The following must be demonstrably recorded in this IQC:

- materials used in the product;
- which aspects are checked by the manufacturer;
- · according to which methods these inspections are carried out;
- how often these inspections are carried out;
- how the inspection results are registered and stored.

This IQC should at least be an equivalent of the model IQC Scheme shown in annex II.

6.4 Procedures and working instructions

The supplier shall be able to show the following:

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

6.5 Other requirements

The supplier must be able to submit the following:

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

7 Summary of tests and inspections

7.1 General

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

- type testing;
- inspection tests for the conformation of toxicological requirements and product requirements;
- inspection of the quality system.

7.2 Test matrix

All testing is done according to the Product Evaluation Guideline (PEG). The latest version of the PEG can be found on: www.1Kiwa.com.

7.3 Inspection of the quality system

The quality system will be checked by Kiwa on the basis of the IQC scheme. The inspection contains at least those aspects mentioned in the Kiwa Regulations for Product certification.

8 Agreements on the implementation of certification

8.1 General

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

8.2 Lay out of Certification staff

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

- Certification assessor (CAS): in charge of reviewing the application, the precertification tests and assessing the inspectors' reports;
- Site assessor (SAS): in charge of carrying out inspections at the supplier's works;
- Decision maker (DM): in charge of taking decisions in connection with the precertification tests carried out, continuing the certification in connection with the inspections carried out and taking decisions on the need to take corrective actions.

8.2.1 Qualification requirements

The qualification requirements consist of:

- qualification requirements for personnel of Kiwa which satisfies the requirements NEN-EN-ISO/IEC 17065, performing certification activities;
- qualification requirements for personnel of Kiwa 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.

The qualification requirements of the site assessor (SAS) executing the audit can be found in the GRPC Annex C.

Remark: the GRPC document can be found on www.1kiwa.com.

Basic requirements	Evaluation criteria	
Knowledge of company processes Requirements for conducting professional audits on products, processes, services, installations, design and management systems.	Relevant experience: in the field SAS see GPRC CAS: 1 year DM: 5 years including 1 year in respect to certification Relevant technical knowledge and experience on the level of: SAS: see GPRC CAS, DM: Bachelor's degree	
Competence for execution of site assessments. Adequate communication skills (e.g. reports, presentation skills and interviewing techniques). Execution of initial examination	SAS: see GPRC. CAS: 3 initial audits under supervision.	
Conducting review	CAS: conducting 3 reviews	

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Technical competences	Evaluation Criteria	
Education	General: Education in one of the following technical areas: Civil Engineering; Engineering.	
Testing skills	General: 1 week laboratory training (general and scheme specific) including measuring techniques and performing tests under supervision; Conducting tests (per scheme).	
Experience - specific	 CAS 3 complete applications (excluding the initial assessment of the production site) under the direction of the PM 1 complete application self-reliant (to be evaluated by PM) 3 initial assessments of the production site under the direction of the PM 1 initial assessment of the production site self-reliant (witnessed by PM) SAS see GPRC. 	
Skills in performing witnessing	PM Internal training witness testing	

Legend:

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

8.2.2 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 deviating 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.

8.3 Report type testing

Kiwa records the results of the type testing 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.

8.4 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 type testing. The decision shall be recorded in a traceable manner.

8.5 Layout of quality declaration

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

8.6 Nature and frequency of third party audits

Qualified personnel shall carry out inspections on site of the supplier at regular intervals to check whether the supplier complies with his obligations. The Board of Experts decides on the frequency of the inspections. At the time of validation of this evaluation guideline the standard frequency is 4 inspection visits per year.

Deviation form the standard frequency:

- In case the IQC scheme forms an integral part of the management system of the supplier and this management system is certified on the basis of ISO 9001 (or equal), the frequency is set at 2 inspection visits per year.
- If the supplier is the holder of a technical approval-with-product certificate (and is not a manufacturer of a pipe or a fitting), the frequency is set to 1 inspection a year.
- If the supplier is an owner of a private label (identical certificate derived from an existing technical approval-with-product certificate) the frequency is set at 1 inspection per 2 year.

8.7 Report to the Board of Experts

Kiwa 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.

In accordance with the GRPC Kiwa shall also report to the Board of Stakeholders (**BoS**).

8.8 Non conformities

When the certification requirements are not met, measures are taken by Kiwa in accordance with the sanction policy.

The sanction policy can be found on www.1kiwa.com.

Enter K536 K into the search field and look for the link to Sanction policy Unit Plastic piping systems.

9 Titles of standards

9.1 Standards / normative documents

In table 3 the relevant normative documents (standards) for this BRL are listed.

Table 3 -normative documents/standards

Standard *	Title
NEN-EN ISO/IEC 17020	Conformity assessment - General criteria for the operation of various types of bodies performing inspection
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
PEG	Product Evaluation Guideline for certification of multilayer piping systems PE-X /AI, PE-RT/AI, PP-R/AI and PP-RCT/AI intended for transport of hot and cold drinking water inside buildings in accordance with EN ISO 21003 Multilayer piping systems for hot and cold water installations inside buildings
GRPC	General Rules for Product Certification by the co-operation of certification bodies.

^{*)} only the latest version is valid

I Model certificate (informative)



Technical approval-with-product certificate **KXXXX/0X**



Replaces 1 of 2

Product

STATEMENT BY KIWA

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

Name Supplier

as specified in this technical approval-with-product certificate and marked with the Kiwa8-mark in the manner as indicated in this technical approval-with-product certificate may, on delivery, be relied upon to comply with Kiwa evaluation guideline BRL-K538 part K "guideline for the Kiwa (technical approval-with-) product certificate for plastics piping systems of PE-RT/AI (example), intended for transport of hot and cold drinking water I" dated [dd-mm-yyyy] inclusive amendment sheet dated dd-mm-yyyy].

Within the framework of this technical approval-with-product certificate Kiwa does not impose any inspections with regard to the production of other parts of the plastics piping system, nor the manufacturing of the plastics piping system itself.

Luc Leroy Kiwa

Publication of this certificate is allowed.

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

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Certification process consists of initial and regular assessment of:

- quality system
 product
- product





IQC-schedule INTERNAL QUALITY PLAN Field(s) of application	Manufacturer / supplier : Production location address		Number of appendices:
According Evaluation Guideline(s)			
Number of production shifts:		Quality manual, procedures and working instructions Is the Quality Management System (QMS) certified according to IS	6O 9001 ¹⁾ ?
Quality Control Total number of employees in QC department : Number of QC-operators per shift : If no QC-inspections are carried out during night shifts, state the QC procedure(s)/instruction(s) to be followed: , documented in:		If yes, by which certification body: If yes, is the certification body accredited for the particular scope of certification? In case the QMS is <u>not</u> certified according to ISO 9001: Working instructions, test instructions and procedures are documented as follows: The following procedure for dealing with <u>complaints</u> applies: The following procedure for nonconformity review applies:	
Inspection and test records All records shall be maintained for a minim	um of years.		
Specific agreements/comments/explanation	n <u>s</u>	Signature of the manufacturer/supplier:	
		Date:	

¹⁾ In case the QMS is ISO 9001 certified and covers the scope of the product certificate(s), reference to the applicable procedure(s) on the next pages is sufficient and the tables A till F do in principle not have to be further filled-out except for the frequency of tests/inspections (to be approved by Kiwa) in tables B, C and D.



A.	Calibration of measuring and test e	quipment			
	Applicable procedure(s) nr(s):				
Equipm	ent to be calibrated	Calibration aspect	Calibration method	Calibration frequency	Calibration file (name and location)
B. B.1	·	dditives data with respect to dates, produ	cers, types and quantities are record	ed as follows:	
B.2 Type of	Entry control raw material	Inspection aspect	Inspection method	Inspection frequency	Registration file
. , p = 0.		moposition doposit	оросиол полоси		(name and location)



C.	Batch release tests per mach Applicable procedure(s) no(s): Production process(es):	nine (including in-process and fin	ished product testing)		
Туре	of product	Type of test	Test method	Test frequency	Registration file (name and location)
Specifi	c agreements/comments/explanati	ons:			
D.	Process verification tests Applicable procedure(s) no(s):				
Type	of product	Type of test	Test method	Test frequency	Registration file (name and location)
E.	Control of nonconforming and Applicable procedure(s) no(s):	d/or rejected products			
E.1	Method of registration				
E.2	Method of identification				
E.3	Method of nonconformity revi	ew and disposition			



F.	Inspection with regard to packaging, storage and transportation of the finished product Applicable procedure(s) no(s):			
Inspec	ion aspects	Inspection method	Inspection frequency	Registration file (name and location)
F.1	F.1 Packaging/storage/ transportation etc			

Specific agreements/comments/explanations:



Rav	v materials list	Appendix I
(no	required to fill-out this appendix in case reference can be made to the Kiwa ATA part of the certification agreement)	Date:
I.1	The product is built-up of the following raw materials: a) In case of products made from ready-made raw materials: listing of name and/or unique code of the raw material(s); b) In case of products made from own compounded raw materials: reference to raw material/compound sheets which are (on the production location and which have to be authenticated by Kiwa (e.g. by the Kiwa inspector); c) In case of composed products (e.g. plastics fitting body, with separate nut, clamp ring and rubber sealing ring): of each pa specification according to a) or b) (whatever applicable).	• ,
	-	
	-	
	-	
	-	
	-	
	-	
	-	

List of technical drawings				
	1-		Date:	
Drawing title and number	Drawing date	Drawing title and number	Drawing date	

Model IQC Scheme system holder* (informative)

* In case of system holder has no production on site



	Producer :		Page no. : 1		
SCHEME INTERNAL QUALITY PLAN	Address	:	Number of		
INTERNAL QUALITY PLAN	Address production site:		pages. : Annexes :		
Scope(s)			7 IIII OXOO .		
Quality Control		Operating instructions and/or quality manual			
Quality Control		Operating instructions and/ or quality manual			
Number of employee's in quality department :		Operating instructions and procedures are registered as following:			
Number of employee's in dayshift :					
Number of employee's in nightshift :		If no inspections are held during the night then the quality procedure:			
		Is followed			
Sample system		Complaint procedure			
Applied system:		The complaint procedure is recorded in			
-		-			
Storage of the control data		Correcting measures			
All control data is to be kept for a minimum ofyear.		The procedure correcting measures is recorded in			
		, , , , , , , , , , , , , , , , , , ,			
Agreements/ clarification		Signature of the producer:			
		Date:			



A.	Supplied pipes and fittings				Page no. : 2
A.1	Delivery Information when receiving each delivery in respect of date, producer, type and quantity are to be recorded in the following way:				
A.2	Incoming inspection				
What	is checked	What aspects are checked	How will the checks be made	With what frequency are the checks performed	Method of registration

Special agreements/ clarification:

INTERNAL QUALITY PLAN

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B. Inspection of the packaging, storage and transportation of the finished product				Page no. : 3	
	The guidelines for packing, storage and transport are listed in annex				
What	is checked	What aspects are checked	How will the checks be made	With what frequency are the checks performed	Method of registration
B.1	Packaging				
B.2	Storage				
B.3	Transport				

INTERNAL QUALITY PLAN

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C. Supply Installers			Page no. : 4
What is checked	What aspects are checked	With what frequency are the checks performed	Method of registration

Special agreements/ clarification:



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E.	Complaints procedure	Page no. : 5
	The complaints procedure is detailed in the Quality manual procedure	
E.1	Receiving the complaint	
E.2	Research of the cause	
E.3	Handling of the complaint	

Special agreements/ clarification: