BRL K17105

Datum dd-mm-2025

bindendverklaring

Evaluation Guideline

for the Kiwa product certificate for Plastics piping systems of polyethylene for the transport of drinking water and raw water

Preface

This Evaluation Guideline (BRL) has been accepted by the Kiwa Board of Experts Watercycle (CWK), in which all relevant parties in the field of plastics piping systems of polyethylene for the transport of drinking water and raw water are represented. This Board of Experts also supervises the certification activities and will adjust this BRL if required. 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, which include the general rules employed by Kiwa for its certification activities.

The product requirements and test methods for the polyethylene parts are based on EN 12201, parts 1, 2, 3 and 5 and CEN/TS 12201-7. This evaluation guideline contains additional requirements and test methods set by the Board of Experts

The following parts of this BRL have been modified:

- Several general and standard texts are revised in order to comply with the new Kiwa BRL template;
- The latest amendment sheet date 2023-04-21 has been incorporated;
- Direct reference to EN 12201, parts 1, 2, 3 and 5 is made instead of using texts from this standard in the BRL;
- With the 2024 revision of EN 12201, parts 1, 2, 3 and 5 the following significant changes are applicable:
    - PE100-RC type materials are added with enhanced resistance to slow crack growth. Therefore new material and product requirements for PE100-RC products do apply.
    - Additional requirements apply for stripe material of the pipes (§5.2 of EN 12201-2);
    - Test requirements for oxygen induction time (OIT) for pipes and fittings is changed with regard to time and temperature (table 5 of EN 12201-2 and table 7 of EN 12201-3) ;
    - Test requirement for melt flow rate (MFR) for PE40 pipes is changed with regard to the weight used (table 5 of EN 12201-2);
    - Circumferential reversion test for pipes $\geq$ 250mm is added (§9.3 of EN 12201-2);
    - The test method for impact resistance of electrofusion saddles (tapping tees) is changed with regard to test norm, temperature and weights (table 4 of EN 12201-3).

Kiwa Nederland B.V.

Sir Winston Churchilllaan 273

Postbus 70

2280 AB RIJSWIJK

Telephone: Tel. +31 88 998 44 00
NL.Kiwa.info@Kiwa.com
www.kiwa.com

Binding declaration
This evaluation guideline has been declared binding by Kiwa effective [dd month year]

Contents

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 plastics piping systems of polyethylene for the transport of drinking water and raw water.

This evaluation guideline replaces BRL-K17105 dated 2017-10-03 with amendment 2023-04-21. In any case, the quality declarations issued on the basis of the latest BRL will lose their validity after twelve months of validation of this BRL.

When carrying out certification activities, Kiwa is bound by the requirements laid down in EN ISO/IEC 17065.

Measurement inaccuracies have been taken into account when determining the requirements. These therefore no longer need to be taken into account when drawing conclusions about whether or not the requirements are met. For tests carried out at the production site, a temperature between 15°C and 30°C is permitted. In case of dispute, (23 ± 2) °C is used.

1.2 Field of application / scope

The PE (co extruded) pipes and fittings according to this BRL are intended to be applied in piping systems for the transport of drinking water and raw water, with a maximum temperature of 40 °C, in accordance with EN 12201 series.

1.3 Acceptance of test reports provided by the supplier

With regard to the requirements included in this evaluation guideline, the applicant, in the view of third party assessments, can submit conformity reports issued by evaluation bodies to prove that the requirements of this BRL are being met. It will have to be demonstrated that the relevant inspection, analysis, test, and/or evaluation reports have been prepared by an institution that meets the corresponding applicable accreditation standard, namely:

- NEN-EN-ISO/IEC 17020 for inspection bodies,
- NEN-EN-ISO/IEC 17021-1 for certification bodies certifying management 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, processes, and services.

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 recognition and acceptance of accreditation has been concluded by the Board of Accreditation. If no certificate of accreditation can be submitted, the certification institution itself will verify if the accreditation criteria have been met.

1.4 Quality declaration

The quality declarations to be issued by Kiwa based on this evaluation guideline will be referred to as Kiwa product certificate.
A model of the certificate to be issued on the basis of this evaluation guideline has been is published for information purposes on the Kiwa website.

2 Terminology

The terms and definitions, symbols and abbreviations as specified in EN 12201, parts 1, 2, 3 and 5 and CEN/TS 12201-7 are applicable.

In addition, 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.
- **Drinking water**: water intended or partly intended for drinking, cooking or food preparation or other domestic purposes, excluding hot tap water, which is made available by pipeline to consumers or other customers (source Dutch drinking water act*).*
- **Evaluation Guideline (BRL)**: the agreements made within the Board of Experts on the subject of certification.
- **Follow-up investigation:** the investigation carried out after granting the certificate to determine that the certified products continue to be in compliance with the requirements laid down in the evaluation guideline.
- **IQC scheme (IQC):** a description of the quality inspections carried out by the supplier as part of his quality system.
- **Installation**: configuration consisting the pipe work, fittings and appliances.
- **Initial investigation**: The initial evaluation of the supplier and the investigation of the relevant products for the first issuance of a 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 certificate**: a document in which Kiwa declares that a product may be deemed, on delivery, to comply with the product specification recorded in the product certificate.
- **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.
- **Raw water**: water that is used for the production of tap water.
- **Supplier**: the party that is responsible for ensuring that the products meet and continue to meet the requirements on which the certification is based.
- **Tap water**: water intended or partly intended for drinking, cooking or food preparation or other domestic purposes.

3 Procedure for obtaining a quality declaration

3.1 Initial investigation

The initial investigation to be performed based on the product requirements as contained in this evaluation guideline, including the test methods, depending on the type of products to be certified:

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

3.2 Granting the certificate

After completing the initial investigation, the results are presented to the Decision maker (see §11.2). This person evaluates the results and decides whether the certificate can be granted or if additional data and/or tests are necessary before the certificate can be granted.

3.3 Investigation into the product and/or performance requirements

Kiwa will investigate the products to be certified against the certification requirements as stated in this evaluation guideline or will have them investigated on its behalf.
The necessary samples will be drawn by or on behalf of Kiwa.
For the approval, relevant test reports not older than 5 years and performed by an ISO/IEC 17025 accredited laboratory for the relevant procedure may be used.

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, semi-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 to Kiwa, must at least include:
That 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 and test methods for the piping system

4.1 General

This chapter describes the requirements that the piping system shall meet, as well as the determination methods to establish that the requirements are being met.

The certificate holder shall ensure a clear description of all relevant design data, including:

- production process / realization process.
- constituent raw materials, materials and products
- recipe

Any proposed change in the aforementioned parameters shall be reported to the certification body. The certification body shall assess whether the change may affect the certified products, which requires reassessment of the product in question.

The certification body shall determine what constitutes a significant change. Once it has been established that the products with the proposed change meet the requirements in accordance with Chapter 4-8, the change can be implemented in the production process of the certificate holder.

The document: CEN/TC 12201-7 recommendations for conformity assessment shall be used as a guideline for the qualification of a significant change to the product or the production process.

4.2 Hygienic Aspects

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 recognised quality declaration, as specified in the currently effective Regulation, has to be concluded with positive results.

Products and materials with a quality declaration, 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.

4.2.2 Hygienic treatment of products in contact with drinking water

The supplier must have a procedure in place that protects the products in such way, that the hygiene is ensured during storage and transport.
In addition, the supplier shall inform the customer about the handling of products delivered under the certificate, which come into contact with drinking water and warm tap water, from arriving at the construction site through to the realization and commissioning. The primary reason for providing this the information is to contribute to the awareness of the importance of hygienic work as a ‘prevention measure’.

4.2.3 Protection of products during storage and transport

For the purpose of hygienic handling, products shall be protected against contamination. This is with respect to the surfaces of the product that come into contact with drinking water during the application.

Precautions to protect the product against contamination shall be agreed upon between the supplier and Kiwa and shall be recorded in the quality management system of the supplier. Further guidance is given in Annex I.

4.3 Elastomeric sealing elements

In case rubber sealing elements are present in the joints, the rubber elements shall meet the requirements of Kiwa BRL K17504 class I.
If the rubber sealing element is supplied under a product certificate based on this BRL, the manufacturer may assume that this requirement is met.

4.4 Greases and lubricants

Where greases and/or lubricants are used in the making of a joint, these lubricants shall meet the requirements of Kiwa BRL K535.
If the grease and/or lubricant is supplied under a product certificate based on this BRL, the manufacturer may assume that this requirement is met.

4.5 PE materials

4.5.1 General

The materials used for the pipes and fittings shall meet the requirements according to EN 12201 series.

Compounds for identification stripes shall meet the requirements of EN 12201-2. Hereby reworked material may be used.

The use of rework material is permitted.

The use of recyclate is not permitted.

4.5.2 Pressure reduction coefficients

When a PE piping system is to be operated at a continuous constant temperature higher than 20 °C up to 40 °C, pressure reduction coefficients according to Annex A of EN 12201-1 are applicable.

4.6 Installation instructions

The supplier shall provide instructions with regard to storage, transport and installation conditions of the piping system components. These instructions comprise instructions for making connections, guidance for assembling flanges, installation instructions etc.
This information shall be recorded in the supplier’s quality plan.

5 Product requirements and test methods: pipes

This chapter contains the requirements to which PE pipes have to comply with.

5.1 General

PE pipes for drinking water have to comply with:

- Hygienic aspects, see §4.2;
- PE raw materials, see §4.5 and chapter 5 of EN 12201-2;
- Installation instructions, see §4.6;
- PE pipes, see §5.2;
- Marking, see §5.4

Additional for PE pipes with integral sockets:

- Elastomeric sealing elements see §4.3;
- Greases and lubricants see §4.4;
- Joints, see chapter 8.

5.2 Requirements for PE pipes

The PE pipes shall fulfil the requirements according to NEN-EN 12201-2, in combination with the requirements in §5.3.

Note: For PE 100-RC materials used in for size group 2, the Resistance to SCG (ANPT) is required, but because nonylphenol ethoxylate is currently unavailable in certain markets, the CRB may be used as alternative test until a requirement using a new detergent for ANPT has been defined. The developments of the NEN-EN 12201 will be followed.

5.2.1 Requirements for pipes with co-extruded layers

Pipes with co-extruded layers shall comply with annex B of EN 12201-2.

5.2.2 Requirements for pipes with peelable layer

Pipes with a peelable layer shall comply with annex C of EN 12201-2.

5.3 Additional requirements for PE pipes

5.3.1 Colour

For the transport of drinking water in accordance with the scope of this evaluation guideline, only black coloured pipes with blue stripes and pipes with a co-extruded blue coloured outer layer shall be used, with exception of PE 100 and PE100-RC for which also uniform blue coloured pipes are allowed.
For uniform blue coloured pipes the requirement for resistance to weathering according to table 2 of EN 12201-1 applies.

5.3.2 Dimensions of the blue stripes

Black pipes shall be provided with co-extruded blue coloured stripes made from the same base material for which the fusibility between the raw materials is proven.

The stripes shall be equally distributed along the circumference of the pipe. The dimensions shall comply with the specifications as given in table 1.

Table 1 - Dimensions of co-extruded strips (in mm)

Pipe diameter d_n	Minimum number of stripes	minimal width of strips	Maximal depth of strips
< 32	3	1	0,2 x e_n
32 ≤ d_n≤ 63	3	2	0,2 x e_n
75 ≤ d_n≤ 160	4	4	0,15 x e_n
180 ≤ d_n≤ 400	4	9	0,15 x e_n
d_n ≥ 450	6	12	0,1 x e_n

5.3.3 Geometrical characteristics

5.3.3.1 Coiled pipes

For coiled pipes made of PE 40, the maximum out-of-roundness shall be measured directly after extrusion and shall comply with table 2.
For coiled pipes made of PE 40 and with a nominal diameter, d_n, < 110 mm, the core diameter of the reel shall be at least 24 x d_n.
For coiled pipes made of PE 40 and with a nominal diameter, d_n, ≥ 110 mm, the core diameter of the reel shall be at least 18 x d_n.

5.3.3.2 Wall thicknesses and tolerances

The wall thickness of pipes made of PE 40 shall be in accordance with table 2.

Table 2 - Outside diameter, out-of-roundness and wall thickness of PE 40 pipes (in mm)

					pipe series			
					SDR 9 S 4		SDR 6 S 2,5	
					Nominal pressure PN in bar			
					6		10	
			Out-of-roundness		Wall thickness			
d_n	$d_{em,min}$	$d_{em,max}$	straight pipe	coiled pipe	min	max	min	max
16	16,0	16,3	0,7	2,0	1,8	2,2	2,7	3,2
20	20,0	20,3	0,8	2,4	2,2	2,7	3,4	4,0
25	25,0	25,3	1,0	3,0	2,7	3,2	4,2	4,9
32	32,0	32,3	1,3	3,9	3,5	4,1	5,4	6,2
40	40,0	40,4	1,6	4,8	4,3	5,0	6,7	7,6
50	50,0	50,4	2,0	6,0	5,4	6,2	8,3	9,4
63	63,0	63,4	2,6	7,6	6,8	7,7	10,5	11,8

Note: PN values are based on C = 1,6

5.4 Marking of pipes

5.4.1 General

The products shall fulfill the marking requirements of chapter 12 of EN 12201-2.

5.4.2 Certification mark

After concluding a Kiwa certification agreement, the certified products shall be clearly and indelible marked with the:

Kiwa Water Mark "KIWA" or "KIWA"

6 Product requirements and test methods: Mechanical fittings

This chapter contains the requirements that mechanical fittings have to comply with.

6.1 General

Mechanical fittings for drinking water have to comply with:

- Hygienic aspects, see §4.2;
- Elastomeric sealing elements see §4.3;
- Greases and lubricants see §4.4;
- Installation instructions, see §4.6;
- Mechanical fittings, see §6.2;
- Marking, see §6.4.
- Joints, see chapter 8.

6.2 Requirements for mechanical fittings

The mmechanical fittings shall fulfil the requirements according to NEN-EN 12201-3, in combination with the requirements in §6.3.

6.3 Additional requirements for mechanical fittings

6.3.1 Classification

Mechanical fittings shall be classified as follows:

- According to the connecting system, as follows:
  - type 1: external-grip fitting (compression type fitting), which grip the pipe only at its outer surface;
  - type 2: internal/external-grip fittings, which grip or support the pipe both at the inner and outer surface of the pipe;
- According to the resistance of the fitting to the longitudinal forces which develop as a result of the internal pressure, as follows:
  - class 1: end-load-bearing compression fittings,
  - class 2: non-end-load-bearing compression fittings.

6.3.2 Raw material(s)

PE raw material(s) have to comply with §4.2 and §4.5 of this evaluation guideline as well as to chapter 5 of EN 12201-3.

PVC-U raw material(s) have to comply with the requirements specified in BRL K17301.

Metal materials are specified in table 2 of ISO 17855: 2021.

Other raw material(s) (e.g): PP-H, PP-R, PP-B, POM (homopolymer and copolymer) of the fitting body, have to comply with the requirements specified in table 3.

Note: For example (e.g.) is used here to prevent exclusion of products made of other plastics. Suppliers of products made of other plastics shall demonstrate that the products fulfil the requirements of BRL K17105.

Table 3 - MRS value and design stress of various fitting materials

	POM	PP			PE	
	Homo-polymer Co-polymer	**PP-H**	**PP-B**	**PP-R**	**PE80**	**PE100 PE100-RC**
MRS (MPa)	10	10	8	8	8	10
Design coefficient, C	1,6	1,6	1,25	1,25	1,25	1,25
Design stress, σ_{DF} (MPa)	6,3	6,3	6,3	6,3	6,3	8

The producer of the fittings shall specify to Kiwa of what materials the fittings are made.

6.3.3 Physical and mechanical requirements of plastic fittings

In addition the requirements in table 4 are applicable.

Table 4 - Physical and mechanical requirements of plastic fittings

Characteristic	**Requirement**	**Test parameters**		**Method**
		Parameter	**Value**	
MRS value	Design stress, σ_{DF}, according to relevant product standard.	Conventional procedure e.g. for PE according to EN 12201-1:2024, §5.4.		EN-ISO 1167 series in combination with EN-ISO 9080
Effect of heating	The maximum dimensions of cracks, delamination, blisters weld-line openings, damage around the sprue point shall be < 30 % relative to the wall thickness of the product.	Test parameters (temperature and duration of heating) in accordance with the relevant product standard and as recorded in the IQC scheme. For PE (110 ± 2) °C and at least 60 minutes; For PP (150 ± 2) °C and at least 60 minutes; For POM (160 ± 2) °C and at least 60 minutes; For PVC-U (150 ± 2) °C and Test period for: e ≤ 3 — 15 min 3 < e ≤ 10 — 30 min 10 < e ≤ 20 — 60 min 20 < e ≤ 30 — 140 min 30 < e ≤ 40 — 220 min 40 < e — 240 min		EN-ISO 580
Vicat softening temperature for PVC-U fittings	≥ 74°C	Shall conform to EN-ISO 2507-2		EN-ISO 2507-1

Continuation of table 4

<table>
<tr><td>Resistance to internal pressure</td><td>No failure during test period of any test piece</td><td colspan="3">End caps
Number of test pieces
Test type</td><td colspan="3">A
3
Water-in-water</td><td>EN-ISO 1167 series</td></tr>
<tr><td></td><td></td><td colspan="6">POM</td><td></td></tr>
<tr><td></td><td></td><td colspan="3">Homopolymer fittings</td><td colspan="3">Copolymer fittings</td><td></td></tr>
<tr><td></td><td></td><td>T (°C)</td><td>t (h)</td><td>p_T (bar)</td><td>T (°C)</td><td>t (h)</td><td>p_T (bar)</td><td></td></tr>
<tr><td></td><td></td><td>20</td><td>1</td><td>6,3xPN</td><td>20</td><td>100</td><td>5,0 x PN</td><td></td></tr>
<tr><td></td><td></td><td>60</td><td>1000</td><td>1,5xPN</td><td>60</td><td>1000</td><td>0,9 x PN</td><td></td></tr>
<tr><td></td><td></td><td colspan="3"></td><td>95</td><td>400</td><td>0,95 x PN</td><td></td></tr>
<tr><td></td><td></td><td colspan="6">PP fittings</td><td></td></tr>
<tr><td></td><td></td><td colspan="2">Type</td><td>T (°C)</td><td colspan="2">t (h)</td><td>p_T (bar)</td><td></td></tr>
<tr><td></td><td></td><td colspan="2">PP-H</td><td>20</td><td colspan="2">1</td><td>3,3 x PN</td><td></td></tr>
<tr><td></td><td></td><td colspan="2"></td><td>60</td><td colspan="2">1000</td><td>0,9 x PN</td><td></td></tr>
<tr><td></td><td></td><td colspan="2"></td><td>95</td><td colspan="2">1000</td><td>0,55 x PN</td><td></td></tr>
<tr><td></td><td></td><td colspan="2">PP-B</td><td>20</td><td colspan="2">1</td><td>2,5 x PN</td><td></td></tr>
<tr><td></td><td></td><td colspan="2"></td><td>80</td><td colspan="2">3000</td><td>0,75 x PN</td><td></td></tr>
<tr><td></td><td></td><td colspan="2"></td><td>95</td><td colspan="2">1000</td><td>0,4 x PN</td><td></td></tr>
<tr><td></td><td></td><td colspan="2">PP-R</td><td>20</td><td colspan="2">1</td><td>2,5 x PN</td><td></td></tr>
<tr><td></td><td></td><td colspan="2"></td><td>80</td><td colspan="2">3000</td><td>0,7 x PN</td><td></td></tr>
<tr><td></td><td></td><td colspan="2"></td><td>95</td><td colspan="2">1000</td><td>0,55 x PN</td><td></td></tr>
<tr><td></td><td></td><td colspan="6">PE fittings</td><td></td></tr>
<tr><td></td><td></td><td colspan="2">Type</td><td>T (°)</td><td colspan="2">t (h)</td><td>σ (MPa) 1)</td><td></td></tr>
<tr><td></td><td></td><td colspan="2">PE80</td><td>20</td><td colspan="2">100</td><td>10,0</td><td></td></tr>
<tr><td></td><td></td><td colspan="2"></td><td>80</td><td colspan="2">165</td><td>4,5</td><td></td></tr>
<tr><td></td><td></td><td colspan="2"></td><td>80</td><td colspan="2">1000</td><td>4,0</td><td></td></tr>
<tr><td></td><td></td><td colspan="2">PE100</td><td>20</td><td colspan="2">100</td><td>12,0</td><td></td></tr>
<tr><td></td><td></td><td colspan="2"></td><td>80</td><td colspan="2">165</td><td>5.4</td><td></td></tr>
<tr><td></td><td></td><td colspan="2"></td><td>80</td><td colspan="2">1000</td><td>5,0</td><td></td></tr>
<tr><td></td><td></td><td colspan="6">PVC-U fittings</td><td></td></tr>
<tr><td></td><td></td><td colspan="2"></td><td>T (°C)</td><td colspan="2">t (h)</td><td>σ (MPa) 1)</td><td></td></tr>
<tr><td></td><td></td><td colspan="2"></td><td>20</td><td colspan="2">1</td><td>42,0</td><td></td></tr>
<tr><td></td><td></td><td colspan="2"></td><td>60</td><td colspan="2">1000</td><td>10,0</td><td></td></tr>
<tr><td>MFR
for PE fittings of:
PE40;
PE80;
PE100;
PE100-RC</td><td>After processing maximum deviation of ± 20 % of the value measured on the batch used to manufacture the fitting.</td><td colspan="8">See table 1 of EN 12201-1</td></tr>
<tr><td>MFR
for fittings of PP</td><td>After processing maximum deviation of ± 20 % of the value measured on the batch used to manufacture the fitting.</td><td colspan="8">See relevant product standard and as recorded in the IQC scheme</td></tr>
<tr><td>MFR
for fittings of POM</td><td>≤ 4 g/10 min</td><td colspan="3">Temperature
Load</td><td colspan="3">190 °C
2,16 kg</td><td>NEN-EN-ISO 1133-1</td></tr>
<tr><td>OIT for PE</td><td>≥ 10 minutes</td><td colspan="3">Temperature
Number of test pieces
Atmosphere
mass test piece</td><td colspan="3">210 °C

3
Oxygen (100 %)
(15 ± 2) mg</td><td>EN-ISO 11357-6</td></tr>
<tr><td>OIT for PP</td><td>≥ 20 minutes</td><td colspan="3">Temperature
Number of test pieces
Atmosphere
mass test piece</td><td colspan="3">200 °C

3
Oxygen (100 %)
(15 ± 2) mg</td><td>EN-ISO 11357-6</td></tr>
</table>

1) Minimum circumferential stress in the wall of the connecting pipe. Pipe and fitting shall have the same PN class.

6.3.4 *Threads*

Pipe threads where pressure-tight joints are made on the threads shall conform to ISO 7-1 or ISO 228-1.

6.3.5 *Transition fittings to metal pipes*

Where a fitting is connected to a metal pipe the joint shall fulfil at least the performance (joint) requirements of the plastic piping system. The fitting part connected to the metal pipe shall fulfil the dimensional requirements of the corresponding metal pipe and its product standard.

6.3.6 *Combined fittings*

Socket fusion ends, spigot ends, electrofusion sockets or others, when included in mechanical fittings, shall meet the requirements of the relevant product standards.

6.3.7 *Twisting*

The fitting shall not induce twisting of the pipes during assembly.

6.3.8 *Stiffeners (pipe inserts)*

Stiffeners (pipe inserts) are recommended for thin wall pipes. If stiffeners are used, they shall comply with ISO 17885:2015, annex B.

In order to avoid excessive pressure loss, internal support - e.g. stiffeners - should cause minimal narrowing of internal cross-section of the fitting. The minimal internal bore diameter of the fitting shall be stated by the manufacturer in his technical file.

6.3.9 *Metal fittings*

The metal fittings shall also meet the requirements listed in Table 5 and 6.

Table 5 - Additional requirements for metal fittings

Characteristics	Requirement	Test parameter	Test method
Material fitting body	NEN-EN1254-3 NEN-EN 1254-6 NEN-EN 1254-8	As recorded in the IQC scheme	Information manufacturer
Rubber	BRL K17504	BRL K17504	BRL K17504
Dimensions	NEN-EN1254-3 NEN-EN 1254-6 NEN-EN 1254-8	Minimum thickness	Fitting body: NEN-EN 1254-3; Pipe threads: ISO 7-1 and NEN-EN-ISO 228-1
Construction	NEN-EN1254-3 NEN-EN 1254-6 NEN-EN 1254-8	Construction drawings	NEN-EN-ISO 3126
Resistance to inner water pressure (strength fitting body)	No cracks	NEN-EN1254-3 par. 5.1 NEN-EN 1254-6 par. 5.1.4 NEN-EN 1254-8 par.5.1.1	NEN-EN-ISO 1167-1
Resistance to stress corrosion	No cracks	PH 9,5	NEN-ISO 6957

Table 6 - Minimum wall thickness* for bronze or messing (in mm).

Outside diameter of the connecting pipe	Cast work	Warm press work
12	1,4	1,4
16	1,4	1,4
20	1,6	1,4
25	1,8	1,5
32	1,0	0,6
40	2,2	0,8
50	2,3	2,0
63	2,8	2,3

* Measured in any cross-section

6.3.10 PVC-U saddles

The saddles are intended for assembly with PE drinking water pipes according to this evaluation guideline.

Saddles of PVC-U have to comply with:

- General requirements and test methods according to BRL K17301;
- Requirements for joints: Saddles of PVC-U according to BRL K17301;
- Product requirements and test methods for special fittings: Saddles of PVC-U according to BRL K17301.

6.4 Marking of mechanical fittings

6.4.1 General

The products shall fulfill the marking requirements of chapter 13 of EN 12201-3.

6.4.2 Certification mark

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

Kiwa water mark:

 or  ;

In consultation with Kiwa:

- the combination of “KIWA” and the Kiwa water mark may be replaced by;

  KK of KK

- some marks may be printed or formed on the (smallest) packaging unit, e.g. because the fittings are too small to be able to print or form all the marks on the fitting.

7 Product requirements and test methods: socket-, butt- and electrofusion fittings

This chapter contains the requirements for socket-, butt- and electrofusion fittings.

7.1 General

Socket-, butt- and electrofusion fittings shall comply with:

- Hygienic aspects, see §4.2;
- PE raw materials, see §4.5 and chapter 5 of EN 12201-3;
- Installation instructions, see §4.6;
- Socket-, butt- and electrofusion fittings, see §7.2;
- Marking, see §7.3.

7.2 Requirements for fittings for fusion-, butt- and electrofusion fittings

The fittings shall fulfil the requirements according to EN 12201-3.

7.3 Marking of fittings for fusion-, butt- and electrofusion joints

7.3.1 General

The products shall fulfill the marking requirements of chapter 13 of EN 12201-3.

7.3.2 Certification mark

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

Kiwa water mark:

 or  ;

In consultation with Kiwa:

- the combination of “KIWA” and the Kiwa water mark may be replaced by;

  KK of KK

- some marks may be printed or formed on the (smallest) packaging unit, e.g. because the fittings are too small to be able to print or form all the marks on the fitting.

8 Product requirements and test methods: joints

This chapter contains the requirements that the joints shall comply with.

8.1 Requirements for the joints

The joints shall fulfil the requirements according to EN 12201- 5, in combination with the requirements in §8.2

8.2 Additional requirements for the joints

8.2.1 Welding and weldability of fusion joints

The fittings shall be adequately weldable in combination with pipes and among themselves.

The pipe manufacturer shall declare which pipes from his own product range conforming to EN 12201-2 are compatible to each other for butt fusion.

The fitting manufacturer shall declare the SDR range and MRS values of pipes conforming to EN 12201-2 to which their fittings, conforming to EN 12201-3 can be fused by using the same procedures (e.g. times, temperatures, fusion pressures) to conform to this standard. If there is a need for deviation in fusion procedures the fitting manufacturer shall state this clearly. If there is such a statement it shall be recorded in the quality plan of the supplier.

In the case of butt fusion joints, the welding instructions and parameters in accordance with NEN 7200 shall be applied. In case the materials complying with this evaluation guideline require different welding parameters as specified in NEN 7200, these deviating parameters shall be included in an instruction paper (in the Dutch language) and supplied to the certification body and end-users. In that case, test samples shall be welded with these different welding parameters.

Note: Beside NEN 7200, ISO 21307 should be used for guidance for the butt fusion jointing procedure.

In the case of electrofusion joints, the recommendations according to NIL publication vm102 shall be followed, unless otherwise specified by the manufacturer of the electrofusion fittings.

Socket fusion joints shall be produced according to the instructions of the manufacturer of the socket fusion fittings. These instructions shall be recorded in the quality plan of the supplier.

The butt fusion PE pipe joints, socket fused joints and electrofusion joints shall be prepared in accordance with the manufacturer's instructions or the instructions specified in the relevant standards (e.g. NEN 7200, ISO 21307, ISO 11414, ISO 11413).
Butt fusion, socket fusion and electrofusion joints are applicable for components in PE 100 and PE 80 materials. Pipes in PE 40 material are joined using mechanical fittings only.

The peelable layer of peelable layer pipe shall be removed in the area of the joint prior to making of the joint.

9 Requirements in respect of the quality system

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

9.1 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.

9.2 Internal quality control/quality plan

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

The following shall be demonstrably recorded in this IQC scheme:

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

This IQC scheme should at least be an equivalent derivative of the model IQC scheme as published on the Kiwa website.

9.3 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.
If and when required, the test and measuring equipment shall be calibrated at specified intervals.
The supplier shall record and evaluate the validity of the previous measuring data if at the time of calibration it is established that the equipment is not functioning properly.
The measuring equipment in question must carry an identification that allows for determining the calibration status.
The supplier shall record the results of the calibration.

9.4 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.

9.5 Other requirements

The supplier shall be able to submit the following:

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

10 Summary of tests and inspections

This chapter contains an overview of the steps required for certification:

- **initial investigation**: the investigation to determine that compliance is given to all the requirements laid down in the evaluation guideline;
- **follow-up investigation:** the investigation carried out after granting the certificate to determine whether the certified products continue to comply with the requirements laid down in the evaluation guideline; the required frequency for the follow-up investigation by the certification body is also specified;
- **inspection of the quality system of the supplier:** monitoring compliance with the IQC scheme and procedures.

Remarks in tables 7- 10

[1] During the periodic assessment, the inspector will check the product against a selection of the above-mentioned product properties. The frequency of the periodic assessments is laid down in §6.3 Nature and frequency of periodic assessments;

[2] If, for whatever reason, it is not possible to perform a test in a laboratory specifically accredited to ISO/IEC 17025 and impartial for that activity, the test can be performed in consultation with the certification body under 'witness' in an ISO/IEC 17025 accredited laboratory;

[3] The frequency can be adjusted in consultation with the certification body , e.g.:

a. in the case of a continuous (automated) measurement;
b. if it can be demonstrated that a reduction in the frequency does not compromise the quality.

Table 7 – Test matrix for PE system

BRL K17105	EN 12201-1	Product characteristics	Assessment within the scope of [1, 3]: Initial investigation [2]	Inspection by Kiwa[2]	IQC By the manufacturer: During start-up	Frequency
General						
4.2	-	Hygienic aspects	x	1 per year	x	Per batch Check of the use of approved raw materials
4.3	-	Elastomeric sealing elements	x	1 per year During inspection	-	Per batch Check of the use of approved elastomeric sealing elements
4.4	-	Greases and lubricants	x	1 per year During inspection	-	Per batch Check of the use of approved greases and lubricants
4.6	-	Installation instructions	x	1 per year During inspection	-	-
PE Material – Tested in the form of granulate						
4.5	5.2.3.1	Compound density	x	1 per 2 years	-	1 test piece/ batch/ but at least every 7 days
		Oxygen induction time (OIT)	x	-	-	Once / batch/ but at least every 7 days
		Melt mass-flow rate (MFR)	x	-	-	1 test piece /batch/ but at least every 7 days
		Volatile content	x	-	-	
		Water content	x	-	-	
		Carbon black content	x	-	-	
		Carbon black dispersion	x	-	-	
		Pigment dispersion	x	-	-	
		Resistance to SCG for PE100-RC (SHT)	x	1 per 2 years	-	3 test pieces /batch/ but at least every 7 days
		Resistance to SCG for PE100-RC (CRB)	x	1 per 2 years	-	-
		Resistance to SCG for PE100-RC (AFNCT)	x	1 per year	-	4 test pieces /batch/ but at least every 7 days
PE Material – Tested in the form of pipe						
4.5	5.2.3.2	Resistance to weathering - Decohesion of an electrofusion joints - Hydrostatic strength (1.000 h at 80 °C) - Elongation at break	x	-	-	-
		Resistance to rapid crack propagation (RCP)		1 per 5 years	-	-
		Resistance to SCG for PE40, PE80 and PE100 (NPT)	x	1 per year	-	-
		Resistance to SCG for PE100-RC (ANPT)	x	1 per year	-	-
		Determination of the failure mode in a tensile test on butt fusion weld	x	-	-	-
	5.3	Fusion compatibility	x	-	-	-
	5.4	Classification and designation	x	1 per 2 years	-	-

Table 8 – Test matrix for PE pipes

BRL K17105	EN 12201-2	Product characteristics	Assessment within the scope of [1, 3]: Initial investigation[2]	Inspection by Kiwa[2]	IQC By the manufacturer: During start-up	Frequency
5.1		PE system: general & PE material	See table 7			
	6.1	Appearance	x	1 per year per size group	x	1 per 8 h
5.3.1	6.2	Colour	x	1 per year per size group	x	1 per 8 h
5.3.2 5.3.3	7	Geometrical characteristics	x	1 per year per size group	x	1 per 8 h For dimensions that are being influenced by the process
	8.2	Hydrostatic strength (20 °C, 100 h)	x	-	-	-
		Hydrostatic strength (80 °C, 165 h)	-	-	-	1 per batch / week
		Hydrostatic strength (80 °C, 1.000 h)	x	1 per year one size group	-	1 per year size group / compound
		Elongation at break (when reworked materials are used)	x	1 per year per size group	-	1 per batch / week
		Elongation at break (100 % virgin material)	x	1 per year per size group	-	1 per year per size group / compound
		Resistance to SCG for PE80 and PE100 (NPT)	x	1 per year	-	1 per year for size group 2
		Resistance to SCG for PE100-RC (ANPT)	x	1 per 2 years for d110	-	1 per 2 years for d110 size group 2
		Resistance to SCG for PE100-RC (SHT)	x	1 per 2 years for size group 1	-	1 per 2 years for size group I
		Resistance to SCG for PE100-RC (CRB)	x	1 per 2 years	-	1 per 2 years for size group 3, 4 or 5
	9.2	Oxygen induction time (OIT)	x	1 per year per size group / compound	-	-
		Melt mass-flow rate (MFR)	x	1 per year per size group / compound	-	-
		Longitudinal reversion	x	1 per year per size group	-	1 per year per size group / compound
	9.3	Circumferential reversion of pipes > d250	x	1 per year for size group 3 and 4	-	1 per year per size group / compound
	B.7	Delamination for coextruded pipes	x	-	-	After the elongation at break and hydrostatic strength test
	B.8	Integrity of the structure after deflection for coextruded pipes	x	-	-	1 per year per size group / compound
	C.3	Resistance to weathering for peelable layer pipes	x	-	-	-
5.4	12	Marking	x	1 per year	x	1 per 8 h

Table 9 – Test matrix for mechanical fittings

BRL K17105	EN 12201-3/5	Product characteristics	Assessment within the scope of [1, 3]: Initial investigation[2]	Inspection by Kiwa[2]	IQC By the manufacturer: During start-up	IQC By the manufacturer: Frequency
6.1		PE system: general & PE material (if app.)	See table 7			
6.3.1	-	Classification	x	-	-	-
6.2 6.3.2	5	Raw materials	x	1 per year During inspection	x	Per batch Check of the use of approved raw materials
6.2	6.1	Appearance	x	1 per 2 years per fitting group / size group / compound	x	1 per 8 h
6.2	6.2	Design	x	-	-	-
6.2	6.3	Colour	x	1 per 2 years per fitting group / size group / compound	x	1 per 8 h
6.2	6.5	Appearance of factory made joints	x	1 per 2 years per fitting group / size group / compound	x	1 per 8 h
6.2	7	Geometrical characteristics	x	1 per 2 years per fitting group / size group / compound	x	1 per 8 h For dimensions that are being influenced by the process
6.3.4	-	Threads	x	-	-	-
6.3.5	-	Transition fittings to metal pipes	x	-	-	-
6.3.6	-	Combined fittings	x	-	-	-
6.3.7	-	Twisting	x	-	-	-
6.3.8	-	Stiffeners (pipe inserts)	x	-	-	-
6.4	13	Marking	x	1 per year	x	1 per 8 h
Additional for PE fittings:						
6.3.2 6.3.3	8.2 with reference to ISO 17885 chapters 8 and 9	MRS Value	x	-	-	-
		Effect of heating	x	-	-	1 per 8 h
		Resistance to internal pressure (20°C, 100h)	x	-	-	-
		Resistance to internal pressure (80°C, 165h)	x	-	-	1 per batch / 14 days
		Resistance to internal pressure (80°C, 1.000h)	x	1 per 2 years per fitting group / compound	-	1 per year per fitting group / size group / compound
		Melt mass-flow rate (MFR)	x	1 per year Per compound	-	-
		Oxygen induction time (OIT)	x	1 per year Per compound	-	-
Additional for POM fittings:						
6.3.3		MRS Value	x	-	-	-
		Effect of heating	x	-	-	1 per 8 h
		Resistance to internal pressure	x	1 per 2 years per fitting group / compound POM-H: (60°C, 1000h) POM-C: (95°C, 400h)	-	-
		Melt mass-flow rate (MFR)	x	1 per year Per compound	-	-
Additional for PP fittings:						
6.3.3		MRS Value	x	-	-	-
		Effect of heating	x	-	-	1 per 8 h
		Resistance to internal pressure	x	1 per 2 years per fitting group / compound (95°C, 1000h)	-	-
		Melt mass-flow rate (MFR)	x	1 per year Per compound	-	-
		Oxygen induction time (OIT)	x	1 per year Per compound	-	-

Continuation of table 9:

Additional for PVC-U fittings:						
6.3.3		MRS Value	x	-	-	-
		Effect of heating	x	-	-	1 per 8 h
		Vicat softening temperature	x	1 per year per compound	-	-
		Resistance to internal pressure	x	1 per 2 years per fitting group / compound (60°C, 1000h)	-	-
Joints						
8.1	11	Leaktightness under internal pressure (D)	x	1 per year	x	1 per batch / week
		Leaktightness under internal pressure when subjected to bending (D)	x	-	x	1 per year size group
		Leaktightness with negative pressure (D)	x	-	x	1 per year per size group
		Resistance to pull-out (D)	x	1 per year	x	1 per year per size group

Table 10 – Test matrix for fittings for socket-, butt- and electrofusion fittings

BRL K17105	EN 12201-3/5	Product characteristics	Assessment within the scope of [1, 3]: Initial investigation[2]	Inspection by Kiwa[2]	IQC By the manufacturer: During start-	IQC By the manufacturer: Frequency
7.1		PE system: general & PE material	See table 7			
7.2	6.1	Appearance	x	1 per 2 years per fitting group / size group / compound	x	1 per 8 h
7.2	6.2	Design	x	-	-	-
7.2	6.3	Colour	x	1 per 2 years per fitting group / size group / compound	x	1 per 8 h
7.2	6.4	Electrical characteristics for electrofusion fittings	x	1 per 2 years per fitting group / size group / compound	x	1 per 8 h
7.2	6.5	Appearance of factory made joints		1 per 2 years per fitting group / size group / compound	x	1 per 8 h
7.2	7	Geometrical characteristics	x	1 per 2 years per fitting group / size group / compound	x	1 per 8 h For dimensions that are being influenced by the process
7.2	8.2	Hydrostatic strength (20 °C, 100 h)	x	-	-	-
		Hydrostatic strength (80 °C, 165 h)		-	x	1 per batch / 14 days
		Hydrostatic strength (80 °C, 1.000 h)	x	1 per 2 years per fitting group / compound	-	1 per year per fitting group / size group / compound
		Resistance to SCG for PE100-RC (SHT)	x	1 per 2 years	-	1 per 2 years
		Decohesive resistance (A)	x	1 per 2 years per compound	-	1 per year size group / compound
		Evaluation of ductility of fusion joint interface (B)	x	1 per 2 years per compound	-	1 per batch / 14 days and/or 1 per year per size group / compound
		Tensile strength for butt fusion (C)	x	1 per 2 years per size group 3 /compound	-	1 per year per size group 2 / compound
		Impact resistance (B) Tapping tees	x	1 per 2 years per compound	-	1 per year per size group / compound
7.2	8.3	Short-term internal pressure resistance (A/B)	x	-	-	1 per year per size group / compound
		Resistance to tensile load (A/B)	x	-	-	1 per year per size group / compound
7.2	9.2	Oxidation induction time (OIT)	x	1 per year Per compound	-	-

Continuation of table 10:

7.2	9.2	Melt mass-flow rate (MFR)	x	1 per year Per compound	-	-
7.3	13	Marking	x	1 per year	x	1 per 8 h
Joints						
8.1	11	Hydrostatic strength (80 °C, 165 h) (C)	x	-	x	1 per batch / 14 days
		Decohesive resistance (A)	x	1 per 2 years per compound	x	1 per year per size group / compound
		Evaluation of ductility of fusion joint interface (B)	x	1 per 2 years per compound		1 per batch / 14 days and/or 1 per year per size group / compound
		Tensile strength for butt fusion joints (C)	x	1 per 2 years per size group 3 /compound		1 per year per size group 2 / compound
8.2	-	Welding and weldability	x	1 per year During inspection	-	-

11 Agreements on the implementation of certification

11.1 General

The certification body must have a procedure in place in which the general regulations used for certification are established.

11.2 Certification staff

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

- Certification assessor/Reviewer **(CAS/RV**): in charge of carrying out the design and documentation evaluations, initial investigation tests, initial investigations, and evaluation of applications and reviewing conformity assessments.
- Site assessor (**SAS**): in charge of carrying out external inspections at the supplier's works;
- Decision maker (**DM**): in charge of taking decisions in connection with the initial investigation tests carried out, continuing the certification based on the inspections carried out and taking decisions on the need to take corrective actions.

11.2.1 Competence criteria certification staff

The competence criteria for the implementing certification staff are laid down in the following table. The competence of the certification staff involved must have been demonstrably recorded.

Legenda:

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

Basic competences	**Evaluation criteria**
Knowledge of company processes. Skills for conducting professional assessments on products, processes, services, installations, design, and management systems.	*Relevant work experience* **SAS, CAS/RV**: 1 year **DM**: 5 years, including 1 year related to certification. *Relevant technical knowledge and experience at the level of:* **SAS:** High school **CAS/RV, DM**: Bachelor
Skills with regard to site assessments to be performed Adequate communication skills (e.g. writing reports, presentation skills and interviewing skills).	**SAS**: Kiwa Assessment training or equivalent and 4 site assessments including 1 supervised self-reliant assessment.
Execution of Initial Investigation	**CAS**: 2 initial assessments under supervision.
Conducting reviews	**RV**: evaluation of 3 reviews

Technical competences	Evaluation criteria
Education	**General:** Education in one of the following technical areas: • Engineering.
Experience – specific	**CAS** • 2 complete applications self-reliant (to be evaluated by **PM**). **SAS** • 2 inspection assessments together with a qualified **SAS**.
Skills in performing witnessing	**SAS** Internal training witness testing

11.2.2 Qualifications Certification staff

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 regarding qualifications shall be recorded in the quality assurance system of the certification body.

11.3 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 their decision on the findings included in the report.

11.4 Decision for granting the certificate

The decision for granting the certificate or the imposition of measures with regard to the certificate shall be based on the results recorded in the file.

The results of an initial investigation and a periodic assessment (in case of critical non-conformities) must be assessed by a reviewer.

Based on the performed review, the decision maker will decide if:

- The certificate can be granted,
- Sanctions are imposed,
- The certificate shall be suspended or revoked.

The reviewer and the decision maker shall not have been involved in the preparation of the results based on which the decision is being made.
The decision shall be recorded in a traceable manner.

11.5 Nature and frequency of third party audits

The certification body shall carry out surveillance assessments on site at the supplier to verify compliance with their obligations. The Board of Experts decides on the frequency of assessments.

In case the quality system of the supplier is certified on the basis of 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, the frequency of assessments is set at 2 inspection visits per year (without an ISO 9001 certification, the frequency is 3x per year).
For suppliers with a private label certificate, the frequency of assessments for the products covered by this certificate is established at 1 assessment per two years (with or without ISO 9001 certification). The assessments are conducted at the site of private label holder and focused 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 at least refer to:

- the correct way of applying markings to the certified products;
- compliance with required procedures for receiving and final inspection;
- the storage of products and goods;
- dealing with complaints about delivered products.

Inspections shall invariably include:

- The IQC-scheme of the supplier and the results of tests carried out by the supplier;
- The correct marking of the certified products;
- The compliance with the required procedures.

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

11.5.1 Serverty of nonconformities

The severity of the issued nonconformity in relation to the assessment conducted after granting the product certificate by certification body can be differentiated as follows:

- Nonconformities entitled as critical are deviations that can directly affect the quality and/or performance of product and/or process
- Other" nonconformities (noncritical nonconformities).

11.6 Report to the Board of Experts

The certification body shall report at least annually about the performed certification activities. In this report the following aspects shall be included:

- mutations in number of issued certificates (granted/withdrawn);
- number of executed assessments in relation to the established minimum;
- results of the inspections;
- measures imposed in case of nonconformities;
- complaints received from third parties about certified products.

11.7 Interpretation of requirements

The Board of Experts may record the interpretation of requirements of this evaluation guideline in one or more separate interpretation document(s). This or those interpretation documents will be available to the members of the Board of Experts, the certification bodies, and the certificate holders who are active based on this evaluation guideline. This or those interpretation documents will be published on Kiwa’s website.

12 Titles of standards

12.1 Public law rules

Dutch Government Gazette ("Staatscourant") dated 1 July 2017	Regulation on materials and chemicals drinking water and warm tap water supply ("Materialen en Chemicaliën drink- en warm tapwatervoorziening")

12.2 Standards / normative documents

Standard	Title
BRL K535	Beoordelingsrichtlijn voor het Kiwa productcertificaat voor glijmiddelen voor rubberring verbindingen
BRL K17105	Evaluation guideline for the Kiwa product certificate for plastics piping systems of polyethylene for the transport of drinking water and raw water
BRL K17301	Evaluation guideline for the Kiwa product certificate for piping systems of PVC for the transport of drinking water and raw water
BRL K17504	Evaluation guideline for the Kiwa product certificate for vulcanised rubber products for cold and hot drinking water applications
NEN 7200	Plastics pipelines for the transport of gas, drinking water and waste water - Buttwelding of PE pipes and fittings of PE 63, PE 80 and PE 100
EN 12201-1	Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) - Part 1: General
EN 12201-2	Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) - Part 2: Pipes
EN 12201-3	Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) - Part 3: Fittings
EN 12201-5	Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) - Part 5: Fitness for purpose of the system
EN 1254-3	Copper and copper alloys - Plumbing fittings - Part 3: Fittings with compression ends for use with plastics pipes
EN-ISO/IEC 17020	Conformity assessment – General criteria for the operation of various types of bodies performing inspection
EN-ISO/IEC 17021-1	Conformity assessment – Requirements for bodies providing audit and certification of management systems
EN-ISO/IEC 17024	Conformity assessment – General requirements for bodies operating certification of persons
EN-ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
EN-ISO/IEC 17065	Conformity assessment - Requirements for bodies certifying products, processes and services
EN-ISO 228-1	Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation
EN-ISO 580	Plastics piping and ducting systems - Injection-moulded thermoplastics fittings - Methods for visually assessing the effects of heating
EN-ISO 1167-1	Thermoplastics pipes, fittings and assemblies for the conveyance of fluids – Determination of the resistance to internal pressure – Part 1: General method

Standard	Title
EN-ISO 1167-2	Thermoplastics pipes, fittings and assemblies for the conveyance of fluids – Determination of the resistance to internal pressure – Part 2: Preparation of pipe test pieces
EN-ISO 1167-3	Thermoplastics pipes, fittings and assemblies for the conveyance of fluids – Determination of the resistance to internal pressure – Part 3: Preparation of components
NEN-EN-ISO 2507-1	Thermoplastics pipes and fittings - Vicat softening temperature - Part 1: General test method
NEN-EN-ISO 2507-2	Thermoplastics pipes and fittings - Vicat softening temperature - Part 2: Test conditions for unplasticized poly(vinyl chloride) (PVC-U) or chlorinated poly(vinyl chloride) (PVC-C) pipes and fittings and for high impact resistance poly (vinyl chloride) (PVC-HI) pipes
EN-ISO 3126	Plastics piping systems - Plastics components - Determination of dimensions
EN-ISO 9080	Plastics piping and ducting systems - Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation
EN-ISO 11357-6	Plastics – Differential scanning calorimetry (DSC) – Part 6: Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT)
ISO 7-1	Pipe threads where pressure-tight joints are made on the threads - Part 1: Dimensions, tolerances and designation
ISO 6957	Copper alloys - Ammonia tests for stress corrosion resistance
ISO 21307	Plastics pipes and fittings - Butt fusion jointing procedures for polyethylene (PE) piping systems
ISO 11413	Plastics pipes and fittings - Preparation of test piece assemblies between a polyethylene (PE) pipe and an electrofusion fitting
ISO 11414	Plastics pipes and fittings - Preparation of polyethylene (PE) pipe/pipe or pipe/fitting test piece assemblies by butt fusion
ISO 17885	Plastics piping systems - Mechanical fittings for pressure piping systems - Specifications
CEN/TS 12201-7	Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) - Part 7: Guidance for the assessment of conformity

* When no date of issue has been indicated, the latest version of the document is applicable

140410

I Guidance for prevention of contamination during transport and storage of new products

(informative)

Importance of a hygienic operation
Hygiene and hygienic work is since decades an important issue with respect to the transport and distribution of drinking water in the Netherlands.
The impact of pollution can have big consequences for the water distribution[1)] and need substantial efforts to clean the system, especially because in the Netherlands chlorine is not used. Already in the 1983 published “guideline for installation of PVC-U piping systems, §4.2 "Storage", mentions this topic as follows: *For the prevention and risk of difficulties disinfecting of the pipe line afterwards, it is recommended to use plugs in pipe ends for storage of the pipes.*
The importance of hygiene also reflected in recent documents e.g. Dutch Hygiene code: "Hygiënecode Drinkwater; Opslag, transport en distributie’ with the accompanying work instructions ("werkboekje") for mechanics. As result of the Hygiene code a wide range of courses for parties involved (installers, personnel of water companies, etc.) can be followed. Last but not least the Hygiene code is also mentioned in the drinking water law of July 1, 2011 and is therefore part of the Dutch law.

Protection of the products during storage and transport
In the "Hygiënecode Drinkwater: Opslag, transport en distributie” with the accompanying work instructions for mechanics the aspect how to work hygienically is extensively described. It involves dealing with parts for piping systems (pipes, fittings, values and hydrants) starting with the arrival of the parts at the construction site to the realization and commissioning of the pipeline. The primary approach to hygienic work is "prevention". Secondly, there are measures described in order to make pipelines suitable for the delivery of clear drinking water. The hygiene aspects in the process from the manufacture of the product in the factory, assembly hall or other production location are briefly described in the "Hygiënecode Drinkwater". Also in this process is the primary approach prevention: For each product applies the sooner the product is protected against contamination [2)], the better the hygiene of the product can be guaranteed. To close the hygiene chain completely and to be eligible for certification, producers of part for piping systems for drinking water shall have a procedure in which measures are described for storage and the route to the water companies (delivery address), as will be defined in general terms or laid down in relevant Kiwa evaluation guidelines. The producer shall have a procedure for the protection of the products during transport and storages, to be able to guarantee that hygiene requirements are meet.

Note:
1) Mostly this is a microbiological contamination coming from the surrounding area on macro- and micro scale like dust, but also faeces and dead beasts.
2) In this context he word "protection" is used as a combination of packing (e.g. providing the product with a casing) and, when applicable, providing end caps (e.g. for pipes and fittings).

Requirements for the protection
For all preventive (protective) actions taken to protect the products against pollution, it is important that the protection is sufficient during the complete process starting after production of the product (followed by e.g. storage, transport and again storage) and ending with the installation of the products.

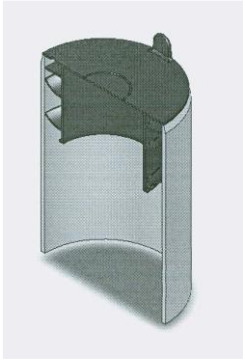
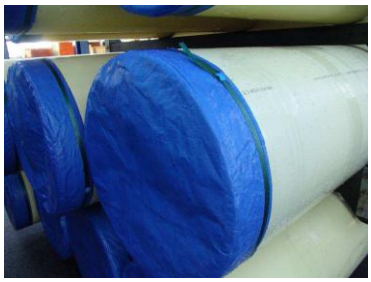
Capabilities to protect the product:
The used packaging depends on the product itself (shape, dimensions, etc.)

Some packaging solutions (not binding and not exhaustive) are mentioned below:

- For small fittings (couplings, rings, rubber seals) a plastic bag eventually in a box;
- "Bubble wrap" foil in combination with adhesive tape for all openings for big(ger) fittings;
- The combination of bags made of fiber reinforced material or heat shrink foil and the use of a box for smaller part;
- End-caps / plugs or stern plastics bags for the pipe ends (where the complete pipe package is wrapped in foil).

The commission ‘OnderhandelingsCommissie Kunststoffen’ (OCK) created a guidance for the end-capes of pipes to improve the quality of packaging, as follows.

The end cap is unmovable fixed in the pipe by using flaps in a labyrinth structure to let in air but prevent pollution.
The end cap is developed for a 110 mm PVC pipe but can also be developed for other diameters (50, 63, 75 , 90, 160, 200 and 250 mm), and for all used pipe materials.
For closing pipe ends with a diameter of 315, 400, 500 and 630 mm a fiber reinforced cover in combination with adhesive tape or lashing straps can be used (see the pictures below).

Left: end cap with flaps. Right: fiber reinforced cover in combination with adhesive tape.