AENOR N Mark Specific Rules for plastics piping systems for hot and cold water installations. Temperature resistant polyethylene (PE-RT)_ RP 001.67

Note: This document is a translation of the Spanish document "RP 001.67 rev 10" approved by the Plastics Technical Certification Committee (CTC-001). Spanish version always prevails over this translation.

RP 001.67

Revision	10
Internal Code	02-RP-0497.00
Date	2025-12-19

Index

1 Purpose and scope

These specific rules describe, in compliance with section 3.2 of the General rules for the AENOR Certification of Products and Services with N Mark, hereafter the General Rules, the specific rules for the certification for plastics piping systems for hot and cold water installations. Temperature Resistant Polyethylene (PE-RT). The present Specific Rules complete the AENOR N Mark Specific Rules for plastic materials – common requirements (RP 001.00). The General Rules always prevail over the present Specific Rules.

The N Mark for plastics piping systems for hot and cold water installations, temperature resistant polyethylene (PE-RT) hereafter the Mark, denotes product compliance with the UNE-EN ISO 22391-1:2010, UNE-EN ISO 22391-2:2010, UNE-EN ISO 22391-2:2010/A1:2021, UNE-EN ISO 22391-3:2010, UNE-EN ISO 22391-3:2010/A1:2021 UNE-EN ISO 22391-3:2010/A2:2022, UNE-EN ISO 22391-5:2010, UNE-EN ISO 22391-5:2010/A1:2021 o SANS 22391-1:2008, SANS 22391-2:2008, SANS 22391-3:2008, SANS 22391-5:2008.

2 Definitions and Special requirements

By means of the application of this Specific Rules, it is possible to obtain the N Mark certification for the following products:

- PERT Pipes, in conformity with the established in part 2 of the applicable standard.
- PERT fittings and other plastics materials in conformity with that it is established in parts 3 and 4 of the applicable standards.
- Plastic piping systems in PERT, in conformity with that it is established in the part of the applicable standard, comprised by PERT pipes and PERT fittings or by PERT pipes and fittings made of other plastic or metallic materials.

PE-RT Type II pipes, fittings and systems in accordance with SANS 22391-1: 2008, SANS 22391-2: 2008, SANS 22391-3: 2008 and SANS 22391-5: 2008 are excluded from the scope of certification.

In order to possess a certified piping system it is necessary that both pipes and fittings that comprise it possess the product N Mark certificate, with the exception of those systems in which the fittings have a metal body, where it will be possible to certify the system but not the fittings.

The clients shall submit and independent application for each product.

Reference: It is consider a reference the set of pipes that have the same diameter and nominal wall thickness, and in the case of fittings the set of them that have the same nominal dimensions and shape.

Raw material: raw material is defined as the same material with the same basic technical specifications.

Besides the general documentation specified in the RP 01.00, it should be sent together with the request, the following additional documentation:

Fittings

For metallic fittings: Indication of the raw materials used, treatment (tin, nickel, etc), alloy(s), joints used and materials of the joints, as well as drawings of the fittings.

For plastic fittings: Indication of the raw materials used, joints used and materials of the joints, as well as drawings of the fittings

System

Instructions for the correct installation of the system and tool to use indicating the type of clamp.

In order to grant the certificate it is not consider necessary that the thermal stability test by hydrostatic pressure testing has concluded given the duration of the test. A provisional certificate valid for one year will be issued. Once the thermal stability results are available, and if they are satisfactory, the definitive certificate valid for five years will be issued, and the product will be subject to the established annual follow-up activities.

On the other hand, if the results of the thermal stability test are not conforming, the provisional certificate will be cancelled, and there will be no possibility of testing the counter-samples or taking extraordinary samples.

If the client wants to request certification for this product again, once the corresponding corrective actions have been implemented, they must start the application process, and before the certificate can be granted, this time they must have all the tests on the samples taken by AENOR at the factory with compliant results, including the thermal stability test.

If fittings can´t be certified because they are metallic fittings, it will necessary to carry out an audit of the quality system in accordance with UNE EN ISO 9001 in the fitting

manufacturer's site, as well as a subsequent product inspection. In case of metallic fittings, it will select samples of each of the fittings that will be marketed as part of the system in order to verify in the laboratory the dimensional compliance required by the UNE-EN 1254-3.

WATER QUALITY FOR HUMAN CONSUMPTION

With regard to potential adverse effects on water quality for human consumption caused by the products covered by the standard UNE-ISO 22391, the clients of the Mark, will provide to AENOR during the inspection visit the evidence that their product complies with the 3/2023, either through migration test according to the UNE-EN 12873 Standard, performed every five years and / or certificates issued by competent authorities.

3 Sampling and testing for granting and maintaining the product N Mark certificate

3.1 Test to be carried out in factory (See RP 001.00)

During initial or surveillance inspection, AENOR will carry out the test indicated in table 1 (pipes) per type of material and/or 2 (fittings and systems), as accordance.

3.2 Sampling and tests to be carried out by the laboratory (See RP 001.00)

AENOR will select and marked the necessary samples to carry out in the laboratory the test indicated in table 1 (pipes), 2 (fittings and system), and 3 (system) as accordance.

The manufacturer will send the selected samples to the laboratories indicated by the AENOR services, and in case that requires it because it considers it to be necessary, the client will send the competent professional technical staff to carry out the welding or assembly tasks requires for the realization of the test.

Dimensional requirements of the fittings

In the case of metallic fittings: the verification of the dimensional requirements will be based on UNE EN 1254-3 Standard.

Requirements for metal fittings materials:

Stainless steel: The parts of stainless steel must be manufactured from steels included in the standard UNE-EN 10088-1 complying with the requirements of this Standard and standard UNE-EN 10027-7.

Aluminium: Parts of aluminium must be manufactured from aluminium included in the standard UNE-EN 573-3.

Copper or alloys of copper: Brass fittings must comply with the requirements of the standard UNE EN1254-3. Brass parts must comply and be manufactured with alloys included in the standards:

- Fittings for machining: UNE EN 12164 Rod for free machining
- Fittings for forging: UNE EN 12165 Semi products for forge
- Fittings manufactured from hollow bars: UNE EN 12168 Hollow Bars for machining
- Ingots and casting: UNE EN 1982

	TESTS	GRANTING / MAINTENCE	RESULTS EVALUATION
TESTS TO BE CARRIED OUT BY THE INSPECTOR IN THE FACTORY	Appearance	10 pipes at random	1
	Mean outside diameter	1 pipe per reference. minimum 10 pipes	2
	Wall thickness	1 pipe per reference. minimum 10 pipes	3
TESTS TO BE CARRIED OUT BY THE LABORATORY	Opacity (if declared)	1 reference selecting the one with the lowest wall thickness	1
	Longitudinal reversión	20% references/minimum 2	1
	Melt flow rate (compound + pipe)	1 reference	1
	Induction time to oxidation Test Method according to UNE-EN ISO 11357-6 Specification according to the raw material supplier's technical sheet: 210°C ≥ 10 min o 200° C ≥ 20min	1 reference	1
	Resistance to internal pressure 20°C 1 h	20% references/minimum 2	1
	Resistance to internal pressure 95°C 22 h	20% references/minimum 2	1
	Resistance to internal pressure 95°C 165 h	20% references/minimum 2	1
	Resistance to internal pressure 95°C 1000 h	1 reference at random	1
	Thermal stability test by hydrostatic pressure testing (only granting and every five years and in case of any formulation change) (5)	1 reference	1

TABLE 1 (PIPES)

	TESTS	GRANTING / MAINTENCE	RESULTS EVALUATION
ACCESORIOS METALICOS (*)			
TESTS TO BE CARRIED OUT BY THE INSPECTOR IN THE FACTORY	Minimum cross section flow and mínimum wall thickness (metallic fittings)	1 fitting per diameter	1
TESTS TO BE CARRIED OUT BY THE LABORATORY	Chemical composition of the body of the fitting and shell (only for metallic fittings)	5% references, minimum 2	1
	Dimensional tests for all the parts of the fittings	15 fittings at minimum (depending on the machines that intervene in the manufacturing process, per each reference is established a % more, according to the criteria of AENOR)	1
ACCESORIOS PLASTICOS			
TESTS TO BE CARRIED OUT BY THE INSPECTOR IN THE FACTORY	Appearance	1 fitting per diameter	1
	Ovality	1 fitting per diameter	3
	Socket lenght	1 fitting per diameter	2
	Mean inner diameter of the sockets	1 fitting per diameter	2
TESTS TO BE CARRIED OUT BY THE LABORATORY	Opacity (if declared)	1 reference selecting the one with the lowest wall thickness	1
	Resistance to internal pressure 20°C 1 h	5% references per type of joint	1
	Resistance to internal pressure 95°C 1000 h (or at 80°C 1000 h for class 4)	2% references per type of joint	1
	Melt flow rate (fitting + compound) (1)	1 reference	1
	FUNTIONAL REQUIREMENTS		
	Bending (2)	50% of the diameters	1
	Pull out (23°C and 80°, 90° o r 95°C 1h) (2)	50% of the diameters	1
	Thermal cycling test (2)	1 diameter	1
	Pressure cycling test (2)	50% of the diameters	1
	Vaccum (2)	50% of the diameters	1

TABLE 2 (FITTINGS AND SYSTEM)

NOTE (1) When the raw material is pigmented by the manufacturer of the PE-RT pipe or fitting, then this test will not be required.

NOTE (2) These functional tests will be done for those types of joints which are applicable.

As a general rule for the systems comprised by fittings which type of joint is mechanical, it will be necessary to carry out the entire applicable tests defined in table. In case of electrofusion or fusion it only will be necessary to carry out the thermal cycling test.

4 Manufacturer internal control

4.1 Characteristics under factory production control

Characteristics under factory production control refer to:

— **Raw material**: The manufacturer must ensure that the mixtures of raw materials and compounds involved in the manufacture have the adequate characteristics in order to comply with the requirements of the Standard. Likewise, the manufacturer must verify that the specifications provided in the Certificate of Analysis of material receive, complies with established purchase requirements.

  This requirement applies to all raw materials used in both the pipes and all parts of the fitting: body of the fitting, ring, joint, sleeve, exterior treatment where appropriate ... etc.

— **Dimensions of fittings**: the manufacturer must verify periodically by sampling statistics, that the dimensions of the fittings comply with the drawings and tolerances as well as the standard UNE EN 1254-3 for fittings to apply this standard (cooper fittings and cooper alloys).

  This requirement applies to all parts of the fitting: body of the fitting, joint, sleeve.

— **Joints:** The manufacturer shall have available all the times the certificates of the supplier of joints and verify in every delivery that comply with its specifications and with the standards UNE-EN 681-1 and 681-2.

— **Manufacturing controls:** Tests and their frequency are stated in tables 3 and 4, as proceed.

— **Final product controls:** Tests and their frequency are stated in tables 3 and 4, as proceed.

TESTS	FREQUENCY
Appearance	Every hours per extrusion line
Mean Outside diameter	Every hours per extrusion line
Wall thickness	Every hours per extrusion line
Opacity (only if manufacturer declares it)	Once a year per raw material, selecting the one with the lowest wall thickness
Longitudinal reversion	Per each line, minimum twice a week
Thermal stability test by hydrostatic pressure testing	At granting and in case of any formulation change
Melt flow rate (compound + pipe)	Every three batches of raw material
Induction time to oxidation * Test method according to UNE-EN ISO 11357-6 Specification according to the raw material supplier's technical sheet: 210°C ≥ 10 min o 200° C ≥ 20min	Every six months per supplier of raw material on the pipe and on the raw material
Resistance to internal pressure 20°C 1 h	Once a year per reference
Resistance to internal pressure 95°C 22 h	Once every two weeks per line
Resistance to internal pressure 95°C 165 h	Once every two weeks per line
Resistance to internal pressure 95°C 1000 h	One pipe per machine, minimum once a year

TABLE 3 (PIPES)

METAL FITTINGS	
TESTS	FREQUENCY
Appearance	According to the manufacturer´s internal procedure
Dimensional verification	According to the manufacturer´s internal procedure
Chemical composition, in case of the manufacturer of the fitting produces the raw material (metallic fittings)	1 fitting for each raw material batch
Chemical composition, in case of the manufacturer of the fitting does not produce the raw material (metallic fittings)	Raw material certificate for each delivery batch
Minimum cross section flow and minimum wall thickness (metallic fittings)	According to the manufacturer´s internal procedure
PLASTIC FITTINGS	
Appereance	Every 8 hours per machine and cavity
Inside diameter of the socket	Per manufacture period. Minimum every 24 hours
Socket length	Per manufacture period. Minimum every 24 hours
Ovality	Every 8 hours per machine and cavity
Opacity (only if declares it)	Once a year per raw material, on the one with the lowest wall thickness
Melt flow rate	Every three batches of raw material
Resistance to internal pressure 20°C 1h	Once a year per reference
Resistance to internal pressure 95°C 1000 h (or at 80°C 1000H for class 4)	Once every 4 months
FUNCTIONAL REQUIREMENTS	
Bending (2)	Once a year
Vacum (2)	Once a year
Pull out (23°C and 80°, 90° or 95°C 1 h) (2)	Once a year
Thermal cycling test (2)	Once a year
Pressure cycling test (2)	Once a year

TABLE 4 (FITTINGS AND SYSTEM)

NOTE (1): If the manufacturer of the fitting also manufactures the raw material, the chemical composition test must be performed. Otherwise it is possible to apply to the raw material supplier the quality Certificate per each delivery batch. The manufacturer of the fitting is responsible for verify that all the chemical composition tests results indicated in the quality certificate are correct and conform to his order specifications. This requirement applies to all parts of the fitting.

NOTE (2) These functional tests will be done for those types of joints which are applicable. As a general rule for the systems comprised by fittings which type of joint is mechanical, it will be necessary to carry out the entire applicable tests defined in table In case of electrofusion or fusion it only will be necessary to carry out the thermal cycling test

5 Marking of certified products

5.1 Marking of the pipes

The marking of the pipes will be carried out every meter. The minimum required marking of the pipe is the following:

— Reference to the word AENOR;

— N Mark logotype, with a size not less than 3 mm;

— Number of the contract signed with AENOR or certificate number: 001/XXX;

— Number of the applicable standard;

— Manufacturer identification, trademark;

— The reference to the material;

— Indication of the external diameter and nominal wall thickness in millimetres;

— Pipe dimension class

— Material;

— Application class(s)combined with design pressure(s);

— Reference to the word opaque (if the manufacturer declares it);

— Manufacturer's information (manufacturing code or data).

The minimum required marking of the fitting is the following:

— Nominal diameter;

— Material identification (only for fusion fittings);

— Information provided by the manufacturer (production period, year and month or place of production if the manufacturer produces at different sites

The minimum required marking of the fittings packaging is the following:

— Reference to the word AENOR;

— N Mark logotype, with a size not less than 3 mm;

- Number of the contract signed with AENOR or certificate: 001/XXX;
- Manufacturer name and/or Trademark;
- Number of the applicable standard;
- Wall thickness of the correspondent pipes. (only for mechanical fittings with compression or stuff joint);
- Application class(s) combined with design pressure(s);
- Reference to the word opaque (if the manufacturer declares it).

AENOR

Annex C1

Description Questionnaire for Pipes

CLIENT:

MANUFACTURER COMPANY:

FACTORY SITE:

PRODUCT:

STANDARD:

TRADEMARK(S):

DATE:

MATERIAL (TYPE):

RANGE FOR WHICH THE MARK IS REQUESTED				
SERIES	**DIAMETERS**	**APPLICATION CLASS**	**DESIGN PRESSURE**	**OPACITY YES/NO**

For any change of these data, the client will send to the Committee Secretary this descriptive questionnaire updated.

…….…… on …… of …… 20….

SIGNATURE AND STAMP OF THE MANUFACTURER

AENOR

Annex C2

Descriptive Questionnaire for fittings

CLIENT:

MANUFACTURER COMPANY:

FACTORY SITE:

PRODUCT:

MATERIAL:

TIPE OF JOINT:

Mechanical ☐ Termofusion ☐ Electrofusion ☐ Incorporated inserts ☐ Gluing ☐

STANDARD:

TRADE MARK(S):

DECLARES OPACITY: YES ☐ NO ☐

DATE:

FILL IN ONE QUESTIONNAIRE (ANNEX C-2) FOR EACH FITTING TYPE

FIGURE	MATERIAL / ALLOY	INTERNAL REFERENCE	DIAMETERS	APPLICATIO N CLASS	PRESSURE DESIGN

For any change of these data, the client will send to the Committee secretary this descriptive questionnaire updated.

…….…… on …… of …… 20……

SIGNATURE AND STAMP OF THE MANUFACTURER

Annex C3

Descriptive Questionnaire for system

CLIENT:

PIPES MANUFACTURER COMPANY:

FITTINGS MANUFACTURER COMPANY:

PRODUCT: SISTEMS FOR HOT AND COLD WATER INSTALLATIONS IN PE-RT

TYPE OF JOINT:

STANDARD:

TRADEMARK(S):

DATE:

For any change of these data, the client will send to the Committee secretary this descriptive questionnaire updated.

…….…… on …… of …… 20……

SIGNATURE AND STAMP OF THE MANUFACTURER