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AENOR N Mark Specific Rules for polypropylene (PP) systems for hot and cold water installations

Note: This document is a translation of the Spanish document RP 001.16 rev 14 approved by the Plastics Technical Certification Committee (CTC-001). Spanish version always prevails over this translation.

RP 001.16

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1 Scope

Pursuant to paragraph 3.2 of the General Rules on the Certification of Products and Services with N Mark, hereafter the General Rules, the present Specific Rules describe the specific certification scheme for polypropylene (PP) systems for hot and cold water installations. The present Specific Rules complete the 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 polypropylene (PP) systems for hot and cold water installations, hereafter the Mark, denotes product compliance with the following standards UNE-EN ISO 15874-1:2013, UNE-EN ISO 15874-2:2013, UNE-EN ISO 15874-3:2013, UNE-EN ISO 15874-5:2013 or SANS 15874-1:2004, SANS 15874-2:2004, SANS 15874-3:2004, SANS 15874-5:2004.

2 Definitions and special requirements

Through the application of this Specific Rules, it is possible to obtain the N Mark certificate for the following products:

— PP pipes, in conformity with the established in part 2 of the applicable standards. Are excluded from the scope of the certification PP-RCT Pipes according to the standards SANS 15874-1: 2004, SANS 15874-2: 2004.

— PP fittings and other plastics materials in conformity with that it is established in parts 3 of 4 of the applicable standards. Are excluded from the scope of the certification PP-RCT fittings according to the standards SANS 15874-1: 2004, SANS 15874-3: 2004

— Plastics piping systems in PP, in conformity with that it is established in the part 5 of the applicable standards, comprised by pipes and fittings PP or PP pipes and of other plastic or metallic materials. PP-RCT system are excluded from the scope of the certification according to the standards SANS 15874-1: 2004, SANS 15874-5: 2004.

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.

The certification applicants shall submit and independent application for each product.

Reference: It is considered 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.

Clients of the Mark for the products listed in this Particular Rules, pending the adoption of standard European test of the effect on water quality of these products, clients should comply with the RD 140/2003 transposition of Community Directive 98/83/CE through migration tests according to UNE-EN 12873-1 Standard, performed every five years.

Respect to the fittings are considered the following dimension group:

- **Group 1:** Nominal diameter $16 \leq DN \leq 32$
- **Group 2:** Nominal diameter $40 \leq DN \leq 63$
- **Group 3:** Nominal diameter $DN \geq 75$

Minimum admission range for fittings:

When applying for certification for PP fittings and systems, the following figures are established as necessary for the realization of a system:

- Socket
- Elbow 90°
- Equal Tee
- Straight Female
- Straight male
- End cap
- Reducer / enlargement

When the range certified or certified includes only Group 1 fittings, the minimum range shall consist of all previous references in diameters 20, 25 and 32.

When the certified or certified range includes fittings of Groups 2 and 3, the minimum range shall consist of all previous references in at least one of the group diameters.

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)

AENOR will carry out the test indicated in table 1 (pipes), 2 (fittings) and 3 (systems) where required, during the initial or surveillance inspection

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 3 (systems) where required.

The manufacturer will send the selected samples to the laboratories indicated by the AENOR, in a maximum term 7 days since the date of inspection.

TABLE 1

PIPES			
	TEST	GRANTING/ MAINTANING	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 reversion	20% references / min. 2, máx. 4	1
	Impact resistance	20% references/ min. 2, max. 4	1
	Melt flow rate (compound + pipe) (1)	1 reference	1
	Resistance to internal pressure 20°C 1 h	20% references / min. 2, máx. 4	1
	Resistance to internal pressure 95°C 22 h	20% references / min. 2, máx. 4	1
	Resistance to internal pressure 95°C 165 h	20% references / min.2, máx. 4	1
	Resistance to internal pressure 95°C 1000 h	1 reference at random	1
	Thermal stability test by hydrostatic pressure testing (only granting and in case of any formulation change) (2)	1 reference for each raw material	1

Note (1) When the raw material is pigmented by the manufacturer of the PP pipes or fittings, then the melt mass flow rate test will not be required.

Note (2) In order to grant the certificate it is not considered necessary that thermal stability test by hydrostatic pressure had finished taking into account the duration of the test.

TABLE 2

FITTINGS			
	TEST	GRANTING/ MAINTANING	RESULTS EVALUATION
TESTS TO BE CARRIED OUT BY THE LABORATORY	Chemical composition of the metallic insert	5% references/ min. 2	1
	Appearance	1 fitting per diameter	1
	Inside diameter end-entrance (D1)	100% references at the granting and 50% at the maintaning	E
	Inside diameter end-bottom (D2)		E
	Ovality		E
	Lenght End		E
	Minimum Bore		E
	Melt flow rate (compound + fitting) (1)	1 reference	1
	Opacity, if declared (2)	1 reference selecting the one with the lowest wall thickness	1
	Resistance to internal pressure 20°C 1 h (only plastics fittings)	5% references per type of joint, min. 2, max. 5	1

Note (1) When the raw material is pigmented by the manufacturer of the PP pipes or fittings, then the melt mass flow rate test will not be required

Note (2) It is not necessary carry out this test if the fitting is of the same opaque compound that the pipe and the test is made for the pipe provided that the minimum thickness of all fittings is greater than the minimum of pipes.

TABLE 3

SYSTEMS			
	TEST	GRANTING/ MAINTANING	RESULTS EVALUATION
TESTS TO BE CARRIED OUT BY THE LABORATORY	Resistance to internal pressure 95°C 1000 h	2% references per type of joint, max. 5	1
	Thermal cycling test	1 diameter	1

Evaluation criterion E:

In order to consider dimensional control of fittings conform, no more than 10% of individual measurements of any of the parameters outside tolerance can be registered. If the percentage of non-conformities is less than 10%, the dimensional control shall be considered compliant. However, in the following follow-up inspection, samples of the pieces that have presented a non-conforming result will be selected in the previous visit. If the results are repeated, the manufacturer will be given a period of three months so that, once the necessary corrective actions have been applied, he sends to the laboratory new parts that have not conformed to repeat the dimensional control.

If that the result of non-conformities is greater than 10%, as a general rule, the manufacturer will be given a period of three months so that, once the necessary corrective actions have been applied, send to the laboratory new parts that have resulted Not conforming to repeat dimensional control. Nevertheless, the Committee will take the agreement that considerer appropriate considering the certified range, the nonconforming dimensions and the magnitude of the dimensional deviation in each case.

4 Manufacturer internal control

4.1 Raw materials for pipes and fittings

The manufacturer must guarantee that the mixtures, compounds and alloys involved in the manufacture of pipes and fittings have appropriate characteristics. In addition, will assure that the specifications provided in the Certificate of Analysis, comply with the purchase requirements established and that these are the compounds and alloys declared in the application forms of as raw materials.

For metallic fittings, brass parts must comply with the alloys included in the standards:

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

Temporarily, and while new revisions of European standards with respect to copper alloys for brass fittings are published, the alloys listed in the following document are allowed: "Common Approach. Metallic materials part B: Common composition 4MS list".

https://www.umweltbundesamt.de/sites/default/files/medien/374/dokumente/150120_4ms_scheme_for_metallic_materials_part_b.pdf

4.2 Final products control

Tests and their frequency are stated in tables 4, 5 and 6, as proceed.

TABLE 4

PIPES	
TEST	FREQUENCY
Appearance	Every 4 hours per extrusion line
Mean outside diameter	Every 4 hours per extrusion line
Wall thickness	Every 4 hours per extrusion line
Opacity (only if manufacturer declares it)	Once per year per compound, on the one with the lowest wall thickness
Longitudinal reversion	Per extrusion line. Minimum twice per week.
Thermal stability test by hydrostatic pressure testing (2)	At granting and in case of any formulation change
Impact resistance	Per manufacturing period. Minimum twice per week
Melt flow rate (compound + pipe) (1)	Every three batches of raw material
Resistance to internal pressure 20°C 1	Once per year per reference
Resistance to internal pressure 95°C 22 h	Once per manufacturing period
Resistance to internal pressure 95°C 165 h	Every three manufacturing periods of the same reference
Resistance to internal pressure 95°C 1000 h	One pipe per extrusion line, minimum once per year

Note (1) It is not necessary carry out this test if it presents the regression curve of the material.

Note (2) When the raw material is pigmented by the manufacturer of the PP pipes or fittings, then the melt mass flow rate test will not be required.

TABLE 5

FITTINGS	
TEST	FREQUENCY
Appearance	Every 8 hours per machine and cavity
Chemical composition of metallic insert	Raw material certificate for each delivery batch
Inside diameter End-Entrance (D1)	Per batch, minimum every 24 hours
Inside diameter End-Bottom (D2)	Per batch, minimum every 24 hours
Length End	Per batch, minimum every 24 hours
Ovality	Per batch, minimum every 24 hours
Minimum bore	Control at the beginning of production
Opacity (only if manufacturer declares it) (1)	Once per year per compound, on the one with the lowest wall thickness
Melt flow rate (compound + fitting) (2)	Every three batches of raw material
Resistance to internal pressure 20°C 1 h (for plastic fittings)	Once per year per reference

Note (1) It is not necessary carry out this test if the fitting is of the same opaque compound that the pipe and the test is made for the pipe provided that the minimum thickness of all fittings is greater than the minimum of pipes.

Note (2) When the raw material is pigmented by the manufacturer of the PP pipes or fittings, then the melt mass flow rate test will not be required.

TABLA 6

SISTEMAS	
ENSAYOS	FRECUENCIA
Resistance to internal pressure 95°C 1000 h	Once every 4 months
Thermal cycling test	Once per year

5 Marking of certified products (see RP 001.00)

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;

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

— Number of the applicable standard UNE-EN ISO 15874 and/or SANS 15874;

— Manufacturer identification, trademark;

— The reference to the material PPR or PPRCT;

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

— 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).

Example:

AENOR – N - 001/XXX - UNE-EN ISO 15874 - Trademark - PP-R-20x3,4 - Class 1/10 ; 2/8; 4/10 ; 5/6 bar - Opaque - 21/5/2016

5.2 Marking of the fitting / packaging

5.2.1 Marking of the fitting

The minimum required marking of the fitting is the following:

— Trademark;

— Nominal diameter;

— The reference to the material PPR or PPRCT;

— Manufacturing month and year (number or code);

5.2.2 Marking of the packaging

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

— Reference to the word: AENOR;

— AENOR N Mark logotype;

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

— Number of the applicable standard UNE-EN ISO 15874 and/or SANS 15874;

— 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).

5.3 Marking of Systems

Where reference is made to the N Mark Certificate of the system in commercial or other documentation, indicate the type of application and pressure that appears in the N Mark Certificate.

Annex C1

Description Questionnaire for Pipes

CLIENT:

MANUFACTURER COMPANY:

FACTORY SITE:

MATERIAL: ☐ PP-R ☐ PPR-CT

TRADEMARK(S):

STANDART:

COLOR:

DATE:

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

Description of the raw materials used:

SUPPLIER	REFERENCE

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

…….…… on …… of …… 20……

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Annex C2

Descriptive Questionnaire for fittings

CLIENT:

MANUFACTURER COMPANY:

FACTORY SITE:

MATERIAL: ☐ PP-R ☐ PPR-CT

TYPE OF JOINT: Socket fusion ☐ Electrofusion ☐

TRADEMARK(S):

STANDARD:

COLOR:

DATE:

THE APPLICANT SHALL FILL IN A QUESTIONNARIE (ANNEX C-2) FOR EACH FITTING TYPE

FIGURE	MATERIAL / ALLOYS	REFERENCE INTERNAL OF THE MANUFACTURER	DIAMETERS	APPLICATION CLASS	DESIGN PRESSURE	OPACITY YES/NO

Description of the raw materials used:

Fitting body:

SUPPLIER	REFERENCE

Alloys declared for metallic insert:

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

…….…… on …… of …… 20……

DATE, SIGNATURE AND STAMP OF THE MANUFACTURER

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Annex C3

Descriptive Questionnaire for pipes and fittings systems

CLIENT:

PIPES MANUFACTURER COMPANY:

FITTINGS MANUFACTURER COMPANY:

PRODUCT: SYSTEM FOR HOT AND COLD WATER INSTALLATIONS IN ☐PP-R ☐PPR-CT

TYPE OF JOINT: Socket fusion ☐ Electrofusion ☐

STANDARD:

TRADEMARK(S):

Must be attached instructions to the application for correct assembly of the system and tool to be used, indicating the type of clamp.

DATE:

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

…….…… on …… of …… 20……

SIGNATURE AND STAMP OF THE MANUFACTURER