AENOR N Mark Specific Rules for Chlorinated PVC (C-PVC) systems for hot and cold water installations

Note: This document is a translation of the Spanish document RP 001.24 rev 5 approved by the Plastics Technical Certification Committee (CTC-001). Spanish version always prevails over this translation.

RP 001.24

Revision 5

Date 2020-09-30

AENOR
Confía

Index

1 Purpose and 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 chlorinated PVC (C-PVC) systems for hot and cold water installations. 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 chlorinated PVC (C-PVC) systems for hot and cold water installations, hereafter the Mark, denotes product compliance with the following standards UNE-EN ISO 15877-1:2009, UNE-EN ISO 15877-1:2009/A1:2011, UNE-EN ISO 15877-2 :2009, UNE-EN ISO 15877-2:2009/A1:2011UNE-EN ISO 15877-3:2009, UNE-EN ISO 15877-3:2009/A1:2011UNE-EN ISO 15877-5:2009, UNE-EN ISO 15877-5:2009/A1:2011, SANS 15877-1:2005, SANS 15877-2:2005, SANS 15877-3:2005, SANS 15877-5:2005.

2 Def Definitions and special requirements

Through the application of this Specific Rules, it is possible to obtain de AENOR certification for the following products:

- C-PVC pipes, in conformity with the established in part 2 of the applicable standards.
- C-PVC fittings and other plastics materials in conformity with that it is established in parts 3 of the applicable standards.
- Plastics piping systems in C-PVC, in conformity with that it is established in the parts 5 of the applicable standards, comprised by C-PVC pipes and fittings.

In order to possess a certified piping system it is necessary that both pipes and fittings that comprise it possess the N Mark product 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, in accordance with UNE EN ISO 15877, 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 ≤ DN ≤ 32
- **Group 2:** Nominal diameter 40 ≤ DN ≤ 63
- **Group 3:** Nominal diameter DN ≥ 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 16, 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.

3.1 Sampling and testing for granting and maintaining of the product N Mark certificate

3.1 Test to be carried out in factory (See RP 01.00)

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

3.2 Sampling and tests to be carried out by the laboratory (See RP 01.00)

AENOR will select and marked the necessary samples to carry out in the laboratory the test indicated in table 1 (pipes), 2 (fittings) or 3 (system) 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
	Dimensions of sockets	1 pipe per reference	2
	Effective length	10 pipes at random	2
	Angle of Chamfering	1 pipe per reference	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 / mín 2, **máx. 4**	1
	Impact resistance	20% references / mín 2	1
	Tensile strength	20% references / mín 2	1
	Vicat softening temperature	1 reference at random	1
	Resistance to internal pressure 20°C 1 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) (1)	1 reference **for each raw material**	1

Note (1) 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 INSPECTOR IN THE FACTORY	Appearance	1 fitting per diameter	1
	Inside diameter	5% references/ min 10	2
	Ovality	5% references/ min 10	3
	Socket length	5% references/ min 10	2
	Wall thickness of the fitting body	5% references/ min 10	3
TESTS TO BE CARRIED OUT BY THE LABORATORY	Chemical composition of metallic insert	5% references/ min 10	1
	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, min. 2, max. 5	1
	Vicat softening temperature	2% references	1
	Effects of heating	10% references	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) 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 3

SYSTEM			
	TEST	GRANTING/ MAINTANING	RESULTS EVALUATION
TESTS TO BE CARRIED OUT BY THE LABORATORY	Resistance to internal pressure 80°C 3000 h	1 reference per type of joint	1
	Bending test	50% of the diameters	1
	Pull.out test (23°C and 80, 90 or 95 °C 1 h	50% of the diameters	1
	Thermal cycling test	1 diameter	1
	Pressure cycling test	50% of the diameters	1
	Vacuum test	50% of the diameters	1

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 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 Semiproducts for forge

— Fittings manufactured from hollow bars: UNE EN 12168 Hollow Bars for machining

— Ingots and casting: UNE EN 1982

Temporarily and as new revisions of European standards with respect to copper alloys for brass fittings is published, it allows the aforementioned alloys, those listed in "Common Approach" allowed, "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
Dimensions of sockets	Every 4 hours per extrusion line
Effective length	Every 4 hours per extrusion line
Angle of Chamfering	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 manufacturing period. Minimum twice per week
Thermal stability test by hydrostatic pressure testing	At granting and in case of any formulation change
Impact resistance	Per manufacturing period. Minimum twice per week
Tensile strength	Per manufacturing period. Minimum twice per week
Resistance to internal pressure 20°C 1	Once per year per reference
Resistance to internal pressure 95°C 165 h	Once per manufacturing period
Resistance to internal pressure 95°C 1000 h	One pipe per extrusion line, minimum once per year

TABLE 5

FITTINGS	
TEST	FREQUENCY
Appearance	According to the manufacture'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
Inside diameter	Per manufacturing period. Minimum every 24 hours
Ovality	Per manufacturing period. Minimum every 24 hours
Socket length	Per manufacturing period. Minimum every 24 hours
Wall thickness of the fitting body	Every 8 hours per machine and cavity
Opacity (only if manufacturer declares it)	Once per year per compound, on the one with the lowest wall thickness
Vicat softening temperature	Minimum twice per week
Effects of heating	Once per manufacturing period. Minimum one per day
Resistance to internal pressure 20°C 1 h	Once per manufacturing period. Minimum once per week
Thermal stability test by hydrostatic pressure testing	Only granting and in case of any formulation change

TABLE 6

SYSTEMS	
TEST	FREQUENCY
Resistance to internal pressure 80°C 3000 h	Once every 4 months
Bending test	Once per year
Vacuum test	Once per year
Pull.out test (23°C and 80, 90 or 95 °C 1 h	Once per year
Thermal cycling test	Once per year
Pressure cycling test	Once per year

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;
- Contract number signed with AENOR or certificate number: 001/XXX;
- Number of the applicable standard UNE-EN ISO 15877 and/or SANS 15877;
- Manufacturer identification, trademark;
- The reference to the material C-PVC Type I or C-PVC Type II. In the case of marking C-PVC is assumed to be PVC-C Type I;
- Indication of the external diameter and nominal wall thickness in millimetres;
- Pipe series;
- 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 15877 - Trade Mark - C-PVC -16x1,8 - Pipe Serie 4 - Class 1/6; 2/6 ; 4/6 bar - Opaque - 21/5/2016

Additionally it is inform that it is permitted to mark the maximum service pressure at either 20 °C or any other temperature provided this one is not considered malfunction temperature, according to table 1 of UNE EN 15877-1 standards.

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;

— Nominal Wall thickness(s) of the corresponding pipes;

— 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;

— N Mark logotype;

— Contract number signed with AENOR or certificate number: 001/XXX;

— Number of the applicable standard UNE-EN ISO 15877 and/or SANS 15877;

— 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.

AENOR
Confía

Annex C1

Descriptive Questionnaire for Pipes

CLIENT:

MANUFACTURER COMPANY:

FACTORY SITE:

MATERIAL: C-PVC TYPE I ☐ TYPE II ☐

STANDART:

TRADEMARK(S):

DATE:

RANGE FOR WHICH THE MARK IS REQUESTED				
SERIE	**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……

SIGNATURE AND STAMP OF THE MANUFACTURER

AENOR
Confía

Annex C-2

Descriptive Questionnaire for fittings

CLIENT:

MANUFACTURER COMPANY:

FACTORY SITE:

MATERIAL:

TYPE OF JOINT:

Solvent cement joints ☐

Elastic seal ☐

STANDARD:

TRADEMARK(S):

DATE:

THE APPLICANT SHALL FILL IN A QUESTIONNARIE (ANNEX C2) FOR EACH FITTING TYPE

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

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

…….…… on …… of …… 20…….

SIGNATURE AND STAMP OF THE MANUFACTURER

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 C-PVC

TYPE OF JOINT:

Solvent cement joints ☐

Elastic seal ☐

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 modification of these data, the client company shall send on duplicate to the Committee Secretary this updated descriptive questionnaire.

…….…… on …… of …… 20……

SIGNATURE AND STAMP OF THE MANUFACTURER