AENOR
Confía

AENOR N Mark Specific Rules for flexible hose assemblies in drinking water installations

Note: This document is a translation of the Spanish document RP 001.06 rev. 18 approved by the Plastics Technical Certification Committee (CTC-001). Spanish version always prevails over this translation.

RP 001.06

Revision 18
Date 2022-03-21

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 flexible couple hoses for water installations for human consumption. 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 flexible hose assemblies in drinking water installations, hereafter the Mark, denotes product compliance with the standard UNE-EN 13618:2017.

2 Definitions and special requirements

DN: Set of connections that have the same inner and outer diameter.

Type of hose: Hoses that are produced with the same base materials (eg: inner pipe and braiding).

The certification applicants shall submit a separate application for each type of hose.

For special cases, according to paragraph 4.2.2.5 of the standard, dimensional control and flow rate are not required.

The resistance to corrosion test, (48 hours) will be done according to UNE-EN-ISO 1456 for the condition 2 in saline neutral fog (SNF). Test pieces will be hung arranged in U shaped for testing.

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-EN 13618, the clients of the Mark, will provide to AENOR during the inspection visit the evidence that their product complies with the RD 140/2003.

Article 14 of the mentioned document states that "Products that are in contact with the water of human consumption, by themselves or by the practices that are used, shall not transmit to the water for human consumption, substances or properties that contaminate or get worse its quality, and involve a failure to comply the requirements specified in Annex I or a risk to the health of the population supplied.

For it, evidence must be provided of complying with the RD 140/2003 through migration test according to the UNE-EN 12873 Standard, performed every five years and / or certificates issued by competent authorities of compliance with the RD 140/2003.

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, 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, where required.

The dimensional control test over the fittings will be done on free pieces, while the length of the hoses will be measured on the finished product. In both cases, the dimensional control will be done based on the dimension declared by the manufacturer as indicated in Annex C.

3.3 Assessment result criteria

The assessment criteria are indicated in table 1. The meaning of the criteria is as follow:

- **Evaluation 1:** The test result shall conform with the requirements of the Standard. Any value out of tolerance is not accepted.
- **Evaluation 2:** If only one of the test samples tested has a not conform test result, the test shall be repeat on other five test samples. In this case, any value out of tolerance is not accepted.

For evaluation of point 4.1 Materials, the inspector will make the necessary checks on factory.

	TESTS	GRANTING	SURVEILLANCE	ASSESSMENT RESULT
TESTS TO BE CARRIED OUT BY THE INSPECTOR IN THE FACTORY	FIXED AND REVOLVED MALE FITTINGS AND FEMALE FITTING REVOLVED, STRAIGHT AND ELBOW			
	Minimum lenght of thread (l)	10 fittings randomly	10 fittings randomly	2
	Size of thread (th) per type of thread (conical or cylindrical)	10 fittings randomly	10 fittings randomly	2
	Resistance to tightening torque (*)	10 fittings randomly(10 test pieces)	1 test / DN (10 test pieces)	2
	PLAIN END FITTINGS WITH AND WITHOUT RECESS			
	Minimum length(l1, l2, l3)	10 fittings randomly	10 fittings randomly	2
	Inner diameterr (h)	10 fittings randomly	10 fittings randomly	2
	External diameter (d1 y d2)	10 fittings randomly	10 fittings randomly	2
	Wall thickness (t)	10 fittings randomly	10 fittings randomly	2
	Wrench size (E)	10 fittings at randomly	10 fittings at randomly	2
	HOSES			
	Length	10 hoses randomly	10 hoses randomly	2
TESTS TO BE CARRIED OUT BY THE LABORATORY	FITTINGS			
	Stress corrosion (See note 1)	10 fittings randomly	10 fittings randomly	1
	Resistance to bending (on terminal: nut and nippel)	1 test / DN (10 test pieces)	1 test per DN randomly (10 test pieces)	1
	HOSES			
	Flow rate (only at granting and every five years). (See note 2)	1 test / DN (3 test pieces)	-	2
	Leak tightness under internal hydrostatic pressure	1 test / DN (3 test pieces)	1 test / DN (3 test pieces)	1
	Tensile stress resistance	1 test / DN (3 test pieces)	1 test / DN (3 test pieces)	1
	Pressure cycling resistance	1 test / DN (3 test pieces)	1 test / DN (3 test pieces)	1
	Resistance to pressure jumps.	1 test / DN (3 test pieces)	1 test / DN (3 test pieces)	1
	Temperature cycling resistance (only at granting and, every five years) (See note 2)	1 test / DN (3 test pieces)	-	1
	Frost resistance. (only at the granting,, every five years or in case of formulation changes (See note 3)	1 test / DN (3 test pieces)	-	1
	Resistance to corrosion	1 test / DN randomly	1 test / DN randomly	2
	UV resistance. (only at the granting,, every five years or in case of formulation changes). (See note 2 and 4)	1 test	-	1
	Flexibility (only at granting and every five years) (See note 5)	1 test / DN (3 test pieces)	-	1

TABLE 1

(*) A tool that is calibrated

Note 1: This test only applies when the used alloy contains cooper (it does not apply to coated fittings).

Note 2: These tests can be performed by the manufacturer in the internal control. Whenever carried out by a certified external laboratory, the manufacturer must provide the test and the corresponding records for the approval by the Technical Committee of Certification of Plastics.

Note 3: The length of the hose for this test must be as minimum 350 mm.

Note 4: Only applies to plastic braidings.

Note 5: This test will be carried out placing the hose in the opposite direction to the degree of natural curvature of the hose.

4 Manufacturer internal control

4.1 Characteristics under factory production control (See RP 001.00)

- **Raw material:** Manufacturer must ensure that all components of hoses involved in the manufacture of the same ones having suitable characteristics.
- **Controls during manufacturing:** The tests and their frequency are indicated in table 2.
- **Final product control:** The tests and their frequency are indicated in table 2.

TEST	FREQUENCY
DIMENSIONAL CONTROL ON FIXED AND REVOLVED MALE FITTINGS AND FEMALE FITTINGS. REVOLVED, STRAIGHT AND ELBOW	
Minimum lenght of thread (l)	According to internal procedure of the manufacturer
Size of thread (th) per type of thread (conical or cylindrical)	
DIMENSIONAL CONTROL ON PLAIN END FITTINGS WITH AND WITHOUTH RECESS	
Minimum length (l1, l2, l3)	According to internal procedure of the manufacturer
Inner diameterr (h)	
External diameter (d1 y d2)	
Wall thickness (t)	
Wrench size (E)	
DIMENSIONAL CONTROL ON HOSES	
Length	According to internal procedure of the manufacturer
TESTS ON FITTINGS	
Stress corrosion (see note 1)	According to internal procedure of the manufacturer
Resistance to tightening torque	
Resistance to bending (on terminal: nut and nippel)	
TESTS ON HOSES	
Flow rate (For DN ≤ 13 or Minimum diameter of bore (For DN ≥ 15) (see note 3)	At granting, every 5 years and for design changes
Leak tightness under internal hydrostatic pressure (without ageing)	One test per week/DN (For EPDM hoses, as an alternative method, It can be use the method of annex D and E of this document)
Tensile stress resistance (without ageing)	
Leak tightness under internal hydrostatic pressure (aged samples)	One test every six months/DN
Tensile stress resistance (aged samples) according to the method of annex B.3 of the Standard UNE EN 13618)	
Pressure cycling resistance	One test every six months/ DN
Resistance to pressure jumps	
Resistance to corrosion	
Frost resistance (see note-2)	At granting and every five years
Temperature cycling resistance (see note 3)	
UV resistance (see note 3 and 4)	
Flexibility (see note 5)	

TABLE 2

Note 1: This test only applies when the used alloy contains cooper.
Note 2: The length of the hose for this test must be as minimum 350 mm.
Note 3: These tests can be performed by the manufacturer in the internal control. Whenever carried out by a certified external laboratory, the manufacturer must provide the test and the corresponding records for the approval by the Technical Committee of Certification of Plastics.
Note 4: Only applies to plastic braidings.
Note 5: This test will be carried out placing the hose in the opposite direction to the degree of natural curvature of the hose.

5 Marking

5.1 Marking

The marking on the hoses include at least the following:

— N Mark logotype;

— Manufacturer´s trademark or identification;

— Nominal pressure of 10 bar (PN) (*);

— Design temperatura 70°C (*);

— At least the last two digits of the production year.

The inner pipe must be marked with the name or trademark of the manufacturer or supplier and production date.

5.2 Marking of the packaging

The minimum required marking of the packaging is the following:

— Name of the producto;

— Reference to this standard UNE EN 13618;

— Nominal diameter;

— Legth L, in mm;

— Type of fitting.

Example:

Hose assembly - EN 13618 – PN 10 – 70 °C – DN xx – Lxxx –Fitting types X and X

(*) The design temperature and the nominal pressure will preferably be marked on the hoses (for example on the sleeve). In exceptional cases it may be marked on the packaging.

Anexo C

Product descriptive questionnaire

CLIENT:

MANUFACTURER COMPANY:

FACTORY SITE:

PRODUCT:

STANDARD:

TRADEMARK(S):

DATE:

FILL IN ONE ~~A~~ FORM (ANNEX C) PER EACH TYPE OF CONNECTION

NOMINAL DIAMETER (Dint x Dext)	
INNER PIPE	
BRAIDING (specify the material)	
LENGTHS (mm)	

TYPE OF FITTING:

SIZE AND TYPE OF THREAD (CONICAL O CILINDRICAL)	**FITTING (According to Table 1 UNE EN ISO 13618)**

For any extension of the range, the client will send to the Committee Secretary this descriptive questionnaire updated.

…….…… on …… of …… 20…..…

SIGNATURE AND STAMP OF THE MANUFACTURER

Anexo D

Test Method for Tensile Stress Resistance

This test shall be performed before aging according to the UNE ISO 188 method B. The minimum tensile resistance in both cases is 1,3 KN.

Test equipment required:

Dynamometer which jaws must be separated at an adjustable speed of 35± 5 mm/min.

Operative procedure:

The sample is clamped by the fittings in the jaws of the dynamometer and is pulled until the loosening of one of the fittings.

When the hose length exceeds the maximum jaws separation of the dynamometer, the length of the hose to testing will occur knotting the hose in its central part, as many times as necessary, until obtain a length that allows the performing of the test.

Report: The report shall contain:

- Identification of samples
- Number of tested samples
- Values obtained

(*) The information reflected in this Annex, have their origin in old Standards UNE 53626-1:1989 and UNE 53626-2:1989.

Annex E

Test Method for Bursting

When the connection is tested according to the procedure below, it must resist until 5.4 MPa (corresponding to a service pressure of 1,8MPa) in the first phase of the test and as a minimum 13 MPa in the final phase of bursting.

Test equipment required: A pressure source that use water as the fluid, able to reach a pressure of 30 MPa. It shall be provided with a suitable connection for the perfect coupling of one of the fittings of the test sample. You must have a contrasted manometer; whose scope of measuring is such that the test pressure is comprised between 15 and 85% of full scale from reading.

Operative Procedure: Closes one of the two ends of the specimen with a screw cap and filled with water, ensuring the elimination of air. Then connect the free end of the specimen to the pressure source. Start the application of pressure gradually, at approximately 1 MPa / s up to the pressure equivalent to three times the nominal service pressure declared and held for 60s ± 5s.

After this time, continue rising the pressure with the same speed as in the first phase of the test, until the bursting of the specimen and if otherwise not stated must be at least 4 times the nominal pressure.

If leaks occur in the connections, between the specimen and the pressure source or the screw cap, when you start applying pressure, you must stop the test to ensure the perfect assembly. If you verify that the assembly was correct, testing will continue.

Report: The report shall contain:

- Identification of samples
- Number of tested samples
- Test conditions
- Performance of the specimen during testing (leaks, deformation, etc.)
- Burst pressure, maximum and minimum

Note 1: If in the initial phase of the test, the specimen shows leaks or the pipe become detached of its fittings, it shall state in the report:" tubular connection is not suitable for use".

Nota 2: If one of the three tested samples fails, the test shall perform with other three specimens, indicating the six results in the report.

(*) The information reflected in this Annex, have their origin in old Standards UNE 53626-1:1989 and UNE 53626-2:1989.