

**AENOR Mark Specific Rules for pipes
made of oriented unplasticized poly (vinyl
chloride) (PVC-O) for the conveyance of
water under pressure**

RP 01.53

Version 4

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1 Objeto y Alcance

This document aims to define the procedure for the application, granting and maintenance of the AENOR Mark of pipes made of oriented unplasticized poly (vinyl chloride)(PVC-O), for piping systems intended to be used underground or above-ground where not exposed to direct sunlight, for water mains and services, pressurized sewer systems and irrigation systems, complementing the AENOR Mark Specific Rules for plastic materials – common requirements (RP01.00).

The General Rules always prevail over the present Specific Rules.

The AENOR mark for pipes made of oriented unplasticized poly (vinyl chloride) (PVC-O), hereafter the Mark, denotes product compliance with the standard UNE-ISO 16422:2015 y SANS 16422:2007.

2 Definitions and Special requirements

Classification of material: Depending on the degree of orientation determined that defines its properties: PVC-O 315; PVC-O 355; PVC-O 400; PVC-O 450; PVC-O 500.

Class: it is consider a class the set of pipes that have the same diameter and nominal wall thickness, inside the same classification of material.

Type: Depending on the connection system, the following types are established:

- Type 1: Pipes with integrated socket
- Type 2: Pipes with smooth ends

Together with the application form, the “provisional reference curve” will be presented according to Annex A of the UNE ISO 16422, in order to classify the material with which the pipes are made. After 18 months the “final reference curve” will be presented.

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 16422, the petitioners / licensees of the Mark, will provide to AENOR Technical Services 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 AENOR product certificate

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

AENOR Services will carry out the tests indicated in table 1 during the initial or surveillance inspection.

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

AENOR services will select and marked the necessary samples to carry out in the laboratory the tests indicated in table 1.

	TESTS	GRANTING/MAINTANING	VALUATION OF RESULTS	
TESTS TO BE CARRIED OUT BY THE INSPECTOR IN THE FACTORY	Appearance	10 pipes at random	1	
	Mean Outside diameter	1 pipe per class	2	
	Wall thickness	1 pipe per class	3	
	Ovality	1 pipe / diameter	2	
	Socket lenght	Tyoes 1: 1 pipe / diameter	2	
	Pipe length (3)	10 pipes / type	2	
TESTS TO BE CARRIED OUT BY THE LABORATORY	Opacity(1)	1 pipe, selecting the one with the lowest thickness	1	
	Impact resistance	10% of the classes minimum 2	1	
	Ring stiffness	20% of the classes, minimum 2 per SN	1	
	Uniaxial tensile strength (4)	5 % classes, minimum 2	1	
	Vicat softening temperature (5)	1 class at random /clasification of the material	1	
	Resistance to internal pressure 10 h-20°C (2)(*)	5% classes /clasification of the material	1	
	Resistance to internal pressure 1000 h-20°C (2)(**)	1 class at random /clasification of the material	1	
	Resistance to internal pressure 1000 h-60°C (2)(**)	1 class at random / clasification of the material	1	
	Resistance to internal pressure for pipes with integrated socket	1 class / type of assembly and joint	1	
	FUNCTIONAL REQUIREMENTS			
	Short term pressure test for leaktighness of the assemblies and with angular deviation	1 class / type of assembly and joint	1	
	Short term negative pressure test for leaktighness of the assemblies	1 class / type of assembly and joint	1	
	Long term hydrostatic internal pressure	1 class / type of assembly and joint	1	
	Pressure and bending test for leaktighness and strength(for end-load-bearing joints)	1 class / tyoe of assembly	1	

(1) When the manufacturer declares it

(2) See Annex A of the Standard for the establishment of the minimum required strength (pressure value test 20°C)

(3) It will be the length defined by the manufacturer

(4) In case of dispute, the method of resistance of dichloromethane should be used on preformed pipe. For the certification according to SANS 16422:2007, only applies the tensile strength test.

(5) It shall be performed on preformed pipe. During the inspection visit, the inspector will sample preformed pipe. This test does not apply for the Certification according to the Standard SANS 16422:2007.

(*) **Para una de las clases que ésta prueba es aplicable realizar el ensayo a tubos de embocadura integrada, según punto 11.1.2. de la norma de producto**, it would not be necessary to perform the test on the pipe according to point 11.1.1 of the product standard. It will only be applicable to other classes that correspond to 5% of the classes

(**) According to point 11.1.2 of the Product Standard, it is necessary to perform this test on pipes with integral sockets. If there is no evidence of the failure, it would not be necessary to perform the test on the pipe according to point 11.1.1 of the product standard.

4 Manufacturer internal control

4.1 Characteristics under factory production control

Raw materials: The manufacturer must ensure that the mixtures and compounds involved in the manufacture of pipes having appropriate characteristics in order to comply with the requirements of the Standard

Controls during manufacturing: Tests and their frequency are listed in table 2.

TESTS	FREQUENCY
Appearance	Every 4 h / production line
Mean outside diameter	
Wall thickness	
Ovality	
Socket length	
Pipe length (3)	
Opacity (1)	Whenever the formulation changes in any of the components that affect this feature
Value of K	Certificate of raw material per each delivery batch
Impact resistance	Once per production period
Ring stiffness	Once per production period
Uniaxial tensile strength or dyclorometane or DSC (4)	Once per production period
Resistance to internal pressure 10 h-20°C (2)	Once per production period. Minimum 1/week
Resistance to internal pressure 1000 h-20°C (2)	Once a year / 1 class/ clasification of the material
Resistance to internal pressure 1000 h-60°C (2)	
Vicat softening temperature (5)	
Resistance to internal pressure for pipes with integral sockets	Minimum once a year per type of assembly and joint
FUNCTIONAL REQUIREMENTS	
Short term pressure test for leaktighness of the assemblies and with angular deviation	Minimum once a year 1 class / type of assembly and joint
Short term negative pressure test for leaktighness of the assemblies	
Long term hydrostatic internal pressure	
Pressure and bending test for leaktighness and strength(for end-load-bearing joints)	

(1) When the manufacturer declares it

(2) See Annex A of the Standard for the establishment of the minimum required strength (pressure value test 20°C)

(3) It will be the length defined by the manufacturer.

- (4) The manufacturer may choose to perform the resistance test dichloromethane (on preformed pipe), the uniaxial tensile, or DSC. For the certification according to SANS 16422:2007, only applies the tensile strength test.
- (5) It shall be performed on preformed pipe. This test does not apply for the Certification according to the Standard SANS 16422:2007.

5 Marking of certified products

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;
- AENOR Mark logotype, with a size not less than 5mm;
- Number of the contract signed with AENOR: 001 / XXX
- Trade mark
- Material of the pipe (PVC-O) and its classification
- Nominal external diameter x wall thickness
- Nominal pressure (in bar)
- Service ratio (design) C
- Manufacturer's information (manufacturing period, year, month, etc)
- Number of the applicable standard UNE ISO 16422.

Example:

AENOR -  - 001/XXX - N° 001 / XXX – Trade Mark - PVC-O 400 - 160 x 4,9 - PN 16 - C 1,6 -
Manufacturer's information –UNE ISO 16422 or SABS 16422