TECHNICAL DOCUMENT

WATER DISTRIBUTION OR DRAINAGE PIPES

Technical document 08-01 Non-traditional

Heating and/or domestic distribution and/or distribution of chilled water – Water supply

Technical document 08-01 Non-traditional rev. 02
17/04/2023

The English version is provided for information. In case of doubt or dispute, the French version only is valid.

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MODIFICATION HISTORY

Revision No.	Application date	Modifications
00	16/11/2018	Update to the document layout and reference Content modifications: Creation of technical document following transition of the products covered by this document to traditional status
01	01/07/2020	Integration of PVC-U sleeves for PVC-BO water supply networks
01	17/04/2023	-§2.2 tests methods -§ 4 Marking

Contents

The requirements and provisions specified in this Technical Document will be updated in the case of new components or products.

1. STANDARDS

1.1. Product standards

NF EN 12201-2: Plastics piping systems for water supply - Polyethylene (PE) - Part 2: Pipes.

NF EN 545: Ductile iron pipes, fittings, accessories and their assemblies for water pipes.

NF EN ISO 1452 (January 2010) Plastics – Plastic piping systems for water supply - Unplasticised poly (vinyl chloride) (PVC-U).

Part 1: General.

Part 2: Pipes.

Part 3: Fittings.

Part 4: Taps and Auxiliary Equipment.

Part 5: System's Suitability for Use.

NF EN 17176 : Plastics systems for water supply and buried and above ground drainage, severage and irrigation under pressure – Oriented unplasticized poly(vinyl chloride) (PVC-O) – Part 1 : general

1.2. Test standards (Methods)

NF EN ISO 1133 (November 2005): Plastics - Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics.

NF EN ISO 1167-1: Thermoplastics pipes, fittings and assemblies for the conveyance of fluids - Determination of the resistance to internal pressure - Part 1: General method.

NF EN ISO 1167-2: Thermoplastics pipes, fittings and assemblies for the conveyance of fluids - Determination of the resistance to internal pressure - Part 2: Preparation of pipe test pieces.

NF EN ISO 1167-3: Thermoplastics pipes, fittings and assemblies for the conveyance of fluids - Determination of the resistance to internal pressure - Part 3: Preparation of components.

NF EN ISO 2505: Thermoplastics pipes -- Longitudinal reversion -- Test method and parameters.

NF EN ISO 3126: Plastics Piping Systems - Plastics components - Determination of dimensions.

NF EN 728: Plastics piping and ducting systems - Polyolefin pipes and fittings - Determination of oxidation induction time.

NF EN ISO 6259-1: Thermoplastics pipes - Determination of tensile properties - Part 1: General test method.

ISO 6259-3: Thermoplastics pipes – Determination of tensile properties – Part 3: Polyolefin pipes.

NF EN ISO 13479: Polyolefin pipes for the conveyance of fluids - Determination of resistance to crack propagation - Test method for slow crack growth on notched pipes (notch test).

ISO 13480: Polyethylene pipes — Resistance to slow crack growth — Cone test method.

ISO 16770: Plastics - Determination of environmental stress cracking (ESC) of polyethylene - Full-notch creep test (FNCT).

NF EN 545: Ductile iron pipes, fittings, accessories and their joints for water pipelines - Requirements and test methods.

- NF EN 545 -7.2.5 - Cyclic internal hydraulic pressure
- NF EN 545 -7.2.2 - Positive internal hydrostatic pressure
- NF EN 545 -7.2.3 - Negative internal hydrostatic pressure

NF EN ISO 2808: Paints and varnishes - Determination of film thickness

NF EN ISO 527-1 - Plastics - Determination of tensile properties - Part 1: General principles

NF EN ISO 13844: Plastics piping systems — Elastomeric-sealing-ring-type socket joints for use with plastic pressure pipes — Test method for leaktightness under negative pressure, angular deflection and deformation

NF EN ISO 13845: Plastics piping systems — Elastomeric-sealing-ring-type socket joints for use with thermoplastic pressure pipes — Test method for leaktightness under internal pressure and with angular deflection

NF EN 1183-1 : Plastics - Methods for determining the density of non-cellular plastics - Part 1 : immersion method, liquid pycnometer method and titration method

NF EN 727 : Plastics piping and ducting systems. Thermoplastics pipes and fittings. Determination of vicat softening temperature (vst).

2. CERTIFIED CHARACTERISTICS AND TEST METHODS

2.1. Certified characteristics

The characteristics listed in the table below will comply with the specifications given in the corresponding Technical Appraisals.

Certified characteristics	Polyethylene pipes	Cast iron systems		**PVC-U sleeves for PVC-BO Pipes**
		Pipe	Fitting	Fitting
Dimensional characteristics *	X	X	X	X
Melt mass-flow rate (MFR)	X			
Density				X
VICAT				X
Tensile properties	X			
Resistance to oxidation (OIT)	X			
Heat shrinkage	X			
Resistance to pressure	X			
Socket resistance to pressure				X
Short-term internal hydrostatic pressure hermetic seal test				X
Short-term negative air pressure hermetic seal test				X
Resistance to slow crack growth (cone test)	X			
Cyclic pressure		X	X	
Positive internal hydrostatic pressure		X	X	
Negative internal hydrostatic pressure		X	X	
Measurement of the thickness of the internal coating		X	X	
Resistance of internal layer to impact on pipe		X		
Inspection of degree of polymerisation on fitting			X	
Inspection of internal resistance to liquid on pipe		X		

*: these characteristics are certified based on verification of the holder's registers and recorded in the audit report

2.2. Test methods

The conditions for verification of the characteristics certified at CSTB are listed in the tables below.

These verification conditions may be supplemented by specific measures given in the Technical Appraisals.

Certified characteristics	Polyethylene pipes	Cast iron systems		**PVC-U sleeves for PVC-BO Pipes**
		Pipe	Fitting	
Dimensional characteristics	NF EN ISO 3126	NF EN ISO 3126		
Melt mass-flow rate (MFR)	NF EN ISO 1133 190°C – 5 kg			
Density				NF EN 1183-1
VICAT				NF EN 727
Tensile properties	NF EN ISO 6259-1 ISO 6259-3			
Resistance to oxidation (3)	EN 728 and/or NF EN ISO 11357-1 and 6 200°C – 20 min			
Heat shrinkage	NF EN ISO 2505 Method B 1) (in air) 110°C - 60 min In drying oven			
Resistance to pressure 1000 h	NF EN ISO 1167 1-2-3 – at 80°C σ = 5 MPa			
Resistance to slow crack growth (cone test)	ISO 13480 V≤10mm/d			
Cyclic pressure		*NF EN 545 - 12.5 25/30 bar ≥ 24000 cycles	*NF EN 545 -7.5 25/30 bar ≥ 24000 cycles	
Socket resistance to pressure				NF EN ISO 1167-1-2 3.36*PN 1 hour (2)
Short-term internal hydrostatic pressure hermetic seal test				EN ISO 13845 Pressure : cf fig 1 EN 1452-5 T° 15 à 25°C Deviation 2° Test duration : 100 min

Short-term negative air pressure hermetic seal test				EN ISO 13844 Pression négative: cf fig 2 EN 1452-5 T° 15 à 25°C Deviation 2° Déformation 5% Test duration : Conforme fig 2
Positive internal hydrostatic pressure		*NF EN 545 -7.1 t ≤ 2h (1.5 PFA + 5) bar	*NF EN 545 -7.1 t ≤ 2h (1.5 PFA + 5) bar	
Negative internal hydrostatic pressure		*NF EN 545 -7.2 t ≤ 2h −0.9 bar	*NF EN 545 -7.2 t ≤ 2h −0.9 bar	
Measurement of the thickness of the internal coating		Nf EN ISO 2808 th. 250 µ minimum	NF EN 14901 th. 250 µ minimum	
Resistance of internal layer to impact on pipe		NF 197 or NF EN ISO 6272 Drop of 0.5m 1kg D20		
Inspection of degree of polymerisation on fitting			NF 197 Before and after salt spray	
Inspection of internal resistance to liquid on pipe		NF 197		

*: See table 1.1 of standard NF EN 545

[1)] : The choice of method A or method B is the responsibility of the holder. However, in case of dispute, only the reversion test performed according to the liquid bath method in standard NF EN ISO 2505 will be the reference test.

(2) : This test can be carried out with different closure modes: pressure PVC-U tubes or pressure enclosure.

(3) : The reference test is the one carried out in accordance with standard NF EN 728

3. VERIFICATION REGIME

For products in family DT 08-01 Non-traditional, the applicable verification regime is the half-yearly regime for the 12 months following admission, then the simplified half-yearly regime.

4. MARKING

4.1. PE and iron pipes

The tubes must be marked indelibly, at least every meter.

This marking must include at least the following elements:

- the name of the holder or the distributor (1) (name, acronym or logo, if the acronym or logo is not explicit, this must be filed with CSTB) and the commercial name of the product,
- the identification of the material (PE) and the ISO material code (iron),
- the intended application: Drinking water,
- the nominal pressure,
- the dimensions of the tube (DN, thickness and SDR),
- the manufacturing marks allowing traceability comprising at least:
the period of manufacture, at least the month and the year, in numbers or in code,
- the QB logo followed by the last two parts of the certificate number
- *(1) A distributor is the beneficiary of a commercial extension.*

4.2. Fittings

4.2.1. Cast Iron Fittings

The fittings must individually bear the following indelible marking:

- the name of the holder or the distributor (1) (name, acronym or logo, if the acronym or logo is not explicit, this must be filed with CSTB) and the commercial name of the product,
- the identification of the material
- DN dimensions
- the manufacturing marks allowing traceability comprising at least:
- the period of manufacture, at least the month and the year, in numbers or in code,
- the identification of the factory when there are several manufacturing sites, by name or code.

(1) A distributor is the beneficiary of a commercial extension.

4.2.2. PVC fittings

The fittings must individually bear the following indelible marking:

- the name of the holder or the distributor (1) (name, acronym or logo, if the acronym or logo is not explicit, this must be filed with CSTB) and the commercial name of the product,
- the identification of the material
- the dimensions and the PN,
- the manufacturing marks allowing traceability comprising at least:
- the period of manufacture, at least the month and the year, in numbers or in code,
- the QB logo followed by the last two parts of the certificate number or) or letters QB

in case of impossibility

(1) A distributor is the beneficiary of a commercial extension.

4.2.2. Labels / Fittings packaging

The following information must be marked on a label affixed to the fitting or its packaging:

- the name of the holder or the distributor (1) (name, acronym or logo, if the acronym or logo is not explicit, this must be filed with CSTB)

- the commercial name of the product,

- the QB logo followed by the last two parts of the certificate number

(1) A distributor is the beneficiary of a commercial extension.

5. SAMPLING FOR TESTS AT CSTB

PE		Cast iron		**PVC-U sleeves for PVC-BO Pipes**	
Pipes	Fittings	Pipes	Fittings	Fittings	Pipes
10 x 1m sections of a DNxe	6 fittings for the connection of specimens to the test equipment	3 x 0.5m sections with sockets 3 smooth 1.1m sections 8 equal segments of 0.15 m	6 flange fittings	5 fittings	3x2m for connection of test pieces to test equipment PVC-BO pipes certified NF055