BS EN 1452 -2 / Plastics Piping Systems for Water Supply – Unplasticized Poly (Vinyl Chloride)(PVC-U) – Testing Equipment

Description

8 Mechanical characteristics

8.1 Impact strength

Pipes with a nominal wall thickness of 14,9 mm or less, when tested for resistance to external blows at 0 °C in accordance with EN 744:1995 shall have a true impact rate (TIR) of not more than 10 % when tested at the levels given in table 6.

Pipes in the series S 5 to S 10 shall be tested at the medium level M and pipes in the series S 12,5 to S 20

shall be tested at the high level H. The type of the striker shall be as given in table 2 of EN 744:1995 depending on the mass of the falling weight. The sampling procedure shall conform to ENV 1452-7.

NOTE For practical reasons this test is not relevant for pipes with dn < 20 mm.

Table 6 — Requirements for the falling weight impact test

Nominal outside diameter d_n	Medium level M			High level H		
	Mass of falling weight	Fall height	Impact energy [1) 2)]	Mass of falling weight	Fall height	Impact energy [1) 2)]
mm	kg	m	Nm	kg	m	Nm
20	0,5	0,4	2	0,5	0,4	2
25	0,5	0,5	2,5	0,5	0,5	2,5
32	0,5	0,6	3	0,5	0,6	3
40	0,5	0,8	4	0,5	0,8	4
50	0,5	1,0	5	0,5	1,0	5
63	0,8	1,0	8	0,8	1,0	8
75	0,8	1,0	8	0,8	1,2	9,5
90	0,8	1,2	9,5	1,0	2,0	20
110	1,0	1,6	16	1,6	2,0	31
125	1,25	2,0	25	2,5	2,0	49
140	1,6	1,8	28	3,2	1,8	57
160	1,6	2,0	31	3,2	2,0	63
180	2,0	1,8	35	4,0	1,8	71
200	2,0	2,0	39	4,0	2,0	78
225	2,5	1,8	44	5,0	1,8	88
250	2,5	2,0	49	5,0	2,0	98
280	3,2	1,8	57	6,3	1,8	111
≥ 315	3,2	2,0	63	6,3	2,0	124

1) Based on $g = 9{,}81\ m/s^2$.
2) For less than 10, rounded off to 0,5; for greater than 10, rounded off to integers.

8.2 Resistance to internal pressure

Pipes shall withstand without bursting or leakage the hydrostatic stress induced by internal hydrostatic pressure when tested in accordance with EN 921:1995 using the test conditions specified in table 7.
For this test end caps type a) or b) in accordance with EN 921:1995 may be used.
The sampling procedure shall conform to ENV 1452-7.

Table 7 — Pressure test requirements for pipes

Characteristic	Requirement	Test parameters				Test method
		Temp. °C	Circumferential stress MPa	Time h	Type of test	
Short- and long-term strength	No failure during the test	20 20 60	42,0 35,0 12,5	1 100 1000	Water -in- water	EN 921:1995

Integral sockets shall be tested in accordance with EN 921:1995 using the test parameters given in table 8.
For this test end caps type a) or b) in accordance with EN 921:1995 may be used and the socket entrance
may be externally reinforced to prevent a displacement of the sealing ring. The sampling procedure shall
conform to ENV 1452-7.

Table 8 — Pressure test requirements for all types of integral sockets on pipes

Characteristic	Requirement	Test parameters					Test method
		Nominal diameter d_n	Temp. °C	Pressure bar	Time h	Type of test	
Short-term strength	No failure during the test	≤ 90 mm	20	4,2 × [PN]	1	Water-in-water	EN 921:1995
		> 90 mm	20	3,36 × [PN]	1		

9 Physical characteristics

When tested in accordance with the test methods as specified in table 9 using the indicated parameters, the pipe shall have physical characteristics conforming to the requirements given in table 9.
The sampling procedure shall conform to ENV 1452-7.

Table 9 — Physical characteristics

Characteristic	Requirement	Test parameters		Test method
Vicat softening temperature (VST)	≥ 80 °C	Shall conform to EN 727		EN 727
Longitudinal reversion	Maximum 5 %	Test temperature: Test period for $e \leq 8$ mm $e > 8$ mm	(150 ± 2) °C 30 min 15 min	EN 743, Method A (liquid) [1]
		or [1]		
		Test temperature: Test period for $e \leq 8$ mm 8 mm < $e \leq 16$ mm $e > 16$ mm	(150 ± 2) °C 60 min 120 min 240 min	EN 743, Method B (air)
Resistance to dichloro-methane at elevated temperatures [2] (Degree of gelation)	No attack at any part of the surface of the test piece	Temperature of bath: Immersion time: Min. wall thickness	(15 ± 1) °C 30 min: 1,5 mm	EN 580

[1] In case of dispute method B shall be used.
[2] For requirements for fracture toughness see annex C and note 2) to table 11 of ENV 1452-7.

10 Chemical characteristics

The PVC-U pipe shall not contain vinyl chloride monomer (VCM) exceeding 1 ppm when determined by means of gas-phase chromatography using the 'headspace' method according to ISO 6401. The sampling
procedure shall conform to ENV 1452-7.

11 Sealing rings

The material of the elastomeric sealing ring used in joint assemblies for pipes shall be chosen from EN 681-1

12 Adhesives

The adhesive(s) shall have no detrimental effects on the pipe and shall not cause the test assembly to fail to conform to EN 1452-5.
The adhesives shall be identified according to ISO 7387-1 and their properties shall conform to the appropriate standards.
NOTE A standard on a test method for the determination of the film properties is under preparation (see prEN ISO 9311-1) and shall conform to the appropriate class.
The sealing ring shall have no detrimental effect on the properties of the pipe and shall not cause the test
assembly to fail the functional requirements of EN 1452-5.

13 Performance requirements

When pipes conforming to this standard are jointed to each other or to components conforming to other

Parts of EN 1452, the pipes and the joints shall conform to EN 1452-5.

Below, You Will Find Links to the Products Page of the Required Testing Equipment to Cover This Standard

Falling Weight Impact Tester

Hydrostatic Pressure Test Unit

Hot Water Bath for Hydrostatic Pressure Testing

End Caps (Clamp Set for Creep-Life Testing Of Polymer Pipes)

HDT Vicat Tester / Computerized Model 3 Station

Dichloromethane Tester for PVC Pipes

Hot Air Oven

Category

1. Equipment for Standards
2. Standards