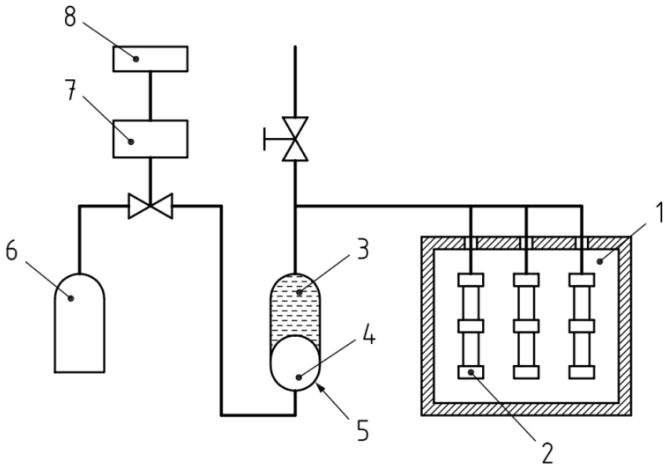
ISO 19892 Thermoplastics Pipes and Fittings for Hot and Cold water â€" Test Method for the Resistance of Joints to Pressure Cycling

Description

Apparatus

3.1 Pressurizing device, capable of applying and regulating the water pressure in the test piece in a sinusoidal or trapezoidal form between pressure limits as specified in the reference standard.
3.2 Pressure measurement device, capable of measuring the water pressure in the test piece to an accuracy of Â±5 %. The device measurement shall be capable of producing a record of the sinusoidal or trapezoidal wave form.
3.3 Test chamber, capable of maintaining the specified test temperature (see Clause 4) to an accuracy of Â±2 Â°C.
3.4 Thermometer(s), capable of checking conformity to the specified test temperature (see 3.3).
3.5 End-sealing device, of appropriate size and sealing method for sealing the non-joined end of the test
piece. The device shall be restrained in a manner which does not exert longitudinal forces on the joints.
A typical test arrangement is shown in Figure 1.



Key
1 temperature controlled test chamber
2 test assemblies
3 water
4 air
5 pressure converter
6 compressed air cylinder
7 valve
8 electric control

Figure 1 — Schematic test arrangement

4 Test parameters
Unless specified otherwise in the reference standard, the test parameters given in Table 1 shall apply.

Table 1 — Test parameters

Parameter	Value
Number of test pieces	3
Conditioning and test temperature	(23 ± 2) °C
Test pressure limits	Shall conform to Table 3
Cycle frequency	(30 ± 5) cycles per minute
Number of cycles	10 000

5 Test pieces
5.1 Number
The number of test pieces shall conform to Clause 4.

5.2 Preparation
The test piece shall comprise an assembly of pipes and at least one fitting joined in accordance with the manufacturerâ€™s recommended practice.
The free length on each side of the fitting under test shall be not less than either 1,5dn or 300 mm, whichever is the greater, where dn is the nominal outside diameter of the pipe.
In order to include the required number of pipes and fitting(s), several test pieces may be tested simultaneously, provided the failure of one test piece does not affect the others under test.
6 Conditioning
6.1 Fill each test piece with water so that all the air is expelled.
6.2 Bring the test piece and water therein to the specified temperature (see Clause 4).
6.3 Condition the test piece at the applicable temperature (see Clause 4) in accordance with Table 2 before or after connecting the test piece(s) to the pressurizing device. If subsequent connection is necessary, ensure that all air is again expelled and that the conditioning has been completed immediately before connection to the pressurizing device.

Table 2 — Conditioning periods

Pipe wall thickness e mm	Minimum conditioning period h
$e < 3$	1
$3 \leq e < 8$	3
$8 \leq e < 16$	6
$16 \leq e < 32$	10

7 Procedure
7.1 Unless specified otherwise in the reference standard, subject the test piece to the applicable pressure
limits conforming to Table 3 and for the number of cycles and cycle frequency conforming to Clause 4, while, for the duration of the test and on completion
a) maintaining the test temperature,
b) monitoring the test piece for any signs of leaks, and
c) checking wave form at the start, at regular intervals and at the end of the test and recording them.

Table 3 — Test pressure limits

Design pressure p_D bar	Test pressure limits	
	Upper limit bar	Lower limit bar
4	6	0,5
6	9	0,5
8	12	0,5
10	15	0,5
NOTE 1 bar = 0,1 MPa = 10^5 Pa; 1 MPa = 1 N/mm^2.		

7.2 If leakage occurs prior to completion of the number of cycles, record the number of elapsed cycles and the position and nature of the leak.
7.3 On completion of the number of cycles, inspect all joints for any sign of leakage.

Category

1. Equipment for Standards
2. Standards