
**Thermoplastics piping systems for soil
and waste discharge inside buildings —
Test method for airtightness of joints**

*Systèmes de canalisations thermoplastiques pour évacuation des eaux-
vannes et des eaux usées à l'intérieur des bâtiments — Méthode
d'essai de l'étanchéité des assemblages à l'air*

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Published in Switzerland

Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13255 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 1, *Plastics pipes and fittings for soil, waste and drainage (including land drainage)*.

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1 Scope

This International Standard specifies a method for testing the airtightness of joints of thermoplastics piping systems for soil and waste discharge inside buildings.

2 Principle

A test assembly of pipes and/or fittings is subjected to a given internal air pressure for a given time period during which the leaktightness of the joint is verified by inspection.

NOTE It is assumed that the following test parameters are set by the referring standard:

- a) the sampling procedure (see 4.1 and Clause 5);
- b) the number of test pieces (see 4.2).

3 Apparatus

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3.1 End-sealing devices, having a size and using a sealing method that are appropriate to the type of joint assembly under test. The devices shall be restrained in such a manner that does not exert longitudinal forces on the joint assembly and prevents the devices or the assembly under test from separating under pressure. The mass of the devices shall not be permitted to influence the angular deflection to be applied (see 5.8).

3.2 Air pressure source, connected via a shut-off valve to one end of at least one end-sealing device, and capable of maintaining the required pressure within $\pm 10\%$ (see Clause 5).

3.3 Pressure-measuring device, capable of checking conformity to the required test pressure (see 3.2 and Clause 5).

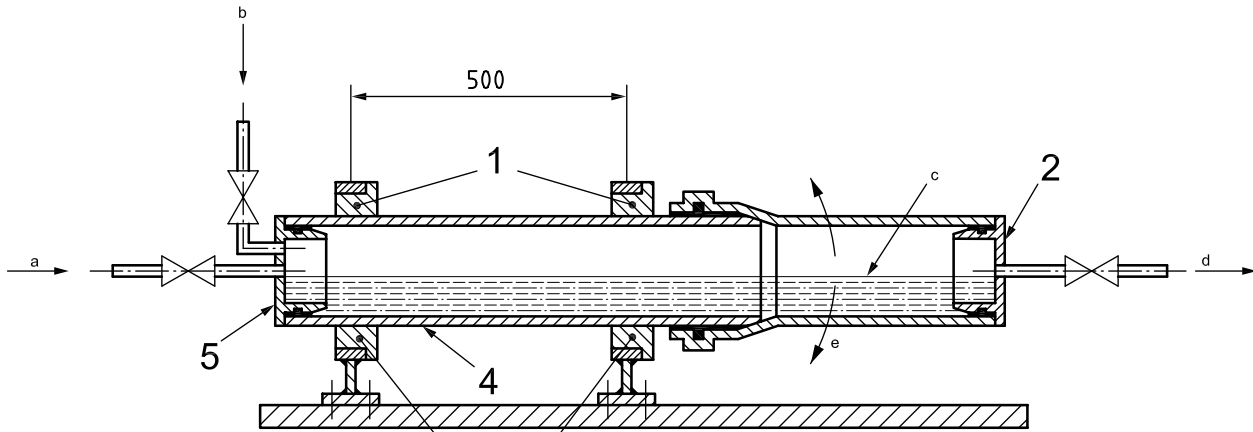
3.4 Water supply and outlet devices, each connected via a shut-off valve to at least one end-sealing device to admit water to the appropriate level within the test piece (see Figure 1).

4 Test pieces

4.1 Preparation of test pieces

The test piece shall comprise an assembly of (a) pipe section(s) (with or without sockets) and/or fitting(s), one part of the test piece being a pipe or a fitting with a spigot mounted in two clamped blocks (see Figure 1).

Dimensions in millimetres



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- 1 fixed points
 - 2 sealing plug with water outlet and end restraint (see 3.1)
 - 3 loose bushes enabling all sizes of pipes to be accommodated on the same test fixture
 - 4 fixed component
 - 5 sealing plug with water inlet, air outlet and end restraint
- a Water inlet.
 b Air outlet.
 c Level of water for test (half of pipe internal bore).
 d Water outlet.
 e Direction of movement for angular deflection, if applicable (see 5.8).

Figure 1 — Typical arrangement

One end of the pipe shall be sealed with a plug that has a combined water and air inlet. A fitting or a joint shall be assembled with the open end of the fixed component. The fitting or joint shall then be sealed at all open ends with plugs, one of which has a centrally mounted water outlet and shut-off valve (see Figure 2).

The assembly of the joint(s) shall be carried out in accordance with the manufacturer's instructions.

The assembly shall comprise the combination of the smallest available spigot end and the largest available socket or socket groove diameter within the applicable tolerance(s) and obtained by sampling in accordance with the referring standard.

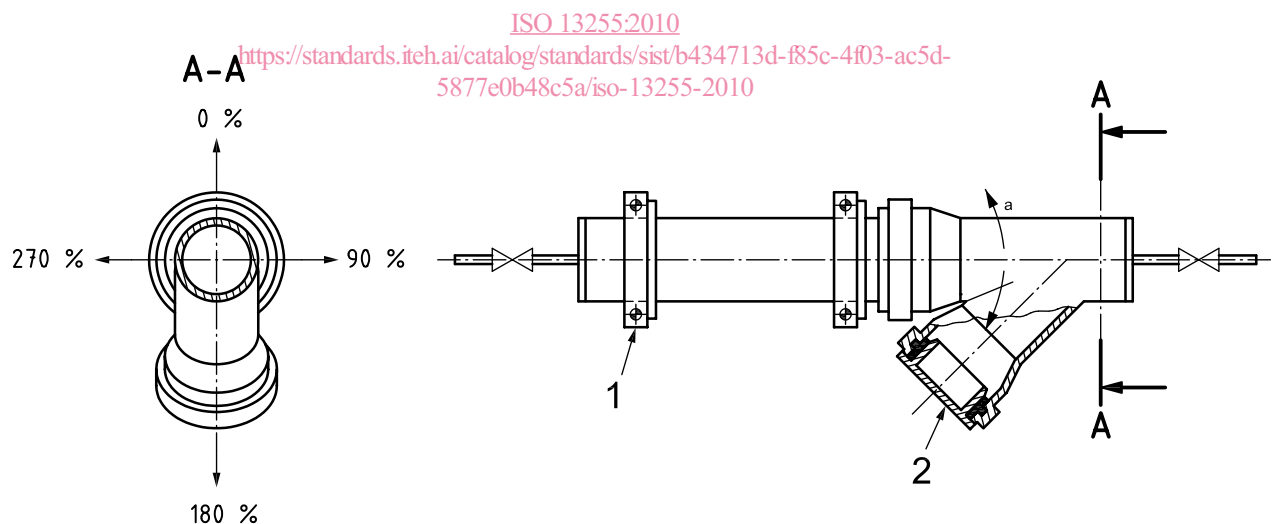
The relevant diameters of the selected spigots and sockets shall be measured and recorded.

4.2 Number of test pieces

The number of test pieces shall be specified in the referring standard.

5 Procedure

- 5.1** Carry out the following procedure at a temperature of $(23 \pm 5) ^\circ\text{C}$ using cold tap water, without permitting any condensation to form on the surface of the test piece.
- 5.2** Mount the test piece horizontally in the apparatus (see Figure 1).
- 5.3** When testing in accordance with 5.4 to 5.8, monitor the joint for and record any leaks which are evident by the formation of bubbles of soap solution (see 5.4) and the escape of water.
- 5.4** Apply a solution of soapy water or equivalent leak-detecting agent around the annular space between the spigot and the mouth of the socket. Afterwards, remove any excess, dripping liquid with a dry cloth.
- 5.5** Open the water outlet valve and close the air inlet valve.
- 5.6** Open the water inlet valve. When the assembly is half-full, as indicated by water flow from the outlet, close first the water inlet valve and then the water outlet valve.
- 5.7** Open the air inlet valve and increase the internal air pressure to $(0,1 \pm 0,01) \text{ bar}^{1)}$ using air at the temperature specified in 5.1.
- 5.8** Maintain this pressure for 5 min, then deflect the fitting or joint manually on the spigot end of the clamped component, until their consecutive axes reach the maximum angular deflection, as stated by the manufacturer for the specific joint under test. Apply this angular deflection at 0° , 90° , 180° and 270° (see Figure 2), maintaining it for 1 min in each of these directions.
- 5.9** Depressurize, drain and dismantle the test piece. Inspect for and record any changes in the appearance of the components tested.



Key

- 1 blocks split and held together with wing-nut
- 2 sealing plug
- ^a Direction of movement of fitting during test (end elevation).

Figure 2 — Directions of deflection

1) 1 bar = 0,1 MPa = 10^5 Pa; 1 MPa = 1 N/mm².

6 Test report

The test report shall include the following information:

- a) a reference to this International Standard, i.e. ISO 13255:2010, and the referring standard;
- b) the complete identification of the components (e.g. fittings, pipes, assemblies) comprising the joints under test and their respective diameters, in millimetres (see 4.1);
- c) the test temperature (see 5.1), in degrees Celsius;
- d) the test pressure, in bar;
- e) the time period under pressure, in minutes;
- f) the angle of deflection applied to the joint, if applicable (see 5.8);
- g) a statement that the joint did not leak or, if applicable, a report of the signs of leakage or rupture, their position(s) and the pressure at which they occurred;
- h) any change in the appearance of the components of the test piece(s) during testing, or immediately afterwards;
- i) any factor that could have affected the results, such as any incident or any operating details not specified in this International Standard;
- j) the date of the test.

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