
**Plastics piping systems —
Elastomeric-sealing-ring-type socket joints
for use with unplasticized poly(vinyl
chloride) (PVC-U) pipes — Test method
for leaktightness under internal pressure
and with angular deflection**

*Systèmes de canalisations en plastiques — Assemblages par emboîture
à bague d'étanchéité en élastomères pour tubes en poly(chlorure de vinyle)
non plastifié (PVC-U) — Méthode d'essai d'étanchéité avec pression
interne et avec déviation angulaire*



Reference number
ISO 13845:2000(E)

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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 734 10 79
E-mail copyright@iso.ch
Web www.iso.ch

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 member bodies casting a vote.

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

International Standard ISO 13845 was prepared by the European Committee for Standardization (CEN) in collaboration with ISO Technical Committee TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 2, *Plastics pipes and fittings for water supplies*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Throughout the text of this standard, read "...this European Standard..." to mean "...this International Standard...".

Foreword

The text of EN ISO 13845:2000 has been prepared by Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems", the secretariat of which is held by NNI, in collaboration with Technical Committee ISO/TC 138 "Plastics pipes, fittings and valves for the transport of fluids".

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2000, and conflicting national standards shall be withdrawn at the latest by October 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This standard is based on a new working draft, prepared by the International Organization for Standardization (ISO). It is recast of the text concerned (ISO/TC138/SC2/N673 revised) without modification of the technical content.

The material-dependent parameters and/or performance requirements are incorporated in the System Standard(s) concerned.

This standard is one of a series of standards on test methods which support System Standards for plastics piping systems and ducting systems.

1 Scope

This standard specifies a method for testing the leaktightness of assemblies of unplasticized poly(vinyl chloride) (PVC-U) pipes with elastomeric sealing-ring-type socket joints including:

- single sockets of pipes;
- double sockets;
- sockets of fittings.

It is also applicable to elastomeric-sealing-ring-type sockets made of ductile cast iron for use with PVC-U pressure piping.

2 Principle

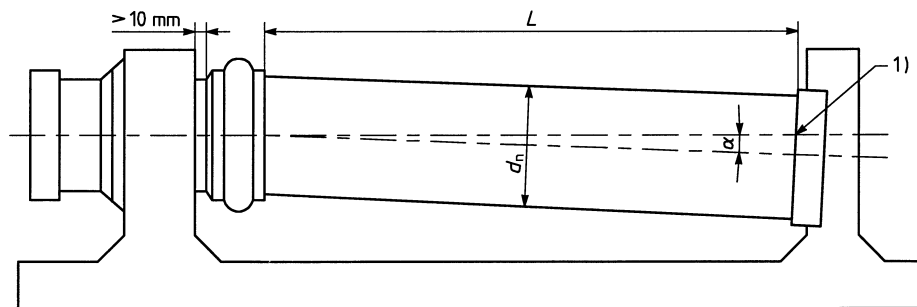
A joint assembly as test piece consisting of a PVC-U pipe mounted into a PVC-U socket is subjected, within a specified temperature range, to a specified internal pressure regime for a specified test period whilst the pipe is also subject to an angular deflection in the socket. While under pressure the test piece is monitored for signs of leakage.

NOTE It is assumed that the following test parameters are set by the standard making reference to this standard:

- a) the test pressure and pressure/time regime (see 3.2 and 5.6);
- b) the number of test pieces to be used (see 4.2).

3 Apparatus

3.1 Framework, comprising at least two fixing devices, one of which is movable to allow angular deflection to be applied to the pipe within the socket. A typical arrangement is shown in figure 1.



d_n is the nominal outside diameter of the pipe

L is the free length of the pipe section [$L = 5d_n$ (min. 500 mm and max. 1500 mm)]

1) is the reference point for measuring and adjusting the angle of deflection α ($\alpha \geq 2^\circ$)

Figure 1 — Typical Arrangement for test apparatus

WARNING For safety reasons, adequate measures should be taken in design and operation of the equipment, especially for large test piece sizes.

3.2 A pressure control device, connected to the test piece and capable of applying and maintaining a variable internal hydrostatic pressure of up to at least twice the nominal pressure of the PVC-U pipe and joint assembly.

3.3 Pressure measuring device, capable of checking conformity to the specified static pressure values (see 5.6 and Figure 2).

4 Test pieces

4.1 Preparation

The test piece shall comprise an assembly of a PVC-U pipe section mounted into the socket of the component to be tested.

The assembly shall be carried out in accordance with the socket manufacturer's instructions.

A pipe of the same nominal pressure as that of the socket shall be used for the test.

The length of the pipe section shall be such that the free length, L , between the socket mouth and the end-seal is equal to five times the nominal outside diameter, d_n , of the pipe with a minimum of 500 mm and a maximum of 1500 mm.

NOTE The mean outside diameter, d_{em} , of the pipe should preferably conform to the minimum specified value, and the socket dimensions (mean inside diameter, d_{im} , and the diameter of the groove for housing the sealing ring) should preferably conform to the maximum values stated by the manufacturer, in order to have dimensions as close as possible to the extreme limits of their relevant tolerances.

4.2 Number

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

5 Procedure

5.1 Secure the socket, without any deformation, to the solid framework and align the pipe section with the axis of the socket.

5.2 By inclining the pipe in the test apparatus, determine the free angle of deflection, α , which the joint can tolerate without the application of force.

If $\alpha \geq 2^\circ$, firmly anchor the pipe to maintain the deflected pipe in this position for the remainder of the test.

If $\alpha < 2^\circ$, carry out the test at a deflection of 2° by forcing the pipe to that degree of deflection.

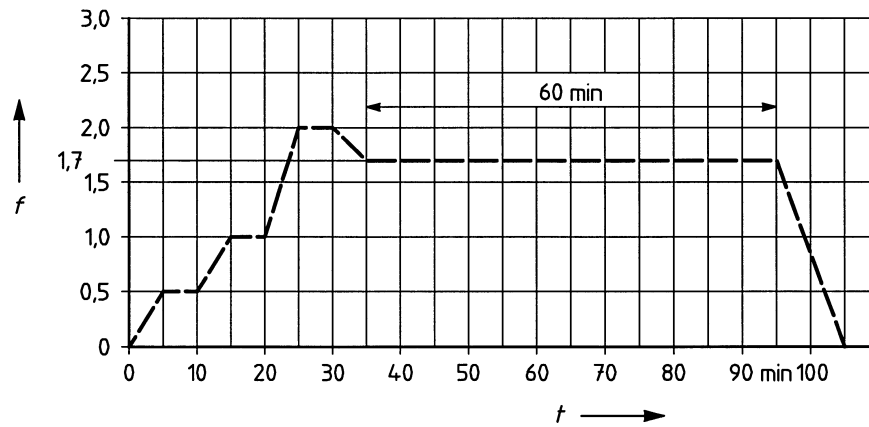
5.3 Fill the test piece with water at a temperature of $(20 \pm 5)^\circ\text{C}$ and release any trapped air.

5.4 Condition the test piece for a period of at least 20 min to ensure equalisation of temperature.

5.5 While testing in accordance with 5.6:

- a) maintain the ambient temperature within $\pm 5^\circ\text{C}$ of any temperature between 15°C and 25°C ;
- b) examine the joint during the whole test cycle and record any sign of leakage.

5.6 Unless otherwise specified in the standard referring to this test method, apply the hydrostatic pressure test regime shown in Figure 2 so that the specified static pressures are maintained within a permitted deviation of $^{+5}_0\%$.



f is the factor to be applied to PN during the test

NOTE The pressure changes need not be at a linear rate.

Figure 2 — Hydrostatic pressure test regime

6 Test report

The test report shall include the following information:

- a) a reference to this standard and to the referring standard;
- b) the nominal pressure class or S series of the PVC-U pipe and socket used for the test;
- c) the angle of deflection, α , used for the test;
- d) the ambient temperature during the test;
- e) information on the leaktightness of the joint;
- f) any factors which may have affected the results, such as any incidents or any operating details not specified in this standard;
- g) the date of test.

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