SLOVENSKI STANDARD
SIST EN 911:1997

01-februar-1997

Cevni sistemi iz polimernih materialov - Spoji z elastomernimi tesnilnimi obroči in mehanski spoji v tlačnih cevovodih iz plastomernih materialov - Preskusna metoda tesnjenja z zunanjim hidrostatičnim tlakom

Plastics piping systems - Elastomeric sealing ring type joints and mechanical joints for thermoplastics pressure piping - Test method for leaktightness under external hydrostatic pressure

Kunststoff-Rohrleitungssysteme - Verbindungen mit elastomeren Dichtringen und mechanische Verbindungen für Druckrohrleitungen aus Thermoplasten - Prüfverfahren für die Dichtheit unter äußerem hydrostatischen Druck

Systemes de canalisations en plastiques - Assemblages a bague d'étanchéité élastomere et assemblages mécaniques pour canalisations thermoplastiques avec pression - Méthode d'essai d'étanchéité sous pression hydrostatique externe

Ta slovenski standard je istoveten z: **EN 911:1995**

ICS:

23.040.60	Prirobnice, oglavki in spojni elementi	Flanges, couplings and joints

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English version

Plastics piping systems - Elastomeric sealing ring type joints and mechanical joints for thermoplastics pressure piping - Test method for leaktightness under external hydrostatic pressure

Systèmes de canalisations en plastiques - Assemblages à bague d'étanchéité élastomère et assemblages mécaniques pour canalisations thermoplastiques avec pression - Méthode d'essai d'étanchéité sous pression hydrostatique externe

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This European Standard was approved by CEN on 1995-06-05. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard has been prepared by the Technical Colmmittee CEN/TC 155 "Plastics piping systems and ducting systems", of which the secretariat is held by NNI.

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 February 1996, and conflicting national standards shall be withdrawn at the latest by February 1996.

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

This standard is based on the International Standards ISO 3604:1976 "Fittings for unplasticized polyvinyl chloride (PVC) pressure pipes with elastic sealing ring type joints - Pressure test for leakproofness under conditions of external hydraulic pressure" and ISO 3459:1976 "Polyethylene (PE) pressure pipes - Joints assembled with mechanical fittings - Internal under pressure test method and requirement", prepared by the International Organization for Standardization (ISO). It is a modification of ISO 3604:1976 and ISO 3459:1976 for reasons of applicability to other plastics materials and/or other test conditions and alignment with texts of other standard or test methods.

The modifications are:

- no pipe material is mentioned;
- test parameters, except those common to all plastics, are omitted;
- no diameter limit is given;
- no material-dependant requirements are given;
- editorial changes have been introduced.

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

No existing European Standard is superseded by this standard.

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

1 Scope

This standard specifies a test method for checking the leaktightness of elastomeric sealing ring type joints and mechanical joints (excluding fusion joints and adhesive type joints) for thermoplastics pressure piping when the external hydrostatic pressure is greater than the pressure within the pipe.

2 Principle

The leaktightness of an assembled joint containing air at atmospheric pressure is checked while the joint is submitted to external hydrostatic pressure greater than the atmospheric pressure within the test piece.

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

a) the test temperature, T (see 3.4 and clause 5);

b) if applicable, the conditioning of the test piece and/or the time necessary for equalization of temperature (see clause 5);

c) the two different pressures, p_1 and p_2 (see clause 5).

3 Apparatus

NOTE: For the apparatus it is expected that pressure differentials up to 1 bar will be required.

3.1 Enclosed tank or **pressure vessel,** capable of being used at the appropriate test pressures and of receiving the test piece. The ends of the test piece shall be enabled to pass through the walls of the tank so that the inside of the pipe is open to the atmosphere and the connecting pipes are in axial alignment. The assembly shall be arranged so as to enable any leakage to be detected within the test piece, as shown in figure 1.

3.2 Pressure source, connected to the tank or vessel (see 3.1) and capable of raising and maintaining the specified water pressures with an accuracy of ± 0,05 bar [1)].

3.3 Pressure measuring device, capable of checking conformity of the test pressure to 3.2.

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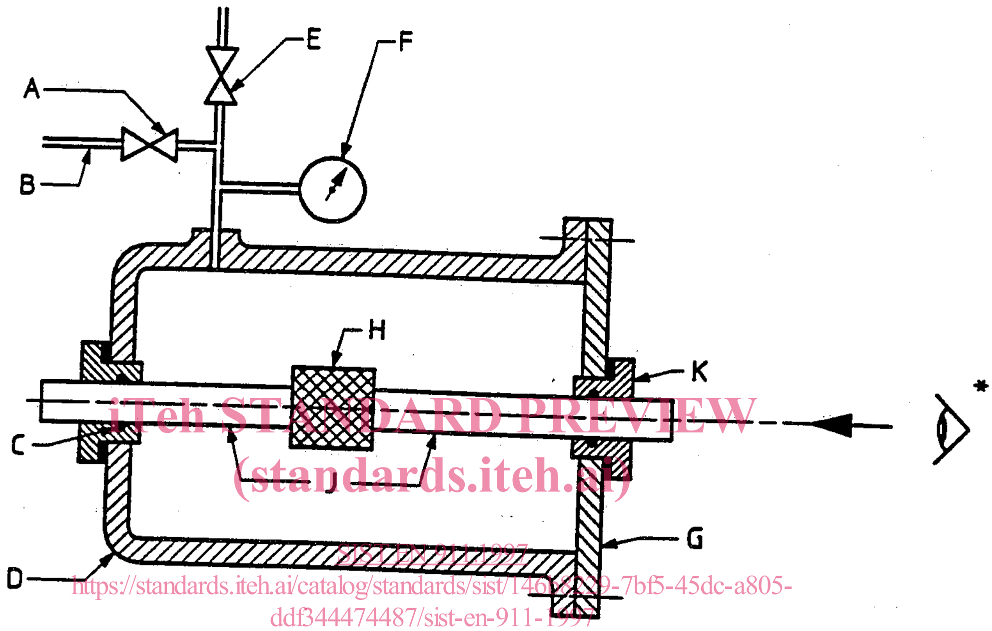
1) 1 bar = 10^5 N/m^2

3.4 **Temperature control system**, capable of maintaining the temperature of the pressurized water (see 3.2) in the tank or vessel (3.1) at the specified temperature, *T*, [see a) of the note to clause 2], with an accuracy of ± 2 °C.



A Valve
B Connection to hydraulic pump
C Annular seal
D Enclosed tank
E Air release valve
F Pressure measuring device
G Cover flange
H Fitting
J Pipe
K Sealing collar

* The apparatus shall permit a clear view through the test piece.

Figure 1: Diagram of a suitable apparatus

4 Test pieces

4.1 General

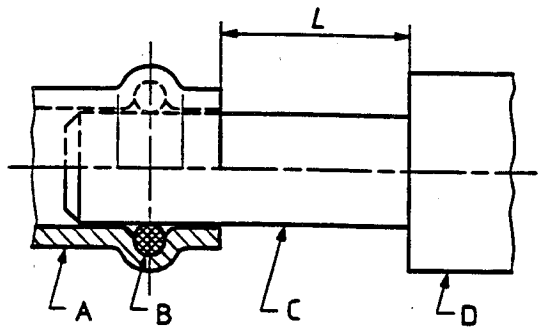
The test piece shall consist of an assembly of (a) pipe section(s) and/or fitting(s) including at least one joint of the type and size to be tested.

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

4.2 Elastomeric sealing ring type joints

The spigot and socket shall have dimensions as close as possible to the extreme limits of their relevant tolerances, i.e. spigot of minimum diameter, socket of maximum diameter in the zone of the groove housing of the sealing ring, and a sealing ring of minimum cross section.

The length(s) of the section(s) of pipe to be connected shall be such that the free length, *L*, of pipe between sockets and between a socket and the test equipment or sealing collar shall be at least equal to the nominal outside diameter of the pipe with a minimum of 250 mm (see figure 2).



L the free length of the pipe
A Fitting
B Sealing ring
C Pipe
D Socket, test equipment or sealing collar

Figure 2: Illustration of method of connection of pipe

4.3 Mechanical joints

In order to provide for the worst possible combination, the spigot and the fitting in the range of the sealing shall have dimensions as close as possible to the extreme limits of their relevant tolerances.

The free length of each pipe assembled to the joint test shall be at least three times its nominal outside diameter, with a minimum of 250 mm.

5 Procedure

Secure the test piece in the enclosed tank or pressure vessel (see 3.1).

Fill the tank with water at the specified temperature, T, ± 2 °C.

Wait 20 min to ensure equalization of temperature, unless temperature conditioning of the test piece and/or a longer period is specified in the referring standard.

Remove any moisture from the inside surface of the test piece.

Wait 10 min and ensure that the inside surface of the test piece is completely dry.

Inspect the inside surface of the test piece for leakage and record any signs of leakage observed, and the pressure at which leakage occurs, while the joint is subjected to external pressure as follows.

Apply a first test pressure, p_1, for at least 1 h and then smoothly increase the pressure without shock to the second level, p_2. Maintain the test pressure p_2 for a further period of at least 1 h.