SLOVENSKI STANDARD
SIST EN 1680:1999

01-julij-1999

Cevni sistemi iz polimernih materialov - Ventili za cevne sisteme iz polietilena (PE) - Metoda za preskus neprepustnosti med upogibanjem zaradi uporabe zapiralnih mehanizmov in po njem

Plastics piping systems - Valves for polyethylene (PE) piping systems - Test method for leaktightness under and after bending applied to the operating mechanisms

Kunststoff-Rohrleitungssysteme - Armaturen für Systeme aus Polyethylen (PE) - Prüfverfahren für die Dichtheit während und nach der Aufbringung eines Biegemomentes auf den Betätigungsmechanismus

Systemes de canalisations en plastique - Robinets pour les systemes de canalisations en polyéthylene (PE) - Méthode d'essai d'étanchéité sous et apres une flexion appliquée au mécanisme d'entraînement

Ta slovenski standard je istoveten z: **EN 1680:1997**

ICS:

83.140.30	Cevi, fitingi in ventili iz polimernih materialov	Plastics pipes, fittings and valves

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

EN 1680

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ICS

Descriptors: plastic tubes, gas pipelines, cocks, driving squares, pressure tests, leak tests, bend tests, verification

English version

Plastics piping systems - Valves for polyethylene (PE) piping systems - Test method for leaktightness under and after bending applied to the operating mechanism

Systèmes de canalisations en plastique - Robinets pour les systèmes de canalisations en polyéthylène (PE) - Méthode d'essai d'étanchéité sous et après une flexion appliquée au mécanisme d'entraînement

Kunststoff-Rohrleitungssysteme - Armaturen für systeme aus Polyethylen (PE) - Prüfverfahren für die Dichtheit während und nach der Aufbringung eines Biegemomentes auf den Betätigungsmechanismus

This European Standard was approved by CEN on 1996-11-07. 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.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

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

Central Secretariat: rue de Stassart,36 B-1050 Brussels

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems", the secretariat of which 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 July 1997, and conflicting national standards shall be withdrawn at the latest by July 1997.

This standard is based on the International Standard ISO/DIS 10933 "Polyethylene (PE) valves for gas distribution systems", published by the International Organization for Standardization (ISO). It is a modification of ISO/DIS 10933 for reasons of applicability to other plastics materials and/or other test conditions and alignment with texts of other standards on test methods.

The modifications are:

- test parameters are omitted;
- no material-dependent requirements are given;
- editorial changes have been introduced.

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.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of 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.

1 Scope

This standard specifies a method for testing the ability of a valve, intended for use in polyethylene (PE) piping systems for gas supply, to maintain its pressure-retaining capabilities under and after being subject to a bending moment applied to the operating mechanism (cap).

2 Normative references

This Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 837-1:1994	*Pressure gauges - Part 1: Bourdon tube pressure gauges - Dimensions, metrology, requirements and testing*
ISO 4065	*Thermoplastics pipes - Universal wall thickness table*
ISO 11413	*Plastics pipes and fittings - Preparation of test piece assemblies between a polyethylene (PE) pipe and an electrofusion fitting*
ISO 11414	*Plastics pipes and fittings - Preparation of test piece assemblies between pipe/pipe or pipe/fitting in polyethylene (PE) by butt fusion*

3 Principle

A bending moment is applied to the operating mechanism of a valve in the plane of its operating stem and at the position of its operating cap. The valve, in a half-open pressurised condition in an assembly with PE pipes, is then tested for external leaktightness. Following removal of the bending moment the valve is tested for internal and external leaktightness when subjected to pressure testing.

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

a) the sampling requirements (see 5.1);
b) the number of test pieces (see 5.3).

4 Apparatus

4.1 Temperature-controlled tank

4.1.1 A watertight tank, capable of accommodating a valve test assembly (5.1) and loading apparatus (4.2).

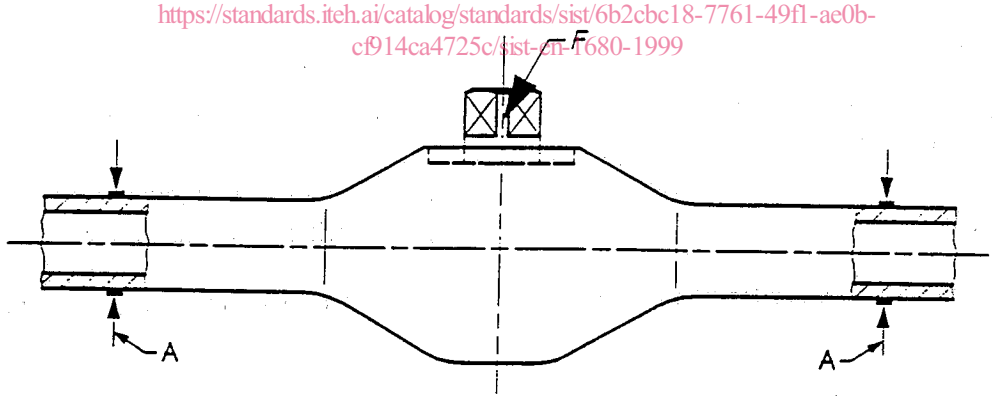
4.1.2 Thermostatic controls, capable of maintaining the water within the tank (4.1.1), around the test assembly at (20^{+3}_{-1}) °C.

4.2 Apparatus

A steel frame or other similar member capable of supporting the valve during the test, as shown in figure 1. The supports shall be applied to the spigot ends of the valve or to the pipework adjacent to the fused sockets, as applicable.

The frame shall be constructed so that a bending moment can be applied directly onto the operating stem with the force being generated by weights or other loading apparatus.

The bending force shall be applied in the plane of the operating stem to create a bending moment of (55^{+0}_{-5}) N•m on the top of the operating cap. The plane of bending shall also be perpendicular to the axis of the valve.



A Position of support
F Bending force

Figure 1: Point of application of the bending force

4.3 Ancillary equipment

a) manometer, 0 mbar[1)] to 50 mbar, conforming to class 0,6 or better, in accordance with EN 837-1:1994;

b) a pressure measurement device(s), capable of checking conformity to the specified pressure(s) (see 6.2);

c) a temperature measurement device capable of checking conformity to 4.1.2 and 6.1;

d) end closures, connected to the ends of the valve by means of an appropriate system and allowing sealing and connecting to the pressurizing equipment;

e) loading apparatus (see 4.2);

f) a device for checking conformity to the bending moment on the valve (see 4.2).

5 Test pieces

5.1 Sampling

The sampling requirements shall be as specified in the referring standard.

5.2 Preparation of test pieces

The test pieces shall comprise a test assembly having PE pipes of the same classification system and/or to the same SDR as the valve, as defined in ISO 4065.

The test piece assembly shall be made in accordance with ISO 11413 or ISO 11414, as applicable, so that each pipe is fused to an end of the valve and fitted with a pressure test enclosures.

The valve shall be in the half-open position.

The test assembly shall be positioned into the loading apparatus (4.2) with the operating stem centrally located beneath the loading mechanism.

5.3 Number of test pieces

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

[1)] 1 bar = 10^5 N/m^2 = 0,1 MPa

6 Procedure

6.1 General

6.1.1 Application of bending force

Connect the air supply to the test piece. Place the test piece in the water tank maintained at (20^{+3}_{-1}) °C (4.1) so that the depth of immersion from the top of the valve spigot end to the surface of the water does not exceed 550 mm. Measure and record that immersion depth of the top of the valve spigot.

6.1.2 Calculate the applied force to create a bending moment of (55^{+0}_{-5}) N•m using the following equation:

$$F = M / L$$

where:

F is the force required, in newtons;

M is the bending moment, in newton•metres

L is the distance to the valve support, in metres.

6.1.3 Apply this force to the operating cap in the plane of the operating stem of the test piece. Keep the test piece under the bending force at specified temperature for a minimum duration of 1 h.

6.1.4 During testing in accordance with 6.2, record any evidence of internal (seat) or external (stem) leakage.

6.2 Leaktightness tests

6.2.1 Pressurize the test piece pneumatically to a pressure of 25 mbar over and above the hydrostatic head produced by the water at the top of the valve spigot for at least 1 h and monitor for external leaktightness.

6.2.2 Repressurize the test piece pneumatically to a pressure of 6 bar or (1,5 × MOP) bar, whichever is the greater, for at least 1 h and monitor for external leaktightness.

6.2.3 Remove the bending moment and close the valves. Repeat the leaktightness tests given in 6.2.1 and 6.2.2.