SLOVENSKI STANDARD
SIST EN 12119:1999

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Cevni sistemi iz polimernih materialov - Ventili iz polietilena (PE) - Metoda za preskus odpornosti proti cikličnim spremembam temperature

Plastics piping systems - Polyethylene (PE) valves - Test method for resistance to thermal cycling

Kunststoff-Rohrleitungssysteme - Armaturen aus Polyethylen (PE) - Prüfverfahren für die Beständigkeit bei Temperaturwechsel

Systemes de canalisations en plastique - Robinets en polyéthylene (PE) - Méthode d'essai de résistance aux cycles thermiques

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English version

Plastics piping systems - Polyethylene (PE) valves - Test method for resistance to thermal cycling

Systèmes de canalisations en plastique - Robinets en polyéthylène (PE) - Méthode d'essai de résistance aux cycles thermiques

Kunststoff-Rohrleitungssysteme - Armaturen aus Polyethylen (PE) - Prüfverfahren für die Beständigkeit bei Temperaturwechsel

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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.

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CEN

European Committee for Standardization
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Europäisches Komitee für Normung

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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.

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.

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of an identical text or by endorsement, at the latest by November 1997, and conflicting national standards shall be withdrawn at the latest by November 1997.

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.

1 Scope

This standard specifies a test method for the resistance of valves to thermal cycling.

This standard is applicable to polyethylene (PE) valves and valves with PE spigot-ends having a nominal outside diameter greater than 63 mm and intended for the transport of fluids.

2 Normative references

This European 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 European 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*
EN 28233:1991	*Thermoplastics valves – Torque – Test method*
ISO 5208:1993	*Industrial valves – Pressure testing of valves*

3 Principle

A valve, initially pressurised with air to 6 bar [1)] is isolated and subjected to cyclic thermal stresses and the consequent pressure changes are measured.

The tightness is checked and actuation torque measured before and after the pressure test.

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

a) the sampling procedure (see 5.1);

b) the number of test pieces to be used (see 5.2);

c) any test conditions, e.g. test pressure, test duration, which differ from those given in ISO 5208:1993 (see 6.2).

4 Apparatus

4.1 Temperature-controlled enclosure, in which the temperature can be time programmed at constant or variable values between -20 °C and +60 °C, to within ± 2 °C. The temperature gradient shall be capable of being set at about 1 °C/min.

4.2 Pressure plotter(s), with a range and scale suitable for the test pressure required for the valve to be tested, of accuracy class 1,5 in accordance with EN 837-1:1994.

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

4.3 Compressed air supply, capable of providing the required test pressure (see 6.4).

4.4 Pipework, equipped with valves enabling the test piece to be connected to the pressure plotter(s) and to the compressed air supply and the test piece and plotter assembly as a whole to be isolated from the air supply. The air supply valves shall enable pressure to be applied gradually and smoothly.

5 Test pieces

5.1 Preparation

The test piece shall comprise a complete valve obtained by sampling in accordance with the referring standard. The valve ends shall be fitted with plugging devices which enable the test to be conducted in accordance with clause 6.

Immediately before testing in accordance with clause 6, the test piece shall be conditioned at (23 ± 2) °C for at least 24 h.

5.2 Number

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

6 Procedure

6.1 Close the valve and place it in the temperature-controlled enclosure at (23 ± 2) °C.

6.2 Measure and record the actuation torque in accordance with EN 28233:1991.

Check and record the leaktightness when the valve is half-open (shell test) and when it is closed (obturator tightness test) by testing in accordance with ISO 5208:1993 and any associated test conditions specified in the referring standard.

6.3 Connect one end of the test piece to the compressed air supply, the other end of the test piece not being closed.

6.4 Raise the pressure gradually in the system to achieve 6 bar ± 2 % within 30 s.

6.5 Wait for 30 min for the pressure to stabilize.

6.6 Isolate the test piece from the compressed air while keeping it connected to the corresponding pressure plotter.

6.7 While testing in accordance with 6.8 and 6.9:

a) record pressures during the cycles, upstream and downstream from the obturating element of the valve;

b) record the temperature at which a leak appears, if any, as well as the pressure changes corresponding to the duration of a cycle;

c) locate and record the position of any leaks.

6.8 Set the temperature-controlled enclosure so as to obtain temperature extremes of (-20 ± 2) °C and (60 ± 2) °C, each of these temperatures being kept constant for periods of 3 h separated by the time necessary to change the temperature at a rate of about 1 °C/min (see 4.1).

6.9 Keep the test piece in the enclosure for 10 cycles, beginning with a temperature increase.

6.10 After completion of the cycles, condition the test piece to (23 ± 2) °C for 24 h. Repeat the procedure given in 6.2.

7 Test report

The test report shall include the following information:

a) the reference to this standard and to the referring standard;

b) the complete identification of the test piece;

c) the type(s) of PE material(s) and of other material(s), if applicable;

d) the nominal size of the valve;

e) the number of test pieces tested;

f) the pressure(s) recorded during the cycle (see 6.7);

g) if applicable, the temperature at which any leaks appeared and their position(s);

h) the actuation torques before and after the thermal cycling;

i) any factors which may have affected the results, such as any incidents or any operating details not specified in this standard;

j) the date of the test.