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# PLASTICS PIPING SYSTEMS - POLYETHYLENE (PE) VALVES - TEST METHOD FOR RESISTANCE TO BENDING BETWEEN SUPPORTS

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English version

## Plastics piping systems – Polyethylene (PE) valves – Test method for resistance to bending between supports

Systèmes de canalisations en plastiques - Robinets en polyéthylène (PE) - Méthode d'essai de résistance à la flexion entre supports

Kunststoff-Rohrleitungssysteme - Armaturen aus Polyethylen (PE) - Prüfverfahren für den Widerstand gegen Biegen bei Dreipunktbelastung

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

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# CEN

European Committee for Standardization
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Europäisches Komitee für Normung

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



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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of an identical text or by endorsement, at the latest by February 1998, and conflicting national standards shall be withdrawn at the latest by February 1998.

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 to bending of a valve installed between supports.

This standard is applicable to valves with a polyethylene (PE) body for use with pipes having a nominal outside diameter from greater than 63 mm up to and including 225 mm and intended for the transport of fluids.

## 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.

| | |
|---|---|
| prEN 837-1:1994 | *Pressure gauges - Part 1 : Bourdon tube pressure gauges - Dimensions, metrology, requirements and testing* |
| EN 28233:1991 | *Thermoplastic valves - Torque - Test method (ISO 8233:1988)* |
| EN 45501:1992 | *Metrological aspects of non-automatic weighing instruments* |
| ISO 5208:1993 | *Industrial valves - Pressure testing of valves* |

## 3 Principle

A valve body is subjected to a bending load, by applying a given constant force to the body connected to two pipe sections resting on two supports. The valve is pressurized with air. Tightness and actuation torque are respectively checked and measured before, during and after loading.

The test is carried out at an ambient temperature of (23 ± 2) °C.

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) the bending force to be applied to the valve (see 6.3.1);

d) 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 Tensile testing machine or similar apparatus**, with a device capable of applying a specified force constant to within 2 %.

The stationary frame of the machine shall include two supports, S, with a 5 mm radius of curvature, having parallel axes and adjustable spacing (see figure 1).

Depending upon the type of valve, the moving part of the machine shall make contact via a tool having a 5 mm radius or a semi-cylindrical face or a yoke, the axis of which is parallel to that of the supports. The tool and the supports shall be made of hardened steel.

NOTE: The force should not be applied directly on the body of the valve, so as not to create any damage on the obturating mechanism.

The apparatus shall include force and deflection measuring indicators conforming to accuracy class II in accordance with EN 45501:1992.

**4.2 Torque measuring device**, accurate to ± 5 % (e.g. a torque wrench).

**4.3 Compressed air supply**, 0 mbar to 50 mbar[1)] (0 MPa to 0,005 MPa), with a pressure regulator.

**4.4 Pressure gauge**, 0 mbar to 50 mbar (0 MPa to 0,005 MPa), conforming to accuracy class 1,6 in accordance with prEN 837-1:1994.

**4.5 Leak-detecting device**, accurate to within 0,1 $cm^3/h$, (typically with a capacity of 35 $cm^3$) and graduated to enable measurement of volumes of 0,1 $cm^3$ (e.g. having a graduated tube with a conical base).

**4.6 Airtight piping systems**, equipped with the following:

a) fittings for connecting to the pipe sections;

b) shut-off devices enabling the valve to be connected to the compressed air supply and the leak-detecting device [e.g. pressure gauge (4.4) and graduated tube (4.5)].

## 5 Test pieces

### 5.1 Preparation

The test piece shall comprise a complete valve, obtained by sampling in accordance with the referring standard, assembled between two lengths of PE pipe, each having a length such that the overall length of the test piece can be supported (see 6.1.3). The valve ends shall be fitted with plugging or capping devices (4.6).

### 5.2 Number

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

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