



SLOVENSKI STANDARD

SIST EN 743:1997

01-februar-1997

Cevni sistemi iz polimernih materialov - Plastomerne cevi - Določanje dolžinske reverzije

Plastics piping and ducting systems - Thermoplastics pipes - Determination of the longitudinal reversion

Kunststoff-Rohrleitungs- und Schutzrohrsysteme - Rohre aus Thermoplasten - Bestimmung des Längsschrumpfes

Systemes de canalisations et de gaines plastiques - Tubes thermoplastiques - Détermination du retrait longitudinal a chaud

<https://standards.iteh.ai/catalog/standards/sist/1dce010d-03d0-43ec-915d-6478ef68963b/sist-en-743-1997>

Ta slovenski standard je istoveten z: EN 743:1994

ICS:

23.040.20 Cevi iz polimernih materialov Plastics pipes

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en

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EUROPEAN STANDARD

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NORME EUROPÉENNE

EUROPÄISCHE NORM

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Descriptors: Plastics pipes, plastic tubes, thermoplastic resins, high temperature tests, determination, dimensional stability, reversion

English version

**Plastics piping and ducting systems -
Thermoplastics pipes - Determination of the
longitudinal reversion**

Systèmes de canalisations et de gaines
plastiques - Tubes thermoplastiques -
Détermination du retrait longitudinal à chaud

Kunststoff-Rohrleitungs- und Schutzrohrsysteme
- Rohre aus Thermoplasten - Bestimmung des
Längsschrumpfes

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This European Standard was approved by CEN on 1994-01-10. 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 standard was prepared by CEN/TC 155 "Plastics piping systems and ducting systems". It received approval from the CEN members on 1993-09-16

This standard is based on the International Standard ISO 3478:1975 "Polypropylene (PP) pipes - Determination of longitudinal reversion" prepared by the International Organization for Standardization (ISO). It is a modification of ISO 3478 for reasons of applicability to other plastics materials and/or other test conditions and alignment with texts of other standards on test methods.

The provisions of the following international standards or draft international standards have also been taken into account:

| | |
|---------------|---|
| ISO 2505:1981 | Unplasticized polyvinyl chloride (PVC) pipes - Longitudinal reversion - Test methods and specification |
| ISO 2506:1981 | Polyethylene (PE) pipes - Longitudinal reversion - Test methods and specification |
| ISO/DP 4438 | Chlorinated polyvinyl chloride (PVC-C) pipes - Determination of longitudinal reversion |

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The modifications are:

- no material is mentioned;
- test parameters, except those common to all thermoplastics, are omitted;
- no material-dependent or performance 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 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 July 1994, and conflicting national standards shall be withdrawn at the latest by July 1994.

The Standard was approved and in accordance with the 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, United Kingdom.

1 Scope

This standard specifies two methods for determining the longitudinal reversion of cylindrical thermoplastics pipes with smooth surfaces.

It provides test methods to be carried out in liquid (method A) or in air (method B).

2 Method A: Determination of reversion using a liquid bath (standards.iteh.ai)

2.1 Principle

A pipe of given length is immersed in an inert liquid maintained at a specified temperature for a specified duration of immersion (see note).

A marked length on this pipe is measured under identical conditions before and after immersion.

The reversion is calculated as the percentage change in length in relation to the initial length.

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

- a) the test temperature, T_R (see 2.2.1 and 2.5.2);
- b) the length of the test piece (see 2.3);
- c) the duration of the immersion, with limiting values (see 2.5.4);

2.2 Apparatus

2.2.1 Heating bath, thermostatically controlled at the specified temperature, T_R .

The volume and agitation of the bath shall be such that the temperature of the liquid in the test piece zone remains within the permissible deviations of the specified temperature, when the test piece is immersed.

The liquid chosen shall be stable at the specified temperature and shall not otherwise affect the plastics material.

NOTE: Glycerine, glycol, mineral oil free from aromatic hydrocarbons, or a solution of calcium chloride are often suitable but other liquids meeting the requirements specified may be used.

2.2.2 Spacing device, to hold the test piece(s) within the heating medium (see 2.5.3).

2.2.3 Thermometer, graduated in increments of not more than 0,5 °C.

2.3 Test pieces

2.3.1 Take as a test piece a length of pipe of minimum 200 mm unless otherwise specified in the referring standard [see item b) of the note to 2.1].

2.3.2 Using, e.g. a scribe, make on the test piece at (23 ± 2) °C two circumferential marks 100 mm apart, so that each mark is at least 10 mm from the nearest end of the test piece.

2.3.3 Prepare a total of three such test pieces per pipe. For pipes of nominal diameter of 400 mm or larger, the test piece may be cut longitudinally into four or more even segments.

2.4 Conditioning

Condition the test pieces for at least 2 h at (23 ± 2) °C.

2.5 Procedure

2.5.1 Measure at (23 ± 2) °C the distance, L_0 , between the marks to within 0,25 mm.

2.5.2 Establish the temperature of the heating medium at the specified temperature, $(T_R \pm 2)$ °C.

2.5.3 Suspend the test pieces vertically in the heated medium, so that they do not touch either the walls or the base of the bath.

2.5.4 Leave the test pieces immersed for the specified duration.

2.5.5 Remove the test pieces from the bath and keep them suspended in a hanging position until cooled to (23 ± 2) °C. Measure, under identical conditions to those used for 2.5.1, the distance, L , between the marks along the maximum and minimum generatrices (diametrically opposed), following any curvature of the surfaces as applicable.

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2.6 Expression of results

2.6.1 For each test piece, or its segments, if applicable (see 2.3.3), calculate the longitudinal reversion, R_L , as a percentage using the following equation:

$$R_L = \frac{VL}{L_0} * 100$$

where:

$$VL = L_0 - L;$$

L_0 is the distance between the marks before the immersion, in millimetres (see 2.5.1);

L is the distance between the marks after the immersion, in millimetres (see 2.5.5) where L is obtained as follows:

Choose for the test piece or its segments, as applicable, those measurements of L which give the greatest value of VL where VL can be positive or negative.

2.6.2 Calculate, as the value for the longitudinal reversion of the pipe, the arithmetic mean, $R_{L,m}$, of the values obtained for each of the three test pieces.

2.7 Test report

The test report shall include the following information:

- a) a reference to this standard and to the referring standard;
- b) full identification of the pipe;
- c) a reference to method A together with the nature of the heating medium used;
- d) the conditioning details, including temperature, time and medium;
- e) the temperature, T_R , of the bath;
- f) the change in length of each test piece, VL , together with its sign (+ or -);
- g) any changes in the appearance of the test pieces during the immersion, or immediately afterwards, e.g. bubbles and cracks;
- h) the longitudinal reversion of the pipe, $R_{L,m}$, calculated in accordance with 2.6.2;
- 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 test.

3 Method B: Determination of reversion in air

3.1 Principle

A pipe of given length is placed in an oven at a specified temperature for a specified duration (see note).

A marked length of this pipe is measured under identical conditions before and after heating in the oven.

The reversion is calculated as the percentage variation in length in relation to the initial length.

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

- a) the test temperature, T_R (see 3.2.1 and 3.5.2);
- b) the length of the test piece (see 3.3.1);
- c) the duration of exposure, with limiting values (see 3.5.4);

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3.2 Apparatus

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3.2.1 Air oven, thermostatically controlled, of a heating power such that it operates at the specified temperature, T_R , and is capable of re-establishing this temperature within 15 min after the introduction of the test pieces.

The oven shall be equipped with a thermostat capable of maintaining the temperature, T_R , with permissible deviations of ± 2 °C.

3.2.2 Thermometer, graduated in increments of not more than 0,5 °C.

3.3 Test pieces

3.3.1 Take as a test piece a length of pipe of minimum 200 mm unless otherwise specified in the referring standard [see item b) of the note in 3.1].