SLOVENSKI STANDARD
SIST EN ISO 9967:1997

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Cevi iz polimernih materialov - Določ evanje razmerja lezenja

Plastics pipes - Determination of creep ratio (ISO 9967:1994)

Thermoplastische Rohre - Bestimmung des Kriechverhaltens (ISO 9967:1994)

Tubes en matieres thermoplastiques - Détermination du taux de fluage (ISO 9967:1994)

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ICS:

23.040.20 Cevi iz polimernih materialov Plastics pipes

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English version

Plastics pipes - Determination of creep ratio (ISO 9967:1994)

Tubes en matières thermoplastiques - Détermination du taux de fluage (ISO 9967:1994)

Thermoplastische Rohre - Bestimmung des Kriechverhaltens (ISO 9967:1994)

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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 was taken over by the Technical Committee CEN/TC 155 "Plastics piping and ducting systems" from the work of ISO/TC 138 "Plastics pipes, fittings and valves for the transport of fluids" of the International Standards Organization (ISO).

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of an identical text or by endorsement, at the latest by August 1995, and conflicting national standards shall be withdrawn at the latest by August 1995.

According to 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.

Endorsement notice

The text of the International Standard ISO 9967:1994 was approved by CEN as a European Standard without any modification.

INTERNATIONAL STANDARD

ISO 9967

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Thermoplastics pipes — Determination of creep ratio

Tubes en matières thermoplastiques — Détermination du taux de fluage

Reference number
ISO 9967:1994(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 9967 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Sub-Committee SC 1, *Plastics pipes and fittings for soil, waste and drainage (including land drainage)*.

Annexes A and B of this International Standard are for information only.

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Introduction

Experience shows that, when a pipe is installed in the ground in accordance with an appropriate code of practice, its increase in deflection virtually stops after a short period. This period varies depending on the soil and installation conditions, but it does not exceed two years.

Therefore the two-year creep ratio as determined in accordance with this International Standard is intended for use when long-term static calculations are carried out.

The theory of creep in thermoplastics materials is briefly explained in annex A.

For experiments, the test can be carried out based on other ages of the test pieces, other test temperatures and/or other testing times.

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Thermoplastics pipes — Determination of creep ratio

1 Scope

This International Standard specifies a method of determining the creep ratio of thermoplastics pipes having a circular cross-section.

2 Symbols

The following symbols are used in this International Standard:

		Units
d_n	nominal diameter of pipe	mm
d_i	inside diameter of pipe test piece	m
F	loading force	kN
F_0	pre-load force	N
L	length of test piece	m
y_0	measured initial deflection	m
Y_t	calculated deflection at time t	m
Y_2	extrapolated two-year deflection	m
δ	vertical deflection used to determine the loading force	m
γ	creep ratio	

3 Principle

A cut length of pipe is placed between two parallel flat horizontal plates and a constant compressive force is applied for 1 000 h (42 days).

The deflection of the pipe is recorded at specified intervals so as to prepare a plot of pipe deflection against time. The linearity of the data is analysed and the creep ratio is calculated.

4 Apparatus

4.1 Compressive-testing machine, capable of applying to the pipe via plates (4.2), and maintaining to within 1 %, both the applicable pre-load force F_0 (see 7.4) and the necessary loading force F (see 7.5).

4.2 Two steel plates, through which the compressive force can be applied to the test piece. The plates shall be flat, smooth and clean and shall not deform during the test to an extent that would affect the results.

The length of each plate shall be at least equal to the length of the test piece. The width of each plate shall be not less than the maximum width of the surface in contact with the test piece while under load plus 25 mm.

4.3 Measuring devices, capable of determining

— the length of the test piece to within 1 mm (see 5.2);

— the inside diameter of the test piece to within 0,5 %;

— the change in inside diameter of the test piece in the direction of loading with an accuracy of 0,1 mm, or 1 % of the deflection, whichever is the greater.

An example of a device for measuring the inside diameter of corrugated pipes is shown in figure 1.

4.4 Timer.