SLOVENSKI STANDARD
SIST EN 744:1997

01-februar-1997

Cevni sistemi iz polimernih materialov - Plastomerne cevi - Metoda za preskus odpornosti na zunanje udarce s postopkom rotiranja (round-the-clock method)

Plastics piping and ducting systems - Thermoplastics pipes - Test method for resistance to external blows by the round-the-clock method

Kunststoff-Rohrleitungs- und Schutzrohrsysteme - Rohre aus Thermoplasten - Prüfverfahren für die Widerstandsfähigkeit gegen äußere Schlagbeanspruchung im Umfangsverfahren

Systemes de canalisations et de gaines en plastiques - Tubes thermoplastiques - Méthode d'essai de résistance aux chocs externes par la méthode du cadran

Ta slovenski standard je istoveten z: **EN 744:1995**

ICS:

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English version

Plastics piping and ducting systems - Thermoplastics pipes - Test method for resistance to external blows by the round-the-clock method

Systèmes de canalisations et de gaines en plastiques - Tubes thermoplastiques - Méthode d'essai de résistance aux chocs externes par la méthode du cadran

Kunststoff-Rohrleitungs- und Schutzrohrsysteme - Rohre aus Thermoplasten - Prüfverfahren für die Widerstandsfähigkeit gegen äußere Schlagbeanspruchung im Umfangsverfahren

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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
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard was prepared by CEN/TC 155 "Plastics piping systems and ducting systems" of which the secretariat 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of an identical text or by endorsement, at the latest by October 1995, and conflicting national standards shall be withdrawn at the latest by October 1995.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.

This standard is based on ISO/DIS 3127:1992 "Unplasticized polyvinyl chloride (PVC) pipes for the transport of fluids - Determination and specification of resistance to external blows", prepared by the International Organization for Standardization (ISO). It is a modification of ISO/DIS 3127:1992 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:

- no pipe material is mentioned;
- test parameters, except those common to all plastics, 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.

Annex A, which is informative, gives guidance on sampling.

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.

1 Scope

This standard specifies a method for determining the resistance to external blows of thermoplastics pipes with circular cross sections by using the round-the-clock method.

The method is intended to be applied to isolated batches of pipe. For type testing and audit testing, 0 °C and/or -20 °C are applicable.

NOTE: Pipes made from polypropylene homopolymer (PP-H) which principally can not conform to impact requirements at 0 °C or lower temperatures are permitted to be tested at (23 ± 2) °C under the condition that PP-H pipes are intended for use for soil and waste discharge and bear an additional marking indicating that they are not to be installed below +5 °C.

2 Definition

For the purposes of this standard, the following definition applies.

True impact rate (TIR): The total number of failures divided by the total number of blows, in per cent, as if the whole batch had been tested.

NOTE: In practice, test pieces are drawn at random from the batch and the result is only an estimate of the TIR for that batch.

3 Principle

Test pieces comprising cut lengths of pipe, representative of a batch or a production run from an extruder, are subjected to blows from a falling weight dropped from a specified height on to specified positions around the circumference of the pipe. The incidence of failure is estimated as the true impact rate (TIR) of the batch, or production run, where the maximum value for TIR is 10 %.

NOTE 1: The severity of this test method can be adjusted to suit different specification needs by changing the mass of the falling weight and/or by changing the fall height. It is not technically correct to vary the severity of the test by choosing other values of TIR than that specified in this method.

NOTE 2: It should be appreciated that a completely definitive result can only be reached by testing the whole batch, but in practice a balance is necessary between the statistical possibility of a definitive result and the cost of further testing.

NOTE 3: It is assumed that the following test parameters are set by the standard making reference to this standard:

a) the type of striker and striker mass [see b) of clause 4 and item a) of 7.1];

b) the drop height for the striker [see d) of clause 4 and 7.2, 7.3 and/or 7.4 as applicable];

c) the method of sampling [see 5.1 and c) of clause 9];

d) if appropriate, the number of test pieces to be used (see 5.2 and clause 7);

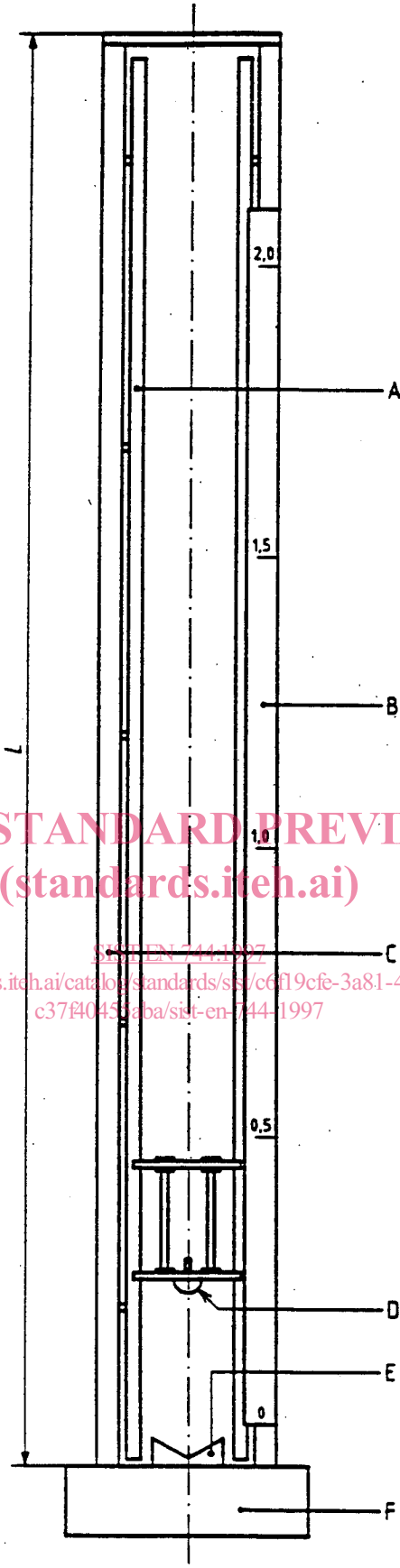
e) the test and conditioning temperature and the conditioning medium (see clause 6);

f) if applicable, any alternative or additional criterion for failure [see d) of 7.1].

4 Apparatus

A falling weight testing machine incorporating the following basic components (see figure 1):

a) **main frame**, with guide rails or a guiding tube rigidly fixed in the vertical position to accommodate a striker [see b)] and release it to fall vertically and freely such that the speed of the striker at the moment of hitting the pipe is not less than 95 % of the theoretical speed;



A Guide

B Graduated scale, vertically adjustable for different sizes of pipe

C Main frame

D Striker

E 120° vee-block

F Solid base

L 2,6 m approximately

Figure 1: Typical falling weight testing machine

b) **striker**, having a nose comprising all or part of a hemispherical form combined with a cylindrical stem at least 10 mm long and having dimensions conforming to table 1 and figure 2, depending upon the mass of the striker. The mass of the striker, including any associated weights, shall be selected from table 2. Below the stem, the nose shall be of steel with a minimum wall thickness of 5 mm and the striking surface shall be free from imperfections which can influence the results.

Table 1: Dimensions for the nose of the striker

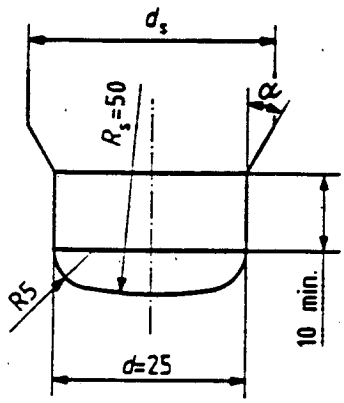
Type	R_S mm	d mm	d_S	α
d25	50	25	*)	*)
d90	50	90	*)	*)

*) Not specified, to allow design freedom

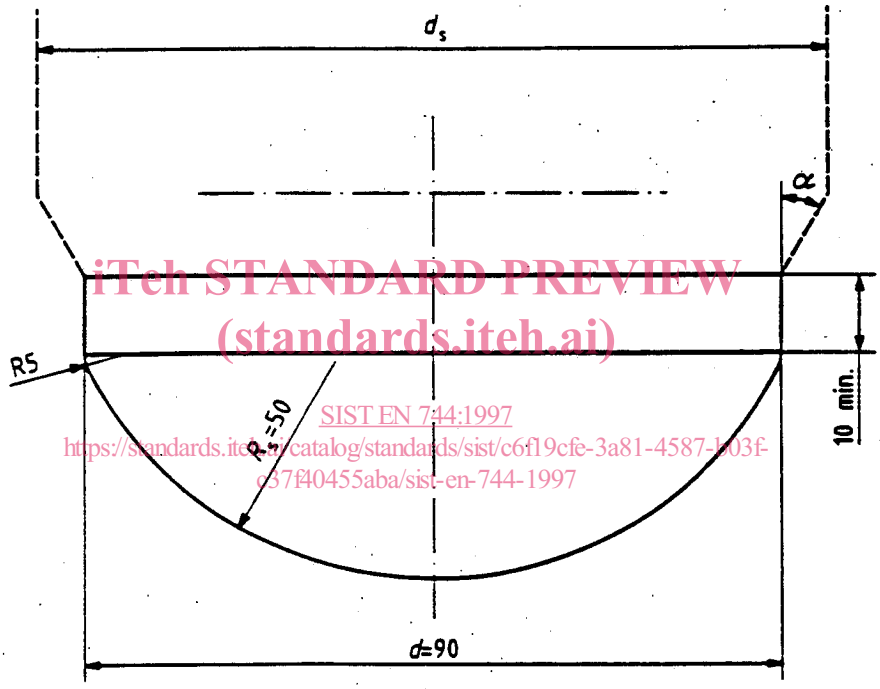
Table 2: Mass of strikers

Masses in kilograms

Mass of striker ± 0,005 kg			
Type d25	**Type d90**		
0,25	1,0	3,2	10,0
0,5	1,25	4,0	12,5
0,8	1,6	5,0	16,0
	2,0	6,3	
	2,5	8,0	



a) Type d25



b) Type d90

Dimensions in millimetres

Figure 2: Dimensions of strikers

c) **rigid test piece support**, consisting of a 120° vee-block at least 200 mm long, positioned so that the axis of the line of fall of the nose of the striker shall intersect the axes of the vee to within ± 2,5 mm (see figure 1).

The support construction shall be sufficiently rigid not to cushion the effect of the impact.