



# SLOVENSKI STANDARD

## SIST EN 1056:1997

01-februar-1997

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### Cevni sistemi iz polimernih materialov - Polimerne cevi in fitingi - Metoda izpostave neposrednim (naravnim) vremenskim vplivom

Plastics piping and ducting systems - Plastics pipes and fittings - Method for exposure to direct (natural) weathering

Kunststoff-Rohrleitungs- und Schutzrohrsysteme - Rohre und Formstücke aus Kunststoffen - Verfahren für die Bewitterung im Freien

Systemes de canalisations et de gaines en plastiques - Tubes et raccords en plastiques - Méthode pour l'exposition directe aux intempéries

<https://standards.iteh.ai/catalog/standards/sist/a75bd479-f4be-4a12-88e7-1812e2428801/sist-en-1056-1997>

Ta slovenski standard je istoveten z: EN 1056:1996

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#### **ICS:**

23.040.20	Cevi iz polimernih materialov	Plastics pipes
23.040.45	Fitingi iz polimernih materialov	Plastics fittings

**SIST EN 1056:1997**

**en**

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EUROPEAN STANDARD

EN 1056

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 1996

ICS 23.040.20

Descriptors: plastic tubes, pipe fittings, ageing tests: materials, weather resistance

English version

**Plastics piping and ducting systems - Plastics  
pipes and fittings - Method for exposure to direct  
(natural) weathering**

Systèmes de canalisations et de gaines en  
plastiques - Tubes et raccords en plastiques -  
Méthode pour l'exposition directe aux  
intempéries

Kunststoff-Rohrleitungs- und Schutzrohrsysteme  
Rohre und Formstücke aus Kunststoffen -  
Verfahren für die Bewitterung im Freien

TECH STANDARD PREVIEW  
(standard.teh.ai)



REPUBLIKA SLOVENIJA  
MINISTRSTVO ZA ZNANOST IN TEHNOLOGIJO  
Urad RS za standardizacijo in meroslovje  
LJUBLJANA

SIST... EN 1056 .....

PREVZET PO METODI RAZGLASITVE

-02- 1997

This European Standard was approved by CEN on 1996-01-26. 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 8-1050 Brussels

## 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.

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 September 1996, and conflicting national standards shall be withdrawn at the latest by September 1996.

This standard is based on ISO 877:1994 "Plastics - Methods of exposure to direct weathering, to weathering using glass-filtered daylight, and to intensified weathering by daylight using Fresnel mirrors", published by the International Organization for Standardization (ISO). It is a modification of those methods for reasons of applicability to plastics pipes and fittings and/or other test conditions and alignment with texts of other standards on test methods.

The modifications are:

- test conditions related to tropical exposures are omitted;
- requirements for test pieces are confined to those relevant to pipes and fittings;
- appropriate tolerances are introduced for the measurement of climatic data;
- a specific radiant energy dose is given for use for evaluating piping components which may be exposed during typical storage prior to installation;
- editorial changes have been introduced.

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.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of 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 and the United Kingdom.



## Introduction

Outdoor-exposure tests of the type specified in this standard are needed to evaluate the performance of plastics piping components or materials when exposed to daylight. The results of such tests should be regarded only as an indication of the effect of exposure to direct weathering by the method described. Results obtained after exposure for a given time may not be comparable to those obtained after other exposures of equal time using the same method. When identical materials are exposed at different times for extended periods of several years, they generally show comparable behaviour after equal-exposure intervals. However, even in long-term tests, the results may be affected by the season in which the tests are started.

The results of short-term direct weathering tests can give an indication of the relative outdoor performance, but should not be used to predict the absolute long-term performance of a pipe, fitting or joint. Even results of tests carried out for longer than 24 months can show an effect of the season in which the exposure started. Comparisons of non-full-year exposure will exhibit seasonable effects.

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The test method chosen is usually designed to expose the material to the most severe conditions associated with any particular climate. It should, therefore, be borne in mind that the severity of exposure in actual use is, in most cases, likely to be less than that specified in this standard, and allowance should be made accordingly when interpreting the results. For example, vertical exposure at 90° from the horizontal is considerably less severe in its effects on plastics than near-horizontal exposure, particularly in tropical regions, where the sun is most powerful at high zenith angles.

Polar-facing surfaces are much less likely to be degraded than equator-facing surfaces because they are less exposed to solar radiation. However, the fact that they may remain wet for longer periods may be of significance for materials affected by moisture.

## 1 Scope

This standard specifies a method for exposing plastics pipes and fittings, individually or assembled, or as pieces therefrom, by direct exposure to natural weathering in order to assess changes produced after specified weathering exposure stages relevant to European latitudes.

*NOTE: For exposure appropriate to tropical or equatorial conditions, attention is drawn to ISO 877.*

## 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.

- ISO 105-A02:1993 *Textiles - Tests for colour fastness - Part A02: Grey scale for assessing change in colour*
- ISO 877:1994 *Plastics - Methods of exposure to direct weathering, to weathering using glass-filtered daylight, and to intensified weathering by daylight using Fresnel mirrors*
- ISO 2818:1994 *Plastics - Preparation of test specimens by machining*
- ISO 4582:1980 *Plastics - Determination of changes in colour and variations in properties after exposure to daylight under glass, natural weathering or artificial light*

## 3 Principle

Test pieces, comprising all or part of a pipe section, a fitting or a jointed assembly, are mounted on a rack under specified conditions and directly exposed to natural weathering until the rack has received a given minimum total solar radiant exposure per unit area .

Climatic conditions and variations and the radiation dosage during exposure are monitored and reported in accordance with the referenced standards.

If necessary (see note 1), additional, comparable, test pieces are tested to establish initial values for one or more properties and/or are stored under protected conditions before testing to enable comparison of the property(ies) with and without weathering.

NOTE 1: Additional test pieces are unnecessary if the data required can be obtained only from exposed test pieces, e.g. by comparison of quantitative colour measurements before, during and/or after exposure or colour comparisons between masked and unmasked zones on the test piece.

NOTE 2: It is assumed that the following test parameters are set by the standard making reference to this standard:

- a) if applicable, the ambient parameters to be recorded (see 4.2.2)
- b) the size, shape and method of preparation of test pieces (see 5.1);
- c) the number of test pieces to be exposed to weathering and, if applicable, to be stored as control test pieces (see 5.2 and 6.1);
- d) if applicable, the sampling procedure to be used (see 5.3);
- e) the solar energy per unit area, if other than 3,5 GJ/m<sup>2</sup> (see 6.2);
- f) the alignment of the pipe axes, if not north/south (see 6.2);
- g) the frequency and method of cleaning (see 6.3);
- h) if applicable, details of the property(ies) to be measured and the method of measurement, in accordance with the referring standard and whether or not any shaped profiles (see 6.5) should be prepared before or after exposure (see 5.1 and 5.2).

## 4 Apparatus

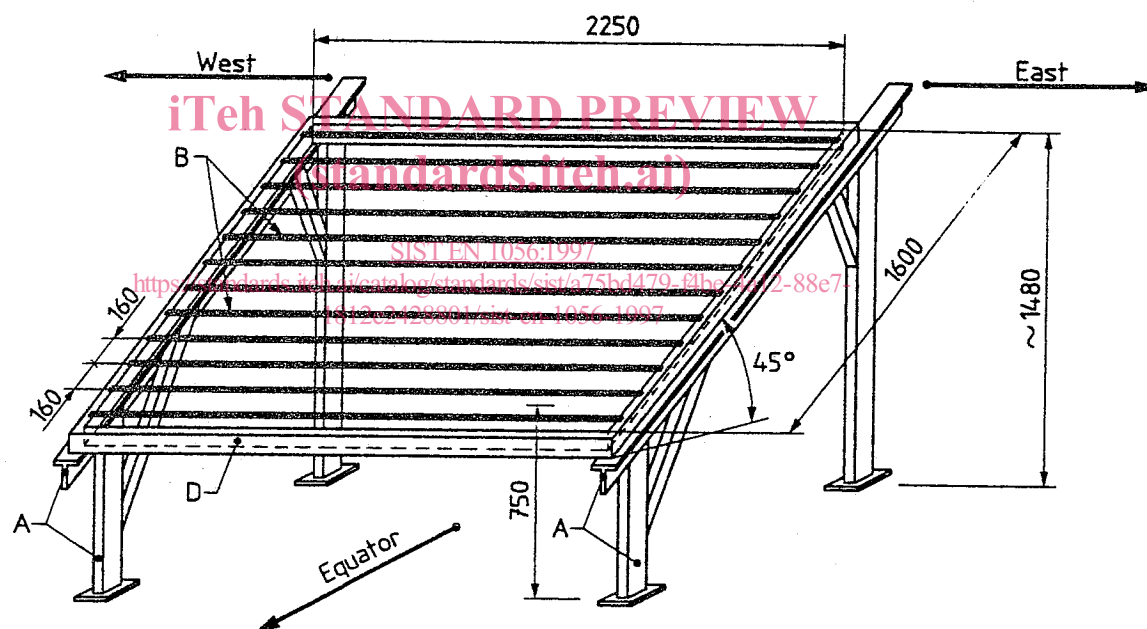
### 4.1 Test piece support rack

The rack shall conform to ISO 877 for the construction requirements and location of a rack having the following characteristics selected from ISO 877:

- a) it shall be constructed from inert materials which shall not affect the test results (see 5.1 of ISO 877);

- b) it shall be capable of supporting test pieces (see clause 5) such that the exposed surface of the test piece shall be at  $45^\circ$  to the horizontal facing the equator;
- c) there shall be no obstructions, including adjacent racks, in an easterly, westerly or equatorial direction, subtending a vertical angle greater than  $20^\circ$ , or in a polar direction an angle greater than  $45^\circ$ ;
- d) it shall have mounting fixtures that are secure but apply as little stress as possible to the test pieces and permit shrinkage, expansion or warpage to occur without constraint greater than would apply in normal service or necessary to prevent sagging during exposure.

A typical rack for exposing pipe test pieces is shown in figures 1 and 2.

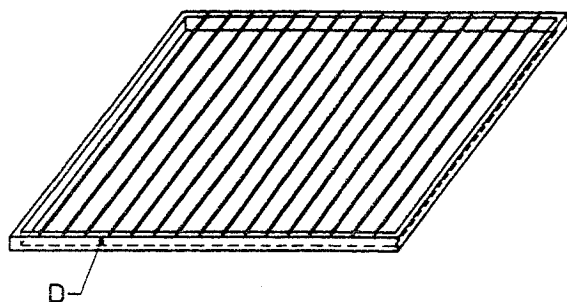


- D Removable metal rack, 1600 mm × 2250 mm  
 A Support for rack  
 B Removable carrier bars

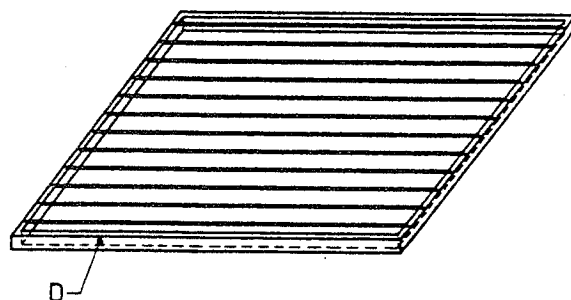
Dimensions in millimetres

Figure 1A: Typical exposure rack for plastics pipes





D Removable metal rack,  
1600 mm × 2250 mm



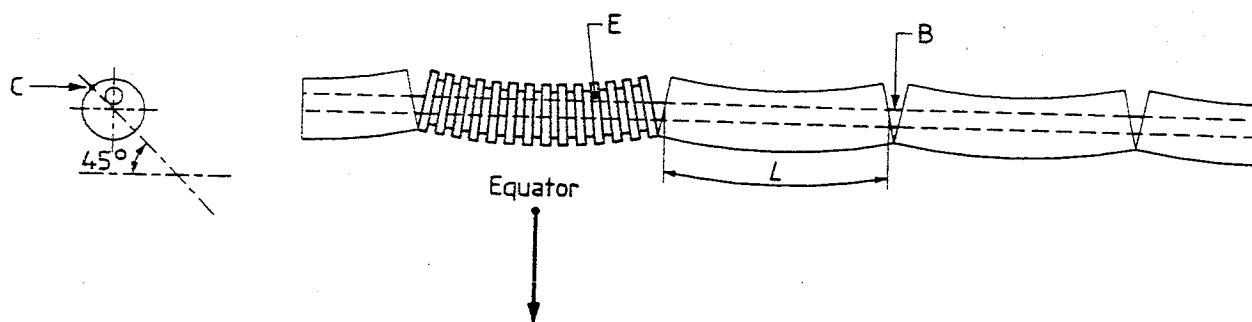
D Removable metal rack,  
1600 mm × 2250 mm

Figure 1B: Schematic test arrangement north/south alignment Figure 1C: Schematic test arrangement east/west alignment

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- B Removable carrier bars
- C Crown of the test piece with east-west support
- E Test piece,  $L = 200$  mm

Figure 2: Mounting of test pieces