SLOVENSKI STANDARD
SIST EN ISO 8256:1999

01-maj-1999

Polimerni materiali ï Doloļ evanje natezno-udarne trdnosti (ISO 8256:1990, vkljuļ no s tehniļ nim popravkom 1:1991)

Plastics - Determination of tensile-impact strength (ISO 8256:1990, including Technical Corrigendum 1:1991)

Kunststoffe - Bestimmung der Schlagzugzähigkeit (ISO 8256:1990, einschließlich Technische Korrektur 1:1991)

Plastiques - Détermination de la résistance au choc-traction (ISO 8256:1992, Rectificatif Technique 1:1991 inclus)

Ta slovenski standard je istoveten z: **EN ISO 8256:1996**

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83.080.01	Polimerni materiali na splošno	Plastics in general

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English version

Plastics - Determination of tensile-impact strength (ISO 8256:1990, including Technical Corrigendum 1:1991)

Plastiques - Détermination de la résistance au chock-traction (ISO 8256:1990, Rectificatif Technique 1:1991 inclus)

Kunststoffe - Bestimmung der Schlagzugzähigkeit (ISO 8256:1990, einschließlich Technische Korrektur 1:1991)

This European Standard was approved by CEN on 1994-12-14. 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.

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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

The text of the International Standard from Technical Committee ISO/TC 61 "Plastics" of the International Organization for Standardization (ISO) has been taken over as an European Standard by Technical Committee CEN/TC 249 "Plastics", the secretariat of which is held by IBN.

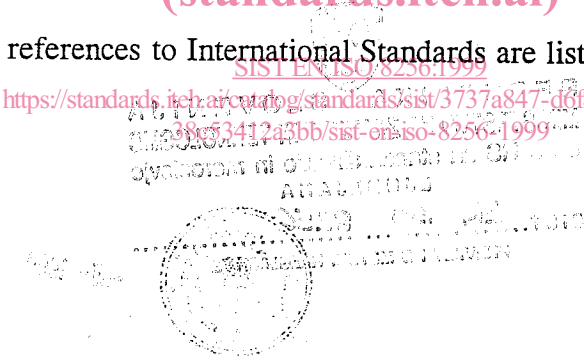
This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 1997, and conflicting national standards shall be withdrawn at the latest by June 1997.

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.

Endorsement notice

The text of the International Standard ISO 8256:1990 has been approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).



Annex ZA (normative)
Normative references to international publications with their relevant European publications

This European 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 European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

Publication	Year	Title	EN	Year
ISO 180	1993	Plastics - Determination of Izod impact strength (including Technical Corrigendum 1:1995 to ISO 180:1993)	EN ISO 180	1996
ISO 2818	1994	Plastics - Preparation of test specimens by machining	EN ISO 2818	1996
ISO 3167	1993	Plastics - Multipurpose test specimens	EN ISO 3167	1996

INTERNATIONAL STANDARD

ISO 8256

First edition
1990-12-15

Plastics — Determination of tensile-impact strength

Plastiques — Détermination de la résistance au choc-traction

Reference number
ISO 8256:1990(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 8256 was prepared by Technical Committee ISO/TC 61, *Plastics*.

Annexes A and B form an integral part of this International Standard. Annex C is for information only.

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Plastics — Determination of tensile-impact strength

1 Scope

1.1 This International Standard specifies two methods for the determination of the energy required to rupture test specimens of plastics under a specified tensile-impact velocity. The tests can be described as tensile tests at comparatively high rates of straining. These methods can be used for materials too flexible or too thin to be tested with impact tests conforming to ISO 179 and ISO 180, and for more rigid materials. Different parameters are specified depending on the type of test specimen (see 6.1 and figure 3).

1.2 These methods are used for investigating the behaviour of specified specimens under specified impact velocities, and for estimating the brittleness or the toughness of specimens within the limitations inherent in the test conditions. The response of plastics to comparatively high rates of straining is useful to describe, for example, the behaviour of materials when subjected to weathering or thermal ageing, as well as to assess their properties under corresponding service conditions.

1.3 These methods are applicable to specimens prepared from moulding materials or to specimens taken from finished or semi-finished products (for example mouldings, films, laminates or extruded or cast sheets). The methods are suitable for production control as well as for quality control. Test results gained on test specimens obtained from moulding compounds cannot be applied directly to mouldings of any given shape, because values may depend on the design of the moulding and the moulding conditions.

1.4 Results obtained by testing moulded specimens of different dimensions may not necessarily be the same. Equally, specimens cut from moulded products may not give the same results as specimens of the same dimensions moulded directly from the material. Results obtained by method A and method B may or may not be comparable.

1.5 These methods are not suitable for use as a source of data for design calculations on components. Information on the typical behaviour of a material can be obtained, however, by testing different types of test specimen prepared under different conditions, and testing at different temperatures.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 179:1982, *Plastics — Determination of Charpy impact strength of rigid materials.*

ISO 180:1982, *Plastics — Determination of Izod impact strength of rigid materials.*

ISO 291:1977, *Plastics — Standard atmospheres for conditioning and testing.*

ISO 293:1986, *Plastics — Compression moulding test specimens of thermoplastic materials.*

ISO 294:1975, *Plastics — Injection moulding test specimens of thermoplastic materials.*

ISO 295:1974, *Plastics — Compression moulding test specimens of thermosetting materials.*

ISO 1268:1974, *Plastics — Preparation of glass fibre reinforced, resin bonded, low-pressure laminated plates or panels for test purposes.*

ISO 2557-1:1989, *Plastics — Amorphous thermoplastics — Preparation of test specimens with a specified maximum reversion — Part 1: Bars.*

ISO 2557-2:1986, *Plastics — Amorphous thermoplastics — Preparation of test specimens with a specified reversion — Part 2: Plates.*

ISO 2818:1980, *Plastics — Preparation of test specimens by machining.*

ISO 3167:1983, *Plastics — Preparation and use of multipurpose test specimens.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 tensile-impact strength of unnotched specimens: The energy absorbed in breaking an unnotched specimen under specified conditions, referred to the original cross-sectional area of the specimen.

It is expressed in kilojoules per square metre (kJ/m^2).

3.2 tensile-impact strength of notched specimens: The energy absorbed in breaking a notched specimen under specified conditions, referred to the original cross-sectional area of the specimen at the notch.

It is expressed in kilojoules per square metre (kJ/m^2).

4 Principle

The energy utilized in this test method is delivered by a single swing of the pendulum of a tensile-impact machine. The energy to fracture is determined by the kinetic energy extracted from the pendulum in the process of breaking the specimen. Corrections are made for the energy to toss or bounce the crosshead.

The specimen is impacted at the bottom of the swing of the pendulum. The specimen is horizontal at rupture. One end of the specimen, at impact, is held either by the frame or the pendulum and the other end by the crosshead. The crosshead may be either mounted stationary on the support frame (method A) or carried downward together with the pendulum (method B).

5 Apparatus

5.1 Test machine

5.1.1 The test machine shall be the pendulum type and shall be of rigid construction. It shall be capable of measuring the impact energy expended in breaking a test specimen. The value of the impact energy shall be taken as equal to the difference between the initial potential energy in the pendulum and the energy remaining in the pendulum after breaking the test specimen. The energy reading shall be accurately corrected for friction and air-resistance losses and for scale errors.

5.1.2 The machine shall have the characteristics shown in table 1. The frictional loss shall be periodically checked.

NOTE 1 In order to apply the test to the full range of materials specified in 1.3, it is necessary to use more than one machine or to use a set of interchangeable pendulums. It is not advisable to compare results obtained with different pendulums.

5.1.3 The machine shall be securely fixed to a foundation having a mass of at least 20 times that of the heaviest pendulum in use. It shall be adjusted so that the orientations of the striker and supports are as specified in 5.2 and 5.3.

5.1.4 The distance between the axis of rotation and the centre of impact of the pendulum shall be within $\pm$ 1 % of the distance from the axis of rotation to the centre of the test specimen.

5.1.5 The dial, or other indicator of the energy consumed, shall be capable of being read to an accuracy of $\pm$ 1 % of full-scale deflection.

5.1.6 The machine shall be of the type shown schematically in figure 1 for method A, or of the type shown in figure 2 for method B.

5.2 Pendulum

5.2.1 The pendulum shall be constructed of a single- or multiple-membered arm holding the head, in which the greatest mass is concentrated. A rigid pendulum is essential to maintain the proper clearances and geometric relationships between related parts and to minimize energy losses, which are always included in the measured impact-energy value.

5.2.2 Accurate means shall be available to determine and minimize energy losses due to windage and friction (see annex B).

5.3 Crosshead

5.3.1 The crosshead, which acts as a specimen clamp for method A, shall be made from a material which guarantees a substantially inelastic impact (e.g. aluminium).

The mass of the crosshead shall be selected from the values given in table 1.

Table 1 — Characteristics of pendulum impact-testing machine

Initial potential energy J	Velocity at impact m/s	Maximum permissible frictional loss %	Crosshead mass[1)] Method A g	Method B g
2,0	2,6 to 3,2	1	15 ± 1 or 30 ± 1	15 ± 1
4,0	2,6 to 3,2	0,5	15 ± 1 or 30 ± 1	15 ± 1
7,5	3,4 to 4,1	0,5	30 ± 1 or 60 ± 1	30 ± 1
15,0	3,4 to 4,1	0,5	30 ± 1 or 60 ± 1	120 ± 1
25,0	3,4 to 4,1	0,5	60 ± 1 or 120 ± 1	120 ± 1
50,0	3,4 to 4,1	0,5	60 ± 1 or 120 ± 1	120 ± 1

1) For method A, use the lighter crosshead wherever possible.

5.3.2 A jig shall be used to assist in clamping the crosshead in the specified position, at right angles to the longitudinal axis of the specimen.

5.4 Clamping devices/jaws

5.4.1 For specimen types 1, 2, 3 and 4 (see table 2 and figure 3), the surfaces between which the specimen is clamped shall be clamped such that there is no slippage when the blow is struck. The same applies to the jaw faces of the clamping device attached to the frame. The clamping device shall be such as to ensure that it does not contribute to failure of the specimen.

Jaws may have file-like serrations, and the size of serrations shall be selected, according to experience, to suit the hardness and toughness of the specimen material and the thickness of the specimen. The edges of the serrated jaws in close proximity to the test region shall have a radius such that they cut across the edges of the first serrations.

5.4.2 For specimen type 5, held only by embedding, a notched pair of jaws with different heights is necessary. The pair of jaws chosen for the test shall be the one whose height is greater than the thickness of the specimen but lower than 120 % of its thickness.

5.5 Micrometers and gauges

Micrometers and gauges suitable for measuring the dimensions of test specimens to an accuracy of 0,01 mm are required. For measuring the thickness of film and sheeting with thicknesses below 1 mm, use an instrument reading to an accuracy of not less than 5 % of the nominal thickness. In measuring the thickness of the specimen, the measuring face shall apply a load of 0,01 MPa to 0,05 MPa.

For notched specimens, see the requirements of 7.4.

6 Test specimens

6.1 Dimensions and notches

Five types of test specimen, as specified in table 2 and shown in figure 3, may be used. For method A, the preferred specimen types are type 1 (notched) and type 3 (unnotched), but type 2, 4 or 5 may also be used if required. For method B, the preferred specimen types are type 2 and type 4.

The test result depends on the type of specimen used and its thickness. For reproducible results, or in case of dispute, therefore, the type of test specimen and its thickness shall be agreed upon.

Specimens are tested at their original thickness up to and including 4 mm. The preferred specimen thickness is 4 mm ± 0,2 mm. Within the gauge area, the thickness shall be maintained to within a tolerance of ± 5 %. Above 4 mm, the test methods described in this International Standard are inapplicable, and use shall be made of ISO 179 or ISO 180.

NOTE 2 Specimen type 1 can be prepared from the multi-purpose test specimen described in ISO 3167.

6.2 Preparation

6.2.1 Moulding or extrusion compounds

Specimens shall be prepared in accordance with the relevant material specification. When none exists, or when otherwise specified, specimens shall be directly extruded, compression or injection moulded from the material in accordance with ISO 293, ISO 294, ISO 295, ISO 2557-1 or ISO 2557-2 as appropriate, or machined in accordance with ISO 2818 from sheet that has been compression or injection moulded from the compound.