SLOVENSKI STANDARD
SIST EN ISO 8256:2004

01-oktober-2004

Nadomeġļa:
SIST EN ISO 8256:1999

Polimerni materiali ï Doloļevanje natezno-udarne trdnosti (ISO 8256:2004)

Plastics - Determination of tensile-impact strength (ISO 8256:2004)

Kunststoffe - Bestimmung der Schlagzugzähigkeit (ISO 8256:2004)

Plastiques - Détermination de la résistance au choc-traction (ISO 8256:2004)

Ta slovenski standard je istoveten z: EN ISO 8256:2004

ICS:

83.080.01	Polimerni materiali na splošno	Plastics in general

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EUROPEAN STANDARD

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English version

Plastics - Determination of tensile-impact strength (ISO 8256:2004)

Plastiques - Détermination de la résistance au choc-traction (ISO 8256:2004)

This European Standard was approved by CEN on 1 June 2004.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN ISO 8256:2004: E

Foreword

This document (EN ISO 8256:2004) has been prepared by Technical Committee ISO/TC 61 "Plastics" in collaboration with 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of an identical text or by endorsement, at the latest by January 2005, and conflicting national standards shall be withdrawn at the latest by January 2005.

This document supersedes EN ISO 8256:1996.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 8256:2004 has been approved by CEN as EN ISO 8256:2004 without any modifications.

INTERNATIONAL STANDARD

ISO 8256

Second edition
2004-07-01

Plastics — Determination of tensile-impact strength

Plastiques — Détermination de la résistance au choc-traction

Reference number
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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 8256 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 2, *Mechanical properties*.

This second edition cancels and replaces the first edition (ISO 8256:1990), which has been technically revised.

Plastics — Determination of tensile-impact strength

1 Scope

1.1 This International Standard specifies two methods (method A and method B) for the determination of the tensile-impact strength of plastics under defined conditions. The tests can be described as tensile tests at relatively high strain rates. These methods can be used for rigid materials (as defined in ISO 472), but are especially useful for materials too flexible or too thin to be tested with impact tests conforming to ISO 179 or ISO 180.

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.

1.3 These methods are applicable both to specimens prepared from moulding materials and to specimens taken from finished or semi-finished products (for example mouldings, laminates, or extruded or cast sheets).

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. Test results obtained from specimens prepared 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. 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 by testing at different temperatures. The two different methods are suitable for production control as well as for quality control.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 179-1, *Plastics — Determination of Charpy impact properties — Part 1: Non-instrumented impact test*

ISO 179-2, *Plastics — Determination of Charpy impact properties — Part 2: Instrumented impact test*

ISO 180, *Plastics — Determination of Izod impact strength*

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

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

ISO 294-1, *Plastics — Injection moulding of test specimens of thermoplastic materials — Part 1: General principles, and moulding of multipurpose and bar test specimens*

ISO 294-2, *Plastics — Injection moulding of test specimens of thermoplastic materials — Part 2: Small tensile bars*

ISO 294-3, *Plastics — Injection moulding of test specimens of thermoplastic materials — Part 3: Small plates*

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

ISO 472, *Plastics — Vocabulary*

ISO 1268 (all parts), *Fibre-reinforced plastics — Methods of producing test plates*

ISO 2602, *Statistical interpretation of tests results — Estimation of the mean — Confidence interval*

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

ISO 3167, *Plastics — Multipurpose test specimens*

ISO 10350-1, *Plastics — Acquisition and presentation of comparable single-point data — Part 1: Moulding materials*

ISO 11403-3, *Plastics — Acquisiton and presentation of comparable multipoint data — Part 3: Environmental influences on properties*

ISO 13802, *Plastics — Verification of pendulum impact-testing machines — Charpy, Izod and tensile impact-testing*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
tensile-impact strength of unnotched specimens

a_{tU}

energy absorbed in breaking an unnotched specimen under specified conditions, referred to the original cross-sectional area of the specimen

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

3.2
tensile-impact strength of notched specimens

a_{tN}

energy absorbed in breaking a notched specimen under specified conditions, referred to the original cross-sectional area of the specimen at the notch

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

4 Principle

A specimen is broken by a single impact at the bottom of the swing of the pendulum of a tensile-impact machine. The specimen is horizontal at the moment of 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 two methods described are based on two different ways of positioning the specimen held by the crosshead: the specimen may be either mounted stationary on the support frame (method A) or carried downward together with the pendulum (method B).

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 (method A) or bounce (method B) the crosshead.

5 Apparatus

5.1 Test machine

The principles, characteristics and verification of suitable test machines are detailed in ISO 13802.

5.2 Pendulum and striker

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 The strikers for method A and method B are described in detail in ISO 13802.

5.3 Crosshead

5.3.1 As pointed out in ISO 13802, in order to reduce bouncing due to the impact of the metal striker on the metal crosshead, the material used for the crosshead shall be one which gives an essentially inelastic impact (e.g. aluminium). The mass of the crosshead, both for method A and for method B, shall be selected from the values given in Table 1.

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

Table 1 — Crosshead masses

Potential energy J	Crosshead mass g	
	Method A	Method B
2,0	15 ± 1 or 30 ± 1	15 ± 1
4,0	15 ± 1 or 30 ± 1	15 ± 1
7,5	30 ± 1 or 60 ± 1	30 ± 1
15,0	30 ± 1 or 60 ± 1	120 ± 1
25,0	60 ± 1 or 120 ± 1	120 ± 1
50,0	60 ± 1 or 120 ± 1	120 ± 1
NOTE For method A, use the lighter crosshead whenever possible.		

5.4 Clamping devices/jaws

Clamps and jaws for tensile-impact testing are described in ISO 13802.

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. 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.