

## **Plastid. Izod' löögisitkuse määramine**

Plastics - Determination of Izod impact strength

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 180:2001 sisaldab Euroopa standardi EN ISO 180:2000 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 18.05.2001 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 180:2001 consists of the English text of the European standard EN ISO 180:2000.</p> <p>This document is endorsed on 18.05.2001 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p><b>Käsitlusala:</b></p> <p>Käesolev standard määrab kindlaks meetodi plastide Izod' löögisitkuse määramiseks kindlaksmääratud tingimustes. Kindlaks on määratud ka proovikehade mitu eri tüüpi ja katsetuskuju.</p>	<p><b>Scope:</b></p>
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**ICS** 83.080.01

**Võtmesõnad:**

**English version**

**Plastics**

**Determination of Izod impact strength  
(ISO 180 : 2000)**

Plastiques – Détermination de  
la résistance au choc Izod  
(ISO 180 : 2000)

Kunststoffe – Bestimmung  
der Izod-Schlagzähigkeit  
(ISO 180 : 2000)

This European Standard was approved by CEN on 2000-12-03.

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

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CEN members are the national standards bodies of Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

**CEN**

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

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## Foreword

International Standard

ISO 180 : 2000     Plastics – Determination of Izod impact strength,  
which was prepared by ISO/TC 61 ‘Plastics’ of the International Organization for Standardization, has been  
adopted by Technical Committee CEN/TC 249 ‘Plastics’, the Secretariat of which is held by IBN, as a European  
Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text  
or by endorsement, and conflicting national standards withdrawn, by June 2001 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the  
following countries are bound to implement this European Standard:

Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy,  
Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

## Endorsement notice

The text of the International Standard ISO 180 : 2000 was approved by CEN as a European Standard without any  
modification.

NOTE: Normative references to international publications are listed in Annex ZA (normative).

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## 1 Scope

**1.1** This International Standard specifies a method for determining the Izod impact strength of plastics under defined conditions. A number of different types of specimen and test configurations are defined. Different test parameters are specified according to the type of material, the type of test specimen and the type of notch.

**1.2** The method is used to investigate the behaviour of specified types of specimen under the impact conditions defined and for estimating the brittleness or toughness of specimens within the limitations inherent in the test conditions.

**1.3** The method is suitable for use with the following range of materials:

- rigid thermoplastic moulding and extrusion materials, including filled and reinforced compounds in addition to unfilled types; rigid thermoplastics sheets;
- rigid thermosetting moulding materials, including filled and reinforced compounds; rigid thermosetting sheets, including laminates;
- fibre-reinforced thermosetting and thermoplastic composites incorporating unidirectional or non-unidirectional reinforcements such as mat, woven fabrics, woven rovings, chopped strands, combination and hybrid reinforcements, rovings and milled fibres and sheet made from pre-impregnated materials (prepregs);
- thermotropic liquid-crystal polymers.

**1.4** The method is not normally suitable for use with rigid cellular materials and sandwich structures containing cellular material. Also, notched specimens are not normally used for long-fibre-reinforced composites or thermotropic liquid-crystal polymers.

**1.5** The method is suited to the use of specimens which may be either moulded to the chosen dimensions, machined from the central portion of a standard multipurpose test specimen (see ISO 3167) or machined from finished or semifinished products such as mouldings, laminates and extruded or cast sheet.

**1.6** The method specifies preferred dimensions for the test specimen. Tests which are carried out on specimens of different dimensions or with different notches, or specimens which are prepared under different conditions, may produce results which are not comparable. Other factors, such as the energy capacity of the apparatus, its impact velocity and the conditioning of the specimens can also influence the results. Consequently, when comparative data are required, these factors must be carefully controlled and recorded.

**1.7** The method should not be used as a source of data for design calculations. Information on the typical behaviour of a material can be obtained, however, by testing at different temperatures, by varying the notch radius and/or the thickness and by testing specimens prepared under different conditions.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 291:1997, *Plastics — Standard atmospheres for conditioning and testing*.

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

ISO 294-1:1996, *Plastics — Injection moulding of test specimens of thermoplastic materials — Part 1: General principles, and moulding of multipurpose and bar test specimens*.

ISO 295:1991, *Plastics — Compression moulding of test specimens of thermosetting materials*.

ISO 1268:1974<sup>1)</sup>, *Plastics — Preparation of glass fibre reinforced, resin bonded, low pressure laminated plates or panels for test purposes*.

ISO 2602:1980, *Statistical interpretation of test results — Estimation of the mean — Confidence interval*.

ISO 2818:1994, *Plastics — Preparation of test specimens by machining*.

ISO 3167:—<sup>2)</sup>, *Plastics — Multipurpose test specimens*.

ISO 10724-1:1998, *Plastics — Injection moulding of test specimens of thermosetting powder moulding compounds (PMCs) — Part 1: General principles and moulding of multipurpose test specimens*.

ISO 13802:1999, *Plastics — Verification of pendulum impact-testing machines — Charpy, Izod and tensile impact-testing*.

## 3 Terms and definitions

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

### 3.1

#### Izod unnotched impact strength

$a_{iU}$

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

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

### 3.2

#### Izod notched impact strength

$a_{iN}$

impact energy absorbed in breaking a notched specimen, referred to the original cross-sectional area of the specimen at the notch, with the pendulum striking the face containing the notch

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

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1) Under revision as a series of 11 parts.

2) To be published. (Revision of ISO 3167:1993)