

**Plastid. Charpy löögiomaduste määramine.  
Osa 2: Mõõteaparatuuri kasutamisega  
löögiteim**

Plastics - Determination of Charpy impact properties  
- Part 2: Instrumented impact test

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 179-2:2000 sisaldab Euroopa standardi EN ISO 179-2:1999 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 11.01.2000 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 179-2:2000 consists of the English text of the European standard EN ISO 179-2:1999.</p> <p>This document is endorsed on 11.01.2000 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> This Standard specifies a method for determining the Charpy impact strength of plastics under defined conditions. A number of different types of specimens and test configurations are defined.</p>	<p><b>Scope:</b> This Standard specifies a method for determining the Charpy impact strength of plastics under defined conditions. A number of different types of specimens and test configurations are defined.</p>
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**ICS** 83.080.01

**Võtmesõnad:** charpy impact tests, determination, impact tests, plastics, rigid plastics, shock resistance, specimen preparation, test specimens, tests

**English version**

**Plastics – Determination of Charpy impact properties**

**Part 2: Instrumented impact test**

(ISO 179-2 : 1997, including Technical Corrigendum 1 : 1998)

Plastiques – Détermination des caractéristiques au choc Charpy – Partie 2: Essai de choc instrumenté (ISO 179-2 : 1997, Rectificatif Technique 1 : 1998 inclus)

Kunststoffe – Bestimmung der Charpy-Schlageigenschaften – Teil 2: Instrumentierte Schlagzähigkeitsprüfung (ISO 179-2 : 1997, einschließlich Technische Korrektur 1 : 1998)

This European Standard was approved by CEN on 1999-05-06.

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, 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

**Central Secretariat: rue de Stassart 36, B-1050 Brussels**

## Foreword

International Standard

ISO 179-2 : 1997 Plastics – Determination of Charpy impact properties – Part 2: Instrumented impact test, 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 December 1999 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 179-2 : 1997, including Technical Corrigendum 1 : 1998, was approved by CEN as a European Standard without any modification.

## 1 Scope

**1.1** This part of ISO 179 specifies a method for determining Charpy impact properties of plastics from force-deflection diagrams. Different types of rod-shaped test specimen and test configuration, as well as test parameters depending on the type of material, the type of test specimen and the type of notch are defined in part 1 of ISO 179.

Dynamic effects such as load-cell/striker resonance, test specimen resonance and initial-contact/inertia peaks are described (see figure 1, curve b, and annex A).

**1.2** For the comparison between Charpy and Izod test methods, see ISO 179-1, clause 1.

ISO 179-1 is suitable for characterizing the impact behaviour by the impact strength only and for using apparatus whose potential energy is matched approximately to the particular energy to break to be measured (see ISO 13802, annex C). This part of ISO 179 is used if a force-deflection or force-time diagram is necessary for detailed characterization of the impact behaviour, and for developing automatic apparatus, i.e. avoiding the need, mentioned above, to match energy.

**1.3** For the range of materials which may be tested by this method, see ISO 179-1, clause 1.

**1.4** For the general comparability of test results, see ISO 179-1, clause 1.

**1.5** The method may not be used as a source of data for design calculations on components. However, the possible use of data is not the subject of this part of ISO 179. Any application of data obtained using this part of ISO 179 should be specified by a referring standard or agreed upon by the interested parties.

Information on the typical behaviour of materials can be obtained by testing at different temperatures, by varying the notch radius and/or specimen thickness and by testing specimens prepared under different conditions.

It is not the purpose of this part of ISO 179 to give an interpretation of the mechanism occurring at every point on the force-deflection diagram. These interpretations are a task for on-going scientific research.

**1.6** The test results are comparable only if the conditions of test specimen preparation, as well as the test conditions, are the same. Comprehensive evaluation of the reaction to impact stress requires that determinations be made as a function of deformation rate and temperature for different material variables such as crystallinity and moisture content. The impact behaviour of finished products cannot, therefore, be predicted directly from this test, but test specimens may be taken from finished products for testing by this method.

**1.7** Impact strengths determined by this method may replace those determined using ISO 179-1 if comparability has been established by previous tests.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 179. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 179 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 179-1:—<sup>1)</sup>, *Plastics — Determination of Charpy impact properties — Part 1: Non-instrumented impact test.*

ISO 13802:—<sup>2)</sup>, *Plastics — Verification of pendulum impact-testing machines — Charpy, Izod and tensile impact testing.*

## 3 Definitions

For the purposes of this part of ISO 179, the definitions given in part 1 apply, together with the following:

**3.1 impact velocity,  $v_0$ :** The velocity of the striker relative to the test specimen supports at the moment of impact.

It is expressed in metres per second (m/s).

**3.2 inertial peak:** The first peak in a force-time or force-deflection diagram. It arises from the inertia of that part of the test specimen accelerated after the first contact with the striker (see figure 1, curve b, and annex A).

**3.3 impact force,  $F$ :** The force exerted by the striking edge on the test specimen in the direction of impact.

It is expressed in newtons (N).

**3.4 deflection,  $s$ :** The displacement of the striker relative to the test specimen supports after impact, starting at first contact between striker and test specimen.

It is expressed in millimetres (mm).

**3.5 impact energy,  $W$ :** The energy expended in accelerating, deforming and breaking the test specimen during the deflection  $s$ .

It is expressed in joules (J).

It is measured by integrating the area under the force-deflection curve from the point of impact to the deflection  $s$ .

**3.6 maximum impact force,  $F_M$ :** The maximum value of the impact force in a force-time or force-deflection diagram (see figure 1).

It is expressed in newtons (N).

**3.7 deflection at maximum impact force,  $s_M$ :** The deflection at which the maximum impact force  $F_M$  occurs (see figure 1).

It is expressed in millimetres (mm).

1) To be published. (Revision of ISO 179:1993)

2) To be published.