



# SLOVENSKI STANDARD SIST EN ISO 14556:2001

01-maj-2001

---

**Jeklo - Udarni preskus žilavosti po Charpyju (V-zareza) - Instrumentirana preskusna metoda (ISO 14556:2000)**

Steel - Charpy V-notch pendulum impact test - Instrumented test method (ISO 14556:2000)

Stahl - Kerbschlagbiegeversuch nach Charpy (V-Kerb) -Instrumentiertes Prüfverfahren (ISO 14556:2000)

Aciers - Essai de flexion par choc sur éprouvette Charpy a entaille en V - Méthode d'essai instrumenté (ISO 14556:2000)

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**  
**SIST EN ISO 14556:2001**  
<https://standards.iteh.ai/catalog/standards/sist/7e09d717-204e-4078-bcd1-6fd0c6af3cc2/sist-en-iso-14556-2001>

**Ta slovenski standard je istoveten z: EN ISO 14556:2000**

---

**ICS:**

77.040.10	Mehansko preskušanje kovin	Mechanical testing of metals
77.080.20	Jekla	Steels

**SIST EN ISO 14556:2001**

**en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN ISO 14556:2001](https://standards.iteh.ai/catalog/standards/sist/7e09d717-204e-4078-bcd1-6fd0c6af3cc2/sist-en-iso-14556-2001)

<https://standards.iteh.ai/catalog/standards/sist/7e09d717-204e-4078-bcd1-6fd0c6af3cc2/sist-en-iso-14556-2001>

EUROPEAN STANDARD

EN ISO 14556

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2000

ICS 77.040.10

English version

## Steel - Charpy V-notch pendulum impact test - Instrumented test method (ISO 14556:2000)

Aciers - Essai de flexion par choc sur éprouvette Charpy à entaille en V - Méthode d'essai instrumenté (ISO 14556:2000)

Stahl - Kerbschlagbiegeversuch nach Charpy (V-Kerb) - Instrumentiertes Prüfverfahren (ISO 14556:2000)

This European Standard was approved by CEN on 30 April 2000.

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.

This European Standard exists 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

[SIST EN ISO 14556:2001](https://standards.iteh.ai/catalog/standards/sist/7e09d717-204e-4078-bcd1-6fd0c6af3cc2/sist-en-iso-14556-2001)

<https://standards.iteh.ai/catalog/standards/sist/7e09d717-204e-4078-bcd1-6fd0c6af3cc2/sist-en-iso-14556-2001>



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 ISO 14556:2000 has been prepared by Technical Committee ISO/TC 164 "Mechanical testing of metals" in collaboration with Technical Committee ECISS/TC 1 "Steel - Mechanical testing", the secretariat of which is held by AFNOR.

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 November 2000, and conflicting national standards shall be withdrawn at the latest by November 2000.

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

**NOTE FROM CEN/CS:** The foreword is susceptible to be amended on reception of the German language version. The confirmed or amended foreword, and when appropriate, the normative annex ZA for the references to international publications with their relevant European publications will be circulated with the German version.

**Endorsement notice**

The text of the International Standard ISO 14556:2000 was approved by CEN as a European Standard without any modification.

**STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN ISO 14556:2001

<https://standards.iteh.ai/catalog/standards/sist/7e09d717-204e-4078-bcd1-6fd0c6af3cc2/sist-en-iso-14556-2001>

REPUBLIC OF POLAND  
INSTITUTE FOR STANDARDIZATION  
ANALIZUJE

14556:2000  
EN ISO 14556:2000

# INTERNATIONAL STANDARD

**ISO**  
**14556**

First edition  
2000-05-01

---

---

## Steel — Charpy V-notch pendulum impact test — Instrumented test method

*Aciers — Essai de flexion par choc sur éprouvette Charpy à entaille en  
V — Méthode d'essai instrumenté*

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN ISO 14556:2001](https://standards.iteh.ai/catalog/standards/sist/7e09d717-204e-4078-bcd1-6fd0c6af3cc2/sist-en-iso-14556-2001)

<https://standards.iteh.ai/catalog/standards/sist/7e09d717-204e-4078-bcd1-6fd0c6af3cc2/sist-en-iso-14556-2001>



Reference number  
ISO 14556:2000(E)

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN ISO 14556:2001

<https://standards.iteh.ai/catalog/standards/sist/7e09d717-204e-4078-bcd1-6fd0c6af3cc2/sist-en-iso-14556-2001>

## Contents

Page

Foreword.....	iv
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions .....	1
4 Symbols and abbreviated terms .....	3
5 Principle.....	4
6 Apparatus .....	4
7 Test Piece .....	6
8 Test procedure .....	6
9 Expression of results .....	7
10 Test Report.....	10
Annex A (informative) Designs of instrumented strikers and associated force-displacement curves.....	11
Annex B (informative) Example of support block for the calibration of a 2 mm striker .....	12
Annex C (informative) Formulae for the calculation of the proportion of ductile fracture surface .....	13
Bibliography .....	14

SIST EN ISO 14556:2001

<https://standards.iteh.ai/catalog/standards/sist/7e09d717-204e-4078-bcd1-6fd0c6af3cc2/sist-en-iso-14556-2001>

**EN ISO 14556:2000****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 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 14556 was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 4, *Toughness testing*.

Annexes A to C of this International Standard are for information only.

**ITEH STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN ISO 14556:2001

<https://standards.iteh.ai/catalog/standards/sist/7e09d717-204e-4078-bcd1-6fd0c6af3cc2/sist-en-iso-14556-2001>



# Steel — Charpy V-notch pendulum impact test — Instrumented test method

## 1 Scope

This International Standard specifies a method of instrumented Charpy V-notch pendulum impact testing on steel products and the requirements concerning the measurement and recording equipment.

This International Standard can be applied to other metallic materials by agreement.

This test provides further information on the fracture behaviour of the tested product.

## 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 reference, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 148-1, *Metallic materials — Charpy pendulum impact test — Part 1: Test Method.*

ISO 148-2, *Metallic materials — Charpy pendulum impact test — Part 2: Verification of test machines.*

## 3 Terms and definitions

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

### 3.1 Characteristic values of force

NOTE Characteristic values of force are expressed in newtons.

#### 3.1.1

##### general yield force

$F_{gy}$

force at the transition point from the linearly increasing part to the curved increasing part of the force-displacement curve

NOTE It represents a first approximation of the force at which yielding has occurred across the entire uncracked-test-piece ligament (see 9.3).

#### 3.1.2

##### maximum force

$F_m$

maximum force in the course of the force-displacement curve

**EN ISO 14556:2000****3.1.3  
crack initiation force**

$F_{iu}$   
force at the beginning of the steep drop in the force-displacement curve

NOTE It characterizes the beginning of unstable crack propagation.

**3.1.4  
crack arrest force**

$F_a$   
force at the end (arrest) of unstable crack propagation

**3.2 Characteristic values of displacement**

NOTE Characteristic values of displacement are expressed in metres.

**3.2.1  
general yield displacement**

$s_{gy}$   
displacement corresponding to the general yield force,  $F_{gy}$

**3.2.2  
displacement at maximum force**

$s_m$   
displacement corresponding to the maximum force,  $F_m$

**3.2.3  
crack initiation displacement**

$s_{iu}$   
displacement at the initiation of unstable crack propagation

**3.2.4  
crack arrest displacement**

$s_a$   
displacement at the end (arrest) of unstable crack propagation

**3.2.5  
total displacement**

$s_t$   
displacement at the end of the force-displacement curve

**3.3 Characteristic values of impact energy**

NOTE Characteristic values of impact energy are expressed in joules.

**3.3.1  
energy at maximum force**

$W_m$   
partial impact energy from  $s = 0$  to  $s = s_m$

**3.3.2  
crack initiation energy**

$W_{iu}$   
partial impact energy from  $s = 0$  to  $s = s_{iu}$

ITIH STANDARD PREVIEW  
(standards.iteh.ai)

SIST EN ISO 14556:2001  
<https://standards.iteh.ai/catalog/standards/sist/7e09d717-204e-4078-bcd1-6fd0c6af3cc2/sist-en-iso-14556-2001>

**3.3.3****crack arrest energy** $W_a$ partial impact energy from  $s = 0$  to  $s = s_a$ **3.3.4****total impact energy** $W_t$ energy absorbed during the breaking of the specimen calculated from area under the force-displacement curve from  $s = 0$  to  $s = s_t$ **4 Symbols and abbreviated terms**

For the purposes of this International Standard, the symbols and abbreviations given in Table 1 are applicable (see also Figures 2 and 3).

**Table 1 — Symbols and designations**

Symbol	Designation	Unit
$f_g$	Output frequency limit	Hz
$F$	Force	N
$F_a$	Crack arrest force	N
$F_{gy}$	General yield force	N
$F_{iu}$	Crack initiation force	N
$F_m$	Maximum force	N
$g_n$	Acceleration due to gravity	$m/s^2$
$h$	Height of fall of the centre of strike of the pendulum (see ISO 148-2)	m
$KV$	Absorbed energy as defined in ISO 148-1	J
$m$	Effective mass of the pendulum corresponding to its effective weight (see ISO 148-2)	kg
$s$	Displacement	m
$s_a$	Crack arrest displacement	m
$s_{gy}$	General yield displacement	m
$s_{iu}$	Crack initiation displacement	m
$s_m$	Displacement at maximum force	m
$s_t$	Total displacement	m
$t$	Time	s
$t_o$	Time at the beginning of deformation of the test piece	s
$t_r$	Signal rise time	s
$v_o$	Initial striker impact velocity	m/s
$v_t$	Striker impact velocity at time $t$	m/s
$W_a$	Crack arrest energy	J
$W_{iu}$	Crack initiation energy	J
$W_m$	Energy at maximum force	J
$W_t$	Total impact energy	J