

This is a preview of "BS EN ISO 148-1:2016". [Click here to purchase the full version from the ANSI store.](#)

BS EN ISO 148-1:2016



BSI Standards Publication

Metallic materials — Charpy pendulum impact test

Part 1: Test method
(ISO 148-1:2016)

This is a preview of "BS EN ISO 148-1:2016". [Click here to purchase the full version from the ANSI store.](#)

This British Standard is the UK implementation of EN ISO 148-1:2016. It supersedes BS EN ISO 148-1:2010 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ISE/101/4, Toughness testing.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2016.
Published by BSI Standards Limited 2016

ISBN 978 0 580 84297 9

ICS 77.040.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2016.

Amendments/Corrigenda issued since publication

Date	Text affected
------	---------------

This is a preview of "BS EN ISO 148-1:2016". [Click here to purchase the full version from the ANSI store.](#)

EUROPÄISCHE NORM

November 2016

ICS 77.040.10

Supersedes EN ISO 148-1:2010

English Version

Metallic materials - Charpy pendulum impact test - Part 1: Test method (ISO 148-1:2016)

Matériaux métalliques - Essai de flexion par choc sur
éprouvette Charpy - Partie 1: Méthode d'essai (ISO
148-1:2016)

Metallische Werkstoffe - Kerbschlagbiegeversuch nach
Charpy - Teil 1: Prüfverfahren (ISO 148-1:2016)

This European Standard was approved by CEN on 20 August 2016.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

European foreword

This document (EN ISO 148-1:2016) has been prepared by Technical Committee ISO/TC 164 "Mechanical testing of metals" in collaboration with Technical Committee ECISS/TC 101 "Test methods for steel (other than chemical analysis)" 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 May 2017, and conflicting national standards shall be withdrawn at the latest by May 2017.

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

This document supersedes EN ISO 148-1:2010.

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

Endorsement notice

The text of ISO 148-1:2016 has been approved by CEN as EN ISO 148-1:2016 without any modification.

This is a preview of "BS EN ISO 148-1:2016". Click here to purchase the full version from the ANSI store.

Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
3.1 Definitions pertaining to energy.....	1
3.2 Definitions pertaining to test piece.....	2
4 Symbols and abbreviated terms	2
5 Principles of the test	3
6 Test pieces	3
6.1 General.....	3
6.2 Notch geometry.....	4
6.2.1 V-notch.....	4
6.2.2 U-notch.....	4
6.3 Tolerance of the test pieces.....	4
6.4 Preparation of the test pieces.....	4
6.5 Marking of the test pieces.....	4
7 Test equipment	4
7.1 General.....	4
7.2 Installation and verification.....	5
7.3 Striker.....	5
8 Test procedure	5
8.1 General.....	5
8.2 Friction measurement.....	5
8.3 Test temperature.....	6
8.4 Specimen transfer.....	7
8.5 Exceeding machine capacity.....	7
8.6 Incomplete fracture.....	7
8.7 Test piece jamming.....	8
8.8 Post-fracture inspection.....	8
9 Test report	8
9.1 Mandatory information.....	8
9.2 Optional information.....	8
Annex A (informative) Self-centring tongs	12
Annex B (informative) Lateral expansion	13
Annex C (informative) Fracture appearance	16
Annex D (informative) Absorbed energy vs. temperature curve and the transition temperature ...19	
Annex E (informative) Measurement uncertainty of an absorbed energy value, <i>K</i>	21
Bibliography	29

This is a preview of "BS EN ISO 148-1:2016". Click here to purchase the full version from the ANSI store.

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 4, *Toughness testing — Fracture (F), Pendulum (P), Tear (T)*.

This third edition cancels and replaces the second edition (ISO 148-1:2009), which has been technically revised.

ISO 148 consists of the following parts, under the general title *Metallic materials — Charpy pendulum impact test*:

- *Part 1: Test method*
- *Part 2: Verification of testing machines*
- *Part 3: Preparation and characterization of Charpy V-notch test pieces for indirect verification of pendulum impact machines*

This is a preview of "BS EN ISO 148-1:2016". Click here to purchase the full version from the ANSI store.

Metallic materials — Charpy pendulum impact test —

Part 1: Test method

1 Scope

This part of ISO 148 specifies the Charpy (V-notch and U-notch) pendulum impact test method for determining the energy absorbed in an impact test of metallic materials. This part of ISO 148 does not cover instrumented impact testing, which is specified in ISO 14556.

[Annexes B](#) and [C](#) are based on ASTM E23 and are used with the permission of ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, USA.

2 Normative references

The following referenced documents, in whole or in part, are normatively referenced in this document and 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 148-2, *Metallic materials — Charpy pendulum impact test — Part 2: Verification of testing machines*

ISO 286-1, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 1: Basis of tolerances, deviations and fits*

3 Terms and definitions

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

3.1 Definitions pertaining to energy

3.1.1

initial potential energy

potential energy

K_p

potential energy of the pendulum hammer prior to its release for the impact test, as determined by direct verification

3.1.2

absorbed energy

K

energy required to break a test piece with a pendulum impact testing machine, after correction for friction

Note 1 to entry: The letter V or U is used to indicate the notch geometry, that is: KV or KU . The number 2 or 8 is used as a subscript to indicate the radius of the striker, for example KV_2 .

3.1.3

nominal initial potential energy

nominal energy

K_N

energy assigned by the manufacturer of the pendulum impact testing machine