



**NSAI**  
Standards

Irish Standard  
I.S. EN ISO 148-3:2016

# Metallic materials - Charpy pendulum impact test - Part 3: Preparation and characterization of Charpy V-notch test pieces for indirect verification of pendulum impact machines (ISO 148-3:2016)

**I.S. EN ISO 148-3:2016**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

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Údarás um Chaighdeáin Náisiúnta na hÉireann

## National Foreword

I.S. EN ISO 148-3:2016 is the adopted Irish version of the European Document EN ISO 148-3:2016, Metallic materials - Charpy pendulum impact test - Part 3: Preparation and characterization of Charpy V-notch test pieces for indirect verification of pendulum impact machines (ISO 148-3:2016)

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**Compliance with this document does not of itself confer immunity from legal obligations.**

*In line with international standards practice the decimal point is shown as a comma (,) throughout this document.*

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EUROPEAN STANDARD

EN ISO 148-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

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Supersedes EN ISO 148-3:2008

English Version

**Metallic materials - Charpy pendulum impact test - Part 3:  
Preparation and characterization of Charpy V-notch test  
pieces for indirect verification of pendulum impact  
machines (ISO 148-3:2016)**

Matériaux métalliques - Essai de flexion par choc sur  
éprouvette Charpy - Partie 3: Préparation et  
caractérisation des éprouvettes Charpy à entaille en V  
pour la vérification indirecte des machines d'essai  
mouton-pendule (ISO 148-3:2016)

Metallische Werkstoffe - Kerbschlagbiegeversuch nach  
Charpy - Teil 3: Vorbereitung und Charakterisierung  
von Charpy-V-Referenzproben für die indirekte  
Prüfung der Prüfmaschinen (Pendelschlagwerke) (ISO  
148-3:2016)

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.



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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

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## **European foreword**

This document (EN ISO 148-3:2016) 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 148-3:2008.

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 148-3:2016 has been approved by CEN as EN ISO 148-3:2016 without any modification.

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# INTERNATIONAL STANDARD

**ISO  
148-3**

Third edition  
2016-10-15

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## **Metallic materials — Charpy pendulum impact test —**

Part 3:

### **Preparation and characterization of Charpy V-notch test pieces for indirect verification of pendulum impact machines**

*Matériaux métalliques — Essai de flexion par choc sur éprouvette  
Charpy —*

*Partie 3: Préparation et caractérisation des éprouvettes Charpy  
à entaille en V pour la vérification indirecte des machines d'essai  
mouton-pendule*



Reference number  
ISO 148-3:2016(E)

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**ISO 148-3:2016(E)**



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## ISO 148-3:2016(E)

## 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](http://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](http://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](http://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 148-3:2008), 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*

## Introduction

The suitability of a pendulum impact testing machine for acceptance testing of metallic materials has usually been based on a calibration of its scale and verification of compliance with specified dimensions, such as the shape and spacing of the anvils supporting the test piece. The scale calibration is commonly verified by measuring the mass of the pendulum and its elevation at various scale readings. This procedure for evaluation of machines had the distinct advantage of requiring only measurements of quantities that could be traced to national standards. The objective nature of these traceable measurements minimized the necessity for arbitration regarding the suitability of the machines for material acceptance tests.

However, sometimes two machines that had been evaluated by the direct-verification procedures described above, and which met all dimensional requirements, were found to give significantly different impact values when testing test pieces of the same material.

This difference was commercially important when values obtained using one machine met the material specification, while the values obtained using the other machine did not. To avoid such disagreements, some purchasers of materials added the requirement that all pendulum impact testing machines used for acceptance testing of material sold to them should be indirectly verified by testing reference test pieces supplied by them. A machine was considered acceptable only if the values obtained using the machine agreed, within specified limits, with the value furnished with the reference test pieces.

Successful experience in the use of reference test pieces led to the requirement in ISO 148-2 that indirect verification should be performed using reference test pieces in addition to direct verification. Other standards and codes also require indirect verification using reference test pieces; for example, EN 10045-2<sup>[1]</sup> (now obsolete) and ASTM E23<sup>[2]</sup> require the use of reference test pieces. The purpose of this part of ISO 148 is to specify the requirements, preparation and methods for qualifying test pieces used for the indirect verification of pendulum impact testing machines.



# Metallic materials — Charpy pendulum impact test —

## Part 3:

# Preparation and characterization of Charpy V-notch test pieces for indirect verification of pendulum impact machines

## 1 Scope

This part of ISO 148 specifies the requirements, preparation and methods for qualifying test pieces used for the indirect verification of pendulum impact testing machines in accordance with ISO 148-2.

It specifies notched test pieces with nominal dimensions identical to those specified in ISO 148-1; however, the tolerances are more stringent.

NOTE 1 The chemical composition or heat treatment, or both, are varied according to the energy level desired.

NOTE 2 Reference test pieces are qualified on reference pendulum impact testing machines which are also described in this part of ISO 148.

## 2 Normative references

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

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 testing machines*

## 3 Terms and definitions

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

### 3.1 Definitions pertaining to the machine

#### 3.1.1

##### **industrial machine**

pendulum impact testing machine used for industrial, general or most research-laboratory testing of metallic materials

Note 1 to entry: These machines are not used to establish reference values.

#### 3.1.2

##### **reference machine**

pendulum impact testing machine used to determine certified values for batches of reference test pieces

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