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**Kovinski materiali – Nihajni udarni test po Charpyju – 3. del: Priprava in popis V-zareznega preskušanca po Charpyju ter posredno preverjanje udarnih naprav (ISO/DIS 148-3:2006)**

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/DIS 148-3:2006)

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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/DIS  
148-3:2006)**

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/DIS  
148-3:2006)

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**Management Centre: rue de Stassart, 36 B-1050 Brussels**

## **Foreword**

This document (prEN ISO 148-3:2006) 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 document is currently submitted to the parallel Enquiry.

### **Endorsement notice**

The text of ISO 148-3:2006 has been approved by CEN as prEN ISO 148-3:2006 without any modifications.

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## DRAFT INTERNATIONAL STANDARD ISO/DIS 148-3

ISO/TC 164/SC 4

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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)*

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## Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 148-3 was prepared by Technical Committee ISO/TC 164, *Mechanical testing of materials*, Subcommittee SC 4, *Toughness testing*.

This second edition cancels and replaces the first edition (1998), 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 usually has 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 specimen. 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 which can 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 impact machines used for acceptance testing of material sold to them must 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 must be performed using reference test pieces in addition to direct verification. Many national standards and codes also require indirect verification using reference test pieces: for example, EN 10045-2:1992, *Metallic materials — Charpy impact test — Part 2: Verification of the testing machine (pendulum impact)*, and ASTM E 23:1994b, *Test methods for notched bar impact testing of metallic materials*, require the use of notched test pieces. The purpose of this part of ISO 148 is to specify the requirements, preparation and methods of qualifying test pieces used for the indirect verification of pendulum impact machines. The indirect verification of the reference machine is carried out with reference test pieces which have been certified by a third party.

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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

### 1 Scope

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

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

NOTE 2 The chemical composition or heat treatment or both are varied according to the energy level desired.

NOTE 3 Reference test pieces are qualified on reference pendulum impact machines which are also described in this document.

### 2 Normative references

The following referenced documents 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 148-1: *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 Definitions

For the purposes of this part of ISO 148, the following definitions apply.

#### 3.1

##### **industrial machine**

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

#### 3.2

##### **reference machine**

pendulum impact testing machines used to determine the reference energy of a reference test piece

#### 3.3 Definitions pertaining to energy

##### 3.3.1

##### **total absorbed energy**

$K_T$

the total energy required to break a test piece when tested by a pendulum impact testing machine

NOTE It is equal to the difference in the potential energy from the starting position of the pendulum to the end of the first half swing during which the test piece is broken