

## DIN EN ISO 148-1



ICS 77.040.10

Supersedes  
DIN EN ISO 148-1:2011-01

**Metallic materials –  
Charpy pendulum impact test –  
Part 1: Test method (ISO 148-1:2016);  
English version EN ISO 148-1:2016,  
English translation of DIN EN ISO 148-1:2017-05**

Metallische Werkstoffe –  
Kerbschlagbiegeversuch nach Charpy –  
Teil 1: Prüfverfahren (ISO 148-1:2016);  
Englische Fassung EN ISO 148-1:2016,  
Englische Übersetzung von DIN EN ISO 148-1:2017-05

Matériaux métalliques –  
Essai de flexion par choc sur éprouvette Charpy –  
Partie 1: Méthode d'essai (ISO 148-1:2016);  
Version anglaise EN ISO 148-1:2016,  
Traduction anglaise de DIN EN ISO 148-1:2017-05

Document comprises 39 pages

Translation by DIN-Sprachendienst.

In case of doubt, the German-language original shall be considered authoritative.

*A comma is used as the decimal marker.*

## National foreword

This document (EN ISO 148-1:2016) has been prepared by Technical Committee ISO/TC 164 “Mechanical testing of metals”, Subcommittee SC 4 “Toughness testing — Fracture (F), Pendulum (P), Tear (T)” in collaboration with Technical Committee ECISS/TC 101 “Test methods for steel (other than chemical analysis)” (Secretariat: AFNOR, France). The responsible German body involved in its preparation was *DIN-Normenausschuss Materialprüfung* (DIN Standards Committee Materials Testing), Working Committee NA 062-01-44 AA “Impact testing of metals”.

Users of this standard should take note of the following:

If it is not possible to obtain standard test pieces from the material, the specifications of the relevant product standard shall be taken into consideration.

The position of the test piece and notch should definitely be stated in the test report.

The assembly for determining lateral expansion shown in Figure B.3 is an example, i.e. other dimensions may be used.

On the basis of the long-term experience of pendulum impact testing machines in Germany, NA 062-01-44 AA recommends that not only an indirect verification be carried out, but also a complete direct verification (as opposed to the reduced direct verification specified) at intervals of one year so that a high level of trueness of the energy values can be achieved, thus ensuring the continuing reproducibility of energy results obtained for different machines using the same method under the same test conditions.

According to DIN EN ISO 148-1, the Charpy pendulum impact test can now be carried out with a 2 mm or an 8 mm striker. The striker used is to be documented in the results. It should be noted that the results of Charpy pendulum impact tests can vary significantly depending on the striker used. Numerous findings are available quantifying the differences among results of tests used with different strikers, but these findings are not applicable to all materials and are not uniform for the upper-shelf zone, transition zone, and lower-shelf zones of the absorbed energy/temperature curve. Normally, when product standards and quality criteria give guaranteed values, they only make general reference to values determined according to a specific testing standard, but they do not differentiate between values obtained with different strikers. Therefore, it is highly recommended that users of the present standard review the relevant documentation beforehand as regards this matter, and that they come to agreement with the customer or client regarding the striker to be used, so that misunderstandings and excessive margins for interpretation are avoided.

The  $\overline{KV}$  value given in Table E.1 is corrected according to Equation (E.1).

The German term *Schlagenergie* used throughout the DIN EN ISO 148 series is equivalent to the previously used German term *Schlagarbeit*.

In addition to the legal units of measurement, this standard also uses the unit “inch”. It is important to note that according to the German law on units in metrology, the use of these units is not permitted in official or business communications within Germany.

#### Conversion:

Unit not permitted	Unit permitted	Conversion
in (inch)	mm	1 inch = 25,4 mm

The DIN Standards corresponding to the International Standards referred to in this document are as follows:

ISO 148-2	DIN EN ISO 148-2
ISO 148-3	DIN EN ISO 148-3
ISO 286-1	DIN EN ISO 286-1
ISO 3785	DIN EN ISO 3785
ISO 14556	DIN EN ISO 14556

#### Amendments

This standard differs from DIN EN ISO 148-1:2011-01 as follows:

- a) the German translations of the terms “thickness” and “width” have been unified with standards from the field of fracture mechanics to read “*Dicke*” and “*Breite*”.
- b) 8.2 “Friction measurement” has been included; formerly, it had only been defined in part two of the standard series;
- c) the information has been added that other methods for heating or cooling are allowed if the other pertinent requirements of 8.3 are fulfilled;
- d) 8.4 “Specimen transfer” has been extended;
- e) 8.6 “Incomplete fracture” has been revised;
- f) in Clause 9, the requirements for the test report have been adapted;
- g) the determination regarding the transition temperature (Clause 4 and D.2) has been adapted;
- h) the standard has been editorially revised.

#### Previous editions

DIN DVM A 115 = DIN 50115: 1937-09  
 DIN 50115: 1952x-05, 1966-11, 1975-02, 1991-04  
 DIN EN 10045-1: 1991-04  
 DIN EN ISO 148-1: 2011-01

## National Annex NA (informative)

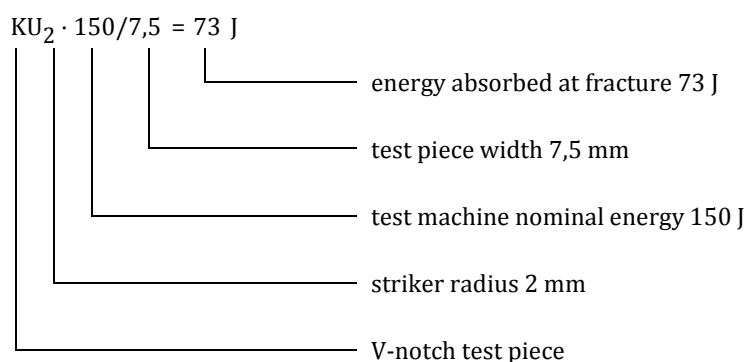
### Examples of designations

The International Standard does not specify a designation system that indicates the test piece width or nominal energy of the testing machine. Below a suitable designation system is recommended.

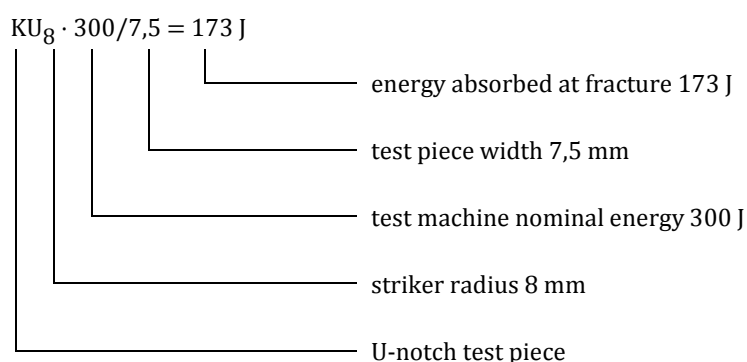
Test machines having different nominal energies may be used for testing as in this standard. If a test machine having a nominal energy other than  $(300 \pm 10)$  J is used, the symbols  $KV_2$  or  $KV_8$  and  $KU_2$  or  $KU_8$  should be supplemented by additional information indicating the nominal energy of the test machine used.

Furthermore, if reduced-section test pieces with a V-notch are used instead of the standard test piece, the relevant symbol should be supplemented by information indicating the test piece width.

#### EXAMPLE 1



#### EXAMPLE 2



**National Annex NB**  
(informative)

**Bibliography**

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

DIN EN ISO 148-3, *Metallic materials — Charpy pendulum impact test — Part 3: Preparation and characterization of Charpy V-notch test pieces for indirect verification of pendulum impact machines*

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

DIN EN ISO 3785, *Metallic materials — Designation of test specimen axes in relation to product texture*

DIN EN ISO 14556, *Metallic materials — Charpy V-notch pendulum impact test — Instrumented test method*