



SLOVENSKI STANDARD
SIST EN ISO 7438:2021

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Nadomešča:
SIST EN ISO 7438:2016

Kovinski materiali - Upogibni preskus (ISO 7438:2020)

Metallic materials - Bend test (ISO 7438:2020)

Metallische Werkstoffe - Biegeversuch (ISO 7438:2020)

Matériaux métalliques - Essai de pliage (ISO 7438:2020)

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Ta slovenski standard je istoveten z: EN ISO 7438:2020

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77.040.10 Mehansko preskušanje kovin Mechanical testing of metals

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EUROPEAN STANDARD
NORME EUROPÉENNE
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Metallic materials - Bend test (ISO 7438:2020)

Matériaux métalliques - Essai de pliage (ISO
7438:2020)

Metallische Werkstoffe - Biegeversuch (ISO
7438:2020)

This European Standard was approved by CEN on 8 August 2020.

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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

| Contents | Page |
|------------------------|------|
| European foreword..... | 3 |

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[SIST EN ISO 7438:2021](https://standards.iteh.ai/catalog/standards/sist/3197cb70-8ccc-439c-8973-ceb38f3a6f7c/sist-en-iso-7438-2021)
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European foreword

This document (EN ISO 7438:2020) has been prepared by Technical Committee ISO/TC 164 "Mechanical testing of metals" in collaboration with Technical Committee CEN/TC 459/SC 1 "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 April 2021, and conflicting national standards shall be withdrawn at the latest by April 2021.

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

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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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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INTERNATIONAL
STANDARD

ISO
7438

Fourth edition
2020-10

Metallic materials — Bend test

Matériaux métalliques — Essai de pliage

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CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
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| Contents | Page |
|---|-------------|
| Foreword | iv |
| 1 Scope | 1 |
| 2 Normative references | 1 |
| 3 Terms and definitions | 1 |
| 4 Symbols, designations and units | 1 |
| 5 Principle | 2 |
| 6 Test equipment | 2 |
| 6.1 General..... | 2 |
| 6.2 Bending device with supports and a former..... | 4 |
| 6.3 Bending device with a V-block..... | 4 |
| 6.4 Bending device with a clamp..... | 4 |
| 7 Test piece | 4 |
| 7.1 General..... | 4 |
| 7.2 Edges of rectangular test pieces..... | 4 |
| 7.3 Width of the test piece..... | 5 |
| 7.4 Thickness of the test piece..... | 5 |
| 7.5 Test pieces from forgings, castings and semi-finished products..... | 5 |
| 7.6 Agreement for test pieces of greater thickness and width..... | 5 |
| 7.7 Length of the test piece..... | 5 |
| 8 Procedure | 6 |
| 9 Interpretation of results | 7 |
| 10 Test report | 7 |
| Annex A (informative) Determination of the bend angle from the measurement of the displacement of the former | 8 |
| Annex B (normative) Bend test at plane strain conditions | 9 |
| Bibliography | 13 |

ISO 7438:2020(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).

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 of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 2, *Ductility testing*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 459, *ECISS – European Committee for Iron and Steel Standardization*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 7438:2016), which has been technically revised.

The main change compared to the previous edition is the addition of new [Annex B](#), describing bending test at plane strain condition.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Metallic materials — Bend test

1 Scope

This document specifies a method for determining the ability of metallic materials to undergo plastic deformation in bending.

This document applies to test pieces taken from metallic products, as specified in the relevant product standard. It is not applicable to certain materials or products, for example tubes in full section or welded joints, for which other standards exist.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

4 Symbols, designations and units

Symbols and designations used in the bend test are shown in [Figures 1](#) and [2](#) and specified in [Table 1](#).

Table 1 — Symbols, designations and units

| Symbol | Designation | Unit |
|----------------|---|---------|
| a | Thickness or diameter of test piece (or diameter of the inscribed circle for pieces of polygonal cross-section) | mm |
| b | Width of the test piece | mm |
| c | Distance between the plane including the horizontal axis of supports and the central axis of the rounded portion of the former before test | mm |
| D | Diameter of the former | mm |
| f | Displacement of the former | mm |
| $\bar{\theta}$ | Lode angle parameter, i.e. strain path direction | — |
| L | Length of the test piece | mm |
| l | Distance between supports | mm |
| η | Triaxiality factor | — |
| p | Distance between the vertical planes including the central axis of each support and the vertical plane including the central axis of the former | mm |
| R | Radius of the supports | mm |
| r | Internal radius of bend portion of test piece after bending | mm |
| α | Angle of bend | degrees |