



SLOVENSKI STANDARD
SIST EN ISO 10113:2014

01-september-2014

Kovinski materiali - Pločevina in trakovi - Ugotavljanje količnika plastične anizotropije (ISO 10113:2006)

Metallic materials - Sheet and strip - Determination of plastic strain ratio (ISO 10113:2006)

Metallische Werkstoffe - Blech und Band - Bestimmung der senkrechten Anisotropie (ISO 10113:2006)

Matériaux métalliques - Tôles et bandes - Détermination du coefficient d'anisotropie plastique (ISO 10113:2006)

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ICS:

77.040.10	Mehansko preskušanje kovin	Mechanical testing of metals
77.140.50	Ploščati jekleni izdelki in polizdelki	Flat steel products and semi-products

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EUROPEAN STANDARD

EN ISO 10113

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2014

ICS 77.040.10

English Version

Metallic materials - Sheet and strip - Determination of plastic strain ratio (ISO 10113:2006)

Matériaux métalliques - Tôles et bandes - Détermination du coefficient d'anisotropie plastique (ISO 10113:2006)

Metallische Werkstoffe - Blech und Band - Bestimmung der senkrechten Anisotropie (ISO 10113:2006)

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

The text of ISO 10113:2006 has been prepared by Technical Committee ISO/TC 164 "Mechanical testing of metals" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 10113:2014 by 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of an identical text or by endorsement, at the latest by December 2014, and conflicting national standards shall be withdrawn at the latest by December 2014.

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.

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.

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The text of ISO 10113:2006 has been approved by CEN as EN ISO 10113:2014 without any modification.

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INTERNATIONAL
STANDARD

ISO
10113

Second edition
2006-09-01

Corrected version
2007-08-01

**Metallic materials — Sheet and strip —
Determination of plastic strain ratio**

*Matériaux métalliques — Tôles et bandes — Détermination du
coefficient d'anisotropie plastique*

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ISO 10113:2006(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.

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 10113 was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 2, *Ductility testing*.

This second edition cancels and replaces the first edition (ISO 10113:1991), which has been technically revised.

This corrected version of ISO 10113:2006 incorporates the following corrections.

- In 3.1, the definition has been updated and previous Note 4 has been incorporated into Note 2.
- In 3.2 and 3.3, second indexes for the strain level have been added. The previous footnote ¹⁾ has been inserted as Note 2.
- In Table 1, corrections to the symbols and designations have been made for specified plastic strain, specified plastic strain range, plastic strain ratio, weighted average of $r_{x/y}$ values and the slope of the elastic part of the stress/percentage extension curve.
- In 9.2, the word “a” has been deleted in the second line between “For” and “better”.
- Symbol corrections have been made in Equation (5) and Equation (7).
- Figures 1 and 2 and the associated keys have been modified.

Metallic materials — Sheet and strip — Determination of plastic strain ratio

1 Scope

This International Standard specifies a method for determining the plastic strain ratio of flat products (sheet and strip) made of metallic materials.

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 6892:1998, *Metallic materials — Tensile testing at ambient temperature*

ISO 9513:1999, *Metallic materials — Calibration of extensometers used in uniaxial testing*

3 Terms and definitions

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

3.1

plastic strain ratio

r

ratio of the true plastic width strain to the true plastic thickness strain in a test piece that has been subjected to uniaxial tensile stress

$$r = \frac{\varepsilon_b}{\varepsilon_a} \quad (1)$$

where

ε_a is the true plastic thickness strain;

ε_b is the true plastic width strain.

NOTE 1 The above expression using a single point is only valid in the region where the plastic strain is homogeneous.

NOTE 2 Since it is easier and more precise to measure changes in length than in thickness, the following relationship derived from the law of constancy of volume is used up to the percentage plastic extension at maximum force, A_G , to calculate the plastic strain ratio, r .

For some materials exhibiting a phase change during plastic deformation, the volume of the measured section cannot always be assumed to be constant. In such cases, the procedure should be defined and agreed between the parties involved.