

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

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ICS 77.040.10

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English Version

Metallic materials - Sheet and strip - Determination of plastic strain ratio (ISO 10113:2006, Corrected version 2007-08-01)

Matériaux métalliques - Tôles et bandes - Détermination du coefficient d'anisotropie plastique (ISO 10113:2006, Version corrigée 2007-08-01)

Metallische Werkstoffe - Blech und Band - Bestimmung der senkrechten Anisotropie (ISO 10113:2006, korrigierte Fassung 2007-08-01)

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

Foreword

The text of ISO 10113:2006, Corrected version 2007-08-01 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of an identical text or by endorsement, at the latest by December 2014, and conflicting national standards shall be withdrawn at the latest by December 2014.

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Endorsement notice

The text of ISO 10113:2006, Corrected version 2007-08-01 has been approved by CEN as EN ISO 10113:2014 without any modification.

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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

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.