



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS Z 2253 : 2011

(JISF)

**Metallic materials — Sheet and strip —
Determination of tensile strain hardening
exponent**

ICS 77.040.10

Reference number : JIS Z 2253 : 2011 (E)

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Date of Establishment: 1996-10-20

Date of Revision: 2011-02-21

Date of Public Notice in Official Gazette: 2011-02-21

Investigated by: Japanese Industrial Standards Committee
Standards Board
Technical Committee on Iron and Steel

JIS Z 2253 : 2011, First English edition published in 2012-03

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

In the event of any doubts arising as to the contents,
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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry, through deliberations at the Japanese Industrial Standards Committee as the result of proposal of revision of Japanese Industrial Standard submitted by the Japan Iron and Steel Federation (JISF) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS Z 2253:1996** is replaced with this Standard.

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Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public or utility model right which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public or utility model right which have the said technical properties.

Metallic materials — Sheet and strip — Determination of tensile strain hardening exponent

Introduction

This Japanese Industrial Standard has been prepared based on the second edition of **ISO 10275** published in 2007 with some modifications of the technical contents of the corresponding part.

The portions with dotted underlines are the matters in which the contents of the corresponding International Standard have been modified. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies the method for determining the tensile strain hardening exponent n of the sheet and strip made of metallic materials.

This method is valid only for that part of the stress-strain curve in the plastic range where the curve is continuous and monotonic (see 7.4).

In the case of materials with a serrated stress-strain curve in the work hardening range (materials which show the Portevin-Le Chatelier effect, such as aluminium-magnesium alloy), the automatic determination (linear regression of logarithm true stress vs. logarithm true strain, see 7.7) should be used to give reproducible results.

NOTE 1 In this Standard, the value of plastic strain is supposed to be used for the value of strain used for the calculation of the tensile strain hardening exponent. However, when the elastic strain is under 10 % of the total strain used for the calculation, the total strain may be used in place of the plastic strain.

NOTE 2 The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 10275 : 2007 *Metallic materials — Sheet and strip — Determination of tensile strain hardening exponent* (MOD)

The symbols which denote the degree of correspondence in the contents in the corresponding International Standard and **JIS** are IDT (identical), MOD (modified) and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

Warning Persons carrying out tests based on this Standard should be familiar with normal laboratory practice. This Standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this Standard to establish appropriate safety and health practices.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 7721 *Tension/compression testing machines — Verification and calibration of the force-measuring system*

NOTE : Corresponding International Standard : ISO 7500-1 : 2004 *Metallic materials — Verification of static uniaxial testing machines — Part 1 : Tension/compression testing machines — Verification and calibration of the force-measuring system* (MOD)

JIS B 7741 *Verification of extensometers used in uniaxial testing*

NOTE : Corresponding International Standard : ISO 9513 *Metallic materials — Calibration of extensometers used in uniaxial testing* (MOD)

JIS Z 2241 *Metallic materials — Tensile testing — Method of test at room temperature*

NOTE : Corresponding International Standard : ISO 6892 *Metallic materials — Tensile testing at ambient temperature* (MOD)

JIS Z 2254 *Metallic materials — Sheet and strip — Determination of plastic strain ratio*

NOTE : Corresponding International Standard : ISO 10113 : 2006 *Metallic materials — Sheet and strip — Determination of plastic strain ratio* (MOD)

JIS Z 8401 *Guide to the rounding of numbers*

3 Symbols and designations

3.1 The symbols and corresponding designations used in determining the tensile strain hardening exponent are given in table 1.