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Metalen - Trekproef - Deel 1 : Beproevingmethode bij omgevingstemperatuur

Matériaux métalliques - Essai de traction - Partie 1 : Méthode d'essai à température ambiante

Metallic materials - Tensile testing - Part 1: Method of test at ambient temperature

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La présente norme européenne EN 10002-1 : 2001 a le statut d'une norme belge.

La présente norme européenne existe en trois versions officielles (allemand, anglais, français).



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English version

Metallic materials - Tensile testing - Part 1: Method of test at ambient temperature

Matériaux métalliques - Essai de traction - Partie 1:
Méthode d'essai à température ambiante

Metallische Werkstoffe - Zugversuch - Teil 1: Prüfverfahren
bei Raumtemperatur

This European Standard was approved by CEN on 12 May 2001.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This European Standard has been prepared by Technical Committee ECISS/TC 1 "Steel - Mechanical testing", 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of an identical text or by endorsement, at the latest by January 2002, and conflicting national standards shall be withdrawn at the latest by January 2002.

This European Standard supersedes EN 10002-1:1990.

The European Standard EN 10002-1 "Metallic materials - Tensile testing - Part 1: Method of test (at ambient temperature)" was approved by CEN on 27 November 1989.

After a first 5 years lifetime, ECISS decided to revise this standard.

The revised prEN 10002-1 was discussed during two meetings of ECISS/TC1/SC1 with the participation of 4 CEN member countries (Belgium, France, Germany, United Kingdom).

EN 10002 was composed of five parts :

Part 1 : Method of test (at ambient temperature)

Part 2 : Verification of the force measuring system of the tensile testing machines

Part 3 : Calibration of force proving instruments used for the verification of uniaxial testing machines

Part 4 : Verification of extensometers used in uniaxial testing

Part 5 : Method of testing at elevated temperature

NOTE Part 2 has been already replaced by EN ISO 7500-1. Parts 3 and 4 will be replaced by corresponding ISO standards.

The annexes B, C, D and E are normative. The annexes A, F, G, H and J are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies the method for tensile testing of metallic materials and defines the mechanical properties which can be determined at ambient temperature.

NOTE Informative annex A indicates complementary recommendations for computer controlled testing machines. It is the intention, based on further developments by manufacturers and users that annex A will become normative in the next revision of this standard.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 10002-4, *Metallic materials - Tensile testing - Part 4: Verification of extensometers used in uniaxial testing.*

EN 20286-2, *ISO system of limits and fits - Part 2 : Tables of standard tolerances grades and limits deviations for holes and shafts (ISO 286-2:1988).*

EN ISO 377, *Steel and steel products - Location of samples and test pieces for mechanical testing (ISO 377:1997).*

EN ISO 2566-1, *Steel conversion of elongation values - Part 1 : Carbon and alloy steels (ISO 2566-1:1984).*

EN ISO 2566-2, *Steel conversion of elongation values - Part 2 : Austenitic steels (ISO 2566-2:1984).*

EN ISO 7500-1, *Metallic materials - Verification of static uniaxial testing machines – Part 1: Tension/compression testing machines – Verification and calibration of force measuring (ISO 7500-1:1999).*

3 Principle

The test involves straining a test piece in tension, generally to fracture, for the purpose of determining one or more of the mechanical properties defined in clause 4.

The test is carried out at ambient temperature between 10 °C and 35 °C, unless otherwise specified. Tests carried out under controlled conditions shall be made at a temperature of 23 °C ± 5 °C.

4 Terms and definitions

For the purpose of this European Standard, the following terms and definitions apply :

4.1

gauge length (L)

length of the cylindrical or prismatic portion of the test piece on which elongation is measured. In particular, a distinction is made between :

4.1.1

original gauge length (L_0)

gauge length before application of force

4.1.2

final gauge length (L_u)

gauge length after rupture of the test piece (see 11.1)

4.2

parallel length (L_c)

parallel portion of the reduced section of the test piece