



**NSAI**  
Standards

Irish Standard  
I.S. EN ISO 6892-1:2016

# Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1:2016)

## I.S. EN ISO 6892-1:2016

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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*This document is based on:*

EN ISO 6892-1:2016

*Published:*

2016-07-27

*This document was published under the authority of the NSAI and comes into effect on:*

2016-08-14

ICS number:

77.040.10

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

## National Foreword

I.S. EN ISO 6892-1:2016 is the adopted Irish version of the European Document EN ISO 6892-1:2016, Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1:2016)

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EUROPEAN STANDARD

**EN ISO 6892-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2016

ICS 77.040.10

Supersedes EN ISO 6892-1:2009

English Version

## Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1:2016)

Matériaux métalliques - Essai de traction - Partie 1:  
Méthode d'essai à température ambiante (ISO 6892-  
1:2016)

Metallische Werkstoffe - Zugversuch - Teil 1:  
Prüfverfahren bei Raumtemperatur (ISO 6892-1:2016)

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

**EN ISO 6892-1:2016 (E)**

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## **European Foreword**

This document (EN ISO 6892-1:2016) has been prepared by Technical Committee ISO/TC 164 “Mechanical testing of metals” in collaboration with 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of an identical text or by endorsement, at the latest by January 2017, and conflicting national standards shall be withdrawn at the latest by January 2017.

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.

This document supersedes EN ISO 6892-1:2009.

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.

### **Endorsement notice**

The text of ISO 6892-1:2016 has been approved by CEN as EN ISO 6892-1:2016 without any modification.

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**INTERNATIONAL  
STANDARD**

**ISO  
6892-1**

Second edition  
2016-07-01

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**Metallic materials — Tensile testing —  
Part 1:  
Method of test at room temperature**

*Matériaux métalliques — Essai de traction —*

*Partie 1: Méthode d'essai à température ambiante*



Reference number  
ISO 6892-1:2016(E)

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**ISO 6892-1:2016(E)**



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ISO copyright office  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org

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## 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](http://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](http://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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 1, *Uniaxial testing*.

This second edition cancels and replaces the first edition (ISO 6892-1:2009), which has been technically revised with the following changes:

- a) renumbering of [Clause 10](#);
- b) additional information about the use of Method A and B;
- c) new denomination for:
  - 1) Method A closed loop → A1
  - 2) Method A open loop → A2;
- e) addition of [A.5](#);
- f) addition in Annex F for determination of the stiffness of the testing equipment;
- g) new normative Annex G: Determination of the modulus of elasticity of metallic materials using a uniaxial tensile test;
- h) the old Annex G is renamed to Annex H, Annex H to Annex I, etc.

ISO 6892 consists of the following parts, under the general title *Metallic materials — Tensile testing*:

- *Part 1: Method of test at room temperature*
- *Part 2: Method of test at elevated temperature*
- *Part 3: Method of test at low temperature*
- *Part 4: Method of test in liquid helium*

## **ISO 6892-1:2016(E)**

### **Introduction**

During discussions concerning the speed of testing in the preparation of ISO 6892, it was decided to recommend the use of strain rate control in future revisions.

In this part of ISO 6892, there are two methods of testing speeds available. The first, method A, is based on strain rates (including crosshead separation rate) and the second, method B, is based on stress rates. Method A is intended to minimize the variation of the test rates during the moment when strain rate sensitive parameters are determined and to minimize the measurement uncertainty of the test results. Therefore, and out of the fact that often the strain rate sensitivity of the materials is not known, the use of method A is strongly recommended.

# Metallic materials — Tensile testing —

## Part 1: Method of test at room temperature

### 1 Scope

This part of ISO 6892 specifies the method for tensile testing of metallic materials and defines the mechanical properties which can be determined at room temperature.

NOTE Annex A contains further recommendations for computer controlled testing machines.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7500-1, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Verification and calibration of the force-measuring system*

ISO 9513, *Metallic materials — Calibration of extensometer systems used in uniaxial testing*

### 3 Terms and definitions

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

NOTE In what follows, the designations “force” and “stress” or “extension”, “percentage extension”, and “strain”, respectively, are used on various occasions (as figure axis labels or in explanations for the determination of different properties). However, for a general description or point on a curve, the designations “force” and “stress” or “extension”, “percentage extension”, and “strain”, respectively, can be interchanged.

#### 3.1 gauge length

$L$

length of the parallel portion of the test piece on which elongation is measured at any moment during the test

##### 3.1.1 original gauge length

$L_0$

length between *gauge length* (3.1) marks on the test piece measured at room temperature before the test

##### 3.1.2 final gauge length after fracture

$L_u$

length between *gauge length* (3.1) marks on the test piece measured after rupture, at room temperature, the two pieces having been carefully fitted back together so that their axes lie in a straight line

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