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# Steel forgings — Testing frequency, sampling conditions and test methods for mechanical tests

*Pièces forgées en acier — Fréquence des essais, conditions d'echantillonnage et méthodes d'essai pour essais mécaniques*

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# Contents

Page

**Foreword** ... **iv**

**1 Scope** ... **1**

**2 Normative references** ... **1**

**3 Terms and definitions** ... **1**

**4 General** ... **2**

**5 Testing frequency** ... **3**

**6 Uniformity checks on test units by hardness tests** ... **6**

**7 Sampling conditions** ... **7**

**8 Designation and determination of the direction of the test piece axis** ... **16**
8.1 General ... 16
8.2 Designation for the main direction of strain during forming ... 16
8.3 Determination of X, Y and Z ... 17

**9 Test methods** ... **20**
9.1 Tensile test at room temperature ... 20
9.2 Impact tests ... 20
9.3 Verification of the elevated temperature proof strength ... 21

**Annex A** (informative) **Presentation of the specifications for the testing frequency and the sampling conditions in tabulated form** ... **22**

**Bibliography** ... **24**

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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).

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).

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 voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 10 *Steel for pressure purposes*.

This first edition of ISO 15461 is based on Technical Report ISO/TR 15461:1997, which has been withdrawn. The main changes are as follows:

— Figures 3 a) and b) have been revised;

— Table 3 has been revised;

— Table 5 has been extended to steels for pressure purposes;

— the text of the document has been generally revised.


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# Steel forgings — Testing frequency, sampling conditions and test methods for mechanical tests

## 1 Scope

This document gives guidelines for the simplification and harmonization of the specifications for mechanical testing of open die and closed die forgings in International Standards and other technical delivery conditions for forgings of steel.

This document

a) offers various options for

   1) the frequency of testing, and

   2) sampling conditions,

b) introduces a designation system for the options, mentioned under (a), and

c) specifies the test methods for

   1) room temperature tensile tests,

   2) elevated temperature tensile tests,

   3) impact tests, and

   4) uniformity checks by hardness tests.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 148-1, *Metallic materials — Charpy pendulum impact test — Part 1: Test method*

ISO 377:2017, *Steel and steel products — Location and preparation of samples and test pieces for mechanical testing*

ISO 404, *Steel and steel products — General technical delivery requirements*

ISO 3785, *Metallic materials — Designation of test specimen axes in relation to product texture*

ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

ISO 6892-2, *Metallic materials – Tensile testing at elevated temperature — Part 2: Method of test at elevated temperature*

## 3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

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— ISO Online browsing platform: available at https://www.iso.org/obp

**3.1**
**specific inspection and testing**
inspection and testing carried out before delivery, according to the technical requirements of the order, on the products to be supplied or on test units of which the product supplied is part, in order to verify whether these products comply with the requirements of the order

[SOURCE: ISO 404:2013, 3.4, modified — "and testing" has been added and the wording has been altered.]

**3.2**
**test unit**
number of pieces or the tonnage of products to be accepted or rejected together, on the basis of the tests to be carried out on sample products in accordance with the requirements of the product standard or order

[SOURCE: ISO 404:2013, 3.6, modified — the wording has been altered slightly and the notes to entry have been deleted.]

**3.3**
**sample product**
item (e.g. bar, sheet, coil) selected for inspection or testing

[SOURCE: ISO 377:2017, 3.2]

**3.4**
**sample**
sufficient quantity of material taken from the sample product for the purpose of producing one or more test pieces

Note 1 to entry: In certain cases, the sample can be the sample product.

[SOURCE: ISO 377:2017, 3.3, modified — a note to entry has been deleted.]

**3.5**
**test piece**
part of a sample, with specified dimensions, machined or unmachined, brought to a required condition for submission to a given test

[SOURCE: ISO 377:2017, 3.5, modified — the wording has been altered slightly and a note to entry has been deleted.]

Note 1 to entry: In certain cases the test piece can be the sample.

**3.6**
**ruling section**
section for which the mechanical properties are specified

## 4 General

Unless otherwise specified in this document, the general conditions given in ISO 377 for the marking and preparation of samples and test pieces apply.

Where the conditions specified in this document differ from the conditions specified in the product standard or order, then the conditions of the product standard or order apply.


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