

**Sintered metal materials, excluding
hardmetals - Fatigue test pieces**

Sintered metal materials, excluding hardmetals -
Fatigue test pieces

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 3928:2006 sisaldab Euroopa standardi EN ISO 3928:2006 ingliskeelset teksti. Käesolev dokument on jõustatud 29.05.2006 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 3928:2006 consists of the English text of the European standard EN ISO 3928:2006. This document is endorsed on 29.05.2006 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.
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Käsitlusala: This International Standard specifies:- the die cavity dimensions used for making fatigue test pieces by pressing and sintering, together with certain dimensions of the test piece obtained from such a die; - the dimensions of the test pieces machined from sintered and powder forged materials.	Scope: This International Standard specifies:- the die cavity dimensions used for making fatigue test pieces by pressing and sintering, together with certain dimensions of the test piece obtained from such a die; - the dimensions of the test pieces machined from sintered and powder forged materials.
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ICS 77.040.10, 77.160

Võtmesõnad:

ICS 77.160; 77.040.10

English Version

Sintered metal materials, excluding hardmetals - Fatigue test pieces (ISO 3928:1999)

Matériaux métalliques frittés, à l'exclusion des métaux-durs
- Echantillons pour essais de fatigue (ISO 3928:1999)

Sintermetallwerkstoffe, ausgenommen Hartmetalle -
Probekörper für die Ermüdungsprüfung (ISO 3928:1999)

This European Standard was approved by CEN on 9 March 2006.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

The text of ISO 3928:1999 has been prepared by Technical Committee ISO/TC 119 "Powder metallurgy" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 3928:2006 by Technical Committee CEN/SS M11 "Powder metallurgy", the secretariat of which is held by CMC.

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 October 2006, and conflicting national standards shall be withdrawn at the latest by October 2006.

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

Endorsement notice

The text of ISO 3928:1999 has been approved by CEN as EN ISO 3928:2006 without any modifications.

**Sintered metal materials, excluding
hardmetals — Fatigue test pieces**

*Matériaux métalliques frittés, à l'exclusion des métaux-durs — Éprouvettes
pour essais de fatigue*



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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 3928 was prepared by Technical Committee ISO/TC 119, *Powder metallurgy*, Subcommittee SC 3, *Sampling and testing methods for sintered metal materials (excluding hardmetals)*.

This second edition cancels and replaces the first edition (ISO 3928:1977) which has been technically revised.

Annex A of this International Standard is for information only.

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Sintered metal materials, excluding hardmetals — Fatigue test pieces

1 Scope

This International Standard specifies:

- the die cavity dimensions used for making fatigue test pieces by pressing and sintering, together with certain dimensions of the test piece obtained from such a die;
- the dimensions of the test pieces machined from sintered and powder forged materials.

This International Standard is applicable to all sintered metals and alloys, excluding hardmetals.

2 Pressed and sintered test pieces for fatigue test by reverse bend and axial testing

2.1 General

The pressed and sintered piece may also be subjected to further treatment, such as sizing, polishing or heat treatment. If such treatments are applied, they shall be stated in the test report. In a metallographically examined cross section of a test piece, in the gauge region, the piece shall show no micro-lamination greater than 0,25 mm in length. Corners shall be broken in the gauge area.

2.2 Test piece specification: unnotched

Figure 1 a) shows a drawing of the unnotched test piece. The flatness and parallelism of 0,1 mm are mandatory. The other dimensions are advisory. Burrs shall be avoided.

2.3 Test piece specification: notched

Figure 2 a) shows a drawing of the notched test piece. The flatness and parallelism of 0,1 mm are mandatory. The other dimensions are advisory. Burrs shall be avoided. The tooling radius 5,5 mm of the die is subject to wear, then the corresponding radius dimension of the test piece shall be reported.

3 Die specifications

3.1 General

The die should preferably be of hardmetal and its surface finish shall be such as to allow compression of test pieces under normal conditions. The die may include a small exit taper to facilitate ejection and avoid cracks or microlaminations in the test pieces. Die cavity may be tapered 0,01 per side to aid ejection. Die bore may be enlarged by 0,5 % for tooling to be used for repressing.

The die should be well supported with shrink rings (of internal diameter $120\text{ mm}^{+0,01}_0\text{ mm}$), so as to minimize lateral expansion during compacting. Such support decreases the possibility of cracking of the specimen at ejection. To reduce the incidence of cracks in the specimen, it is recommended to use top punch hold down during ejection.