



SLOVENSKI STANDARD

SIST EN 10031:2003

01-november-2003

Polizdelki za kovanje – Odstopki mer in mase ter tolerance oblik

Semi-finished products for forging - Tolerances on dimensions shape and mass

Halbzeug zum Schmieden - Grenzabmaße, Formtoleranzen und Grenzabweichungen der Masse

Demi-produits pour forgeage - Tolérances sur des dimensions, la forme et la masse

STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: EN 10031:2003

<https://standards.iteh.ai/catalog/standards/sist/a7d831e1-6bcc-4aa4-b5fc-8cc5169f885c/sist-en-10031-2003>

ICS:

77.140.85	Železni in jekleni kovani izdelki	Iron and steel forgings
-----------	-----------------------------------	-------------------------

SIST EN 10031:2003

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 10031:2003

<https://standards.iteh.ai/catalog/standards/sist/a7d831e1-6bcc-4aa4-b5fc-8cc5169f885c/sist-en-10031-2003>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 10031

March 2003

ICS 77.140.85

English version

**Semi-finished products for forging - Tolerances on dimensions
shape and mass**

Demi-produits pour forgeage - Tolérances sur des
dimensions, la forme et la masse

Halbzeug zum Schmieden - Grenzabmaße,
Formtoleranzen und Grenzabweichungen der Masse

This European Standard was approved by CEN on 28 November 2002.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

SIST EN 10031:2003

<https://standards.iteh.ai/catalog/standards/sist/a7d831e1-6bcc-4aa4-b5fc-8cc5169f885c/sist-en-10031-2003>



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

	page
Foreword	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Appearance and soundness	4
4.1 General	4
4.2 Removal of surface defects	4
5 Tolerances on dimensions	5
5.1 Tolerances on sides of the cross-section	5
5.1.1 Rectangular semi-finished products	5
5.1.2 Square or circular semi-finished products	5
5.2 Diagonal tolerances	5
5.3 Length tolerances	5
5.3.1 Delivery in standard lengths	5
5.3.2 Delivery in fixed lengths	5
6 Shape tolerances	6
6.1 Straightness	6
6.2 Twist	6
7 Tolerances on mass	6
7.1 Tolerances on mass per unit length	6
7.1.1 Case of billets	6
7.1.2 Case of blooms and slabs	6
7.2 Tolerance on batch quantities	6
Bibliography	8

Foreword

This document (EN 10031:2003) has been prepared by Technical Committee ECISS/TC 28 "Steel forgings", the secretariat of which is held by BSI.

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 September 2003, and conflicting national standards shall be withdrawn at the latest by September 2003.

It is based on and replaces Euronorm 31:1969.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 10031:2003](https://standards.iteh.ai/catalog/standards/sist/a7d831e1-6bcc-4aa4-b5fc-8cc5169f885c/sist-en-10031-2003)

<https://standards.iteh.ai/catalog/standards/sist/a7d831e1-6bcc-4aa4-b5fc-8cc5169f885c/sist-en-10031-2003>

EN 10031:2003 (E)

1 Scope

This European Standard specifies the tolerances on dimensions, shape and mass for semi-finished products intended to undergo hot forming by forging, i.e. blooms, slabs and billets made of:

- general purpose steels, in accordance with EN 10250-1 to 4;
- steels for pressure purposes, in accordance with EN 10222-1 to 5.

It does not cover semi-finished products intended for drop forging which are covered by EN 10243-1.

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 applies (including amendments).

EN 10079:1992, *Definition of steel products*.

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 10079:1992 apply.

<https://standards.iteh.ai/catalog/standards/sist/a7d831e1-6bcc-4aa4-b5fc-8cc5169f885c/sist-en-10031-2003>

4 Appearance and soundness

4.1 General

The semi-finished products shall be sound and free from defects such as segregation, cracks, laminations and other imperfections that preclude their intended use.

4.2 Removal of surface defects

Surface defects shall be removed by dressing in order to conform with 4.1. Dressing may be carried out by chipping and/or grinding or by any suitable method providing:

- the resulting depression for a single face shall not fall below a value equal to a maximum of 2% of the nominal size or 3 mm, whichever is the greater;
- in the case of removal of defects from various faces of the same cross section, the residual transverse dimensions shall remain within the specified tolerances;
- in order to ensure adequate blending, the width of the removed area shall be ≥ 6 times its depth and the resulting depression shall not undercut the surface.

5 Tolerances on dimensions

5.1 Tolerances on sides of the cross-section

5.1.1 Rectangular semi-finished products

The tolerances on the specified thickness t and the width b shall be:

- a) specified thickness t
 - $\pm 4\%$ or 3 mm, whichever is the greater;
- b) specified width b
 - ≤ 150 mm: $\pm 3\%$ or ± 3 mm, whichever is the greater;
 - > 150 mm: $\pm 4,5$ mm or $\pm 2\%$ whichever is the greater.

5.1.2 Square or circular semi-finished products

The tolerance on the specified side length a or diameter d shall be:

- ≤ 150 mm: $\pm 3\%$ or ± 3 mm, whichever is the greater ;
- > 150 mm: $\pm 4,5$ mm or $\pm 2\%$ whichever is the greater.

5.2 Diagonal tolerances

The difference between the two diagonals of the same section shall be $\leq 6\%$ of the larger of the two diagonals for semi-finished products of nominal width ≤ 200 mm. For wider semi-finished products, the tolerance shall be the subject of agreement at the time of enquiry and order.

5.3 Length tolerances

5.3.1 Delivery in standard lengths

If standard lengths are ordered, a tolerance of ± 1000 mm shall apply. Semi-finished products shall have a length ≥ 1000 mm unless agreed at the time of enquiry and order.

In addition, for semi-finished products of nominal cross-sectional area $\leq 22\,500$ mm², only 10 % (relative to the mass of the order) of semi-finished products shorter than the values indicated is permitted per delivery.

For semi-finished products of nominal cross-sectional area $> 22\,500$ mm², the percentage of short semi-finished products shall be the subject of agreement at the time of enquiry and order.

5.3.2 Delivery in fixed lengths

If fixed lengths are ordered, the following tolerance classes apply:

- a) Normal tolerance, ± 250 mm;
- b) Tightened tolerance, ± 100 mm;
- c) Reduced tolerance, ± 50 mm.

The tolerance class shall be specified at the time of order. If there is no tolerance indication, the normal tolerance (± 250 mm) applies.

EN 10031:2003 (E)

Special tolerances lower than those specified in a), b) or c) may be agreed at the time of enquiry and order. If agreed at the time of enquiry and order, the tolerance may be totally positive or totally negative.

In addition, if specified at the time of enquiry and order, 20 % of the semi-finished products shall be permitted in sub-multiples of the service length; the tolerances applicable to these short bars are one class tighter than those specified for the ordered length.

6 Shape tolerances**6.1 Straightness**

Semi-finished products shall be delivered hot formed without any special straightening. The permissible deviations shall be:

- in the case of bending, 10 mm per metre uniformly distributed (see Figure 1);
- in the case of local deformations or waviness, 20 mm per metre (see Figure 2).

If specified at the time of enquiry and order, special straightening shall be carried out; the permissible deviations shall be less than 4 mm per m.

Tolerances on deformation of the ends may be agreed at the time of enquiry and order.

6.2 Twist

Square semi-finished products shall not have a twist angle greater than 4° per m, with a maximum of 10° for lengths ≤ 6 m and 15° for greater lengths.

Rectangular semi-finished products shall not have a twist likely to adversely affect their application. If specified at the time of enquiry and order, the tolerances specified for square semi-finished products also apply for rectangular semi-finished products.

7 Tolerances on mass**7.1 Tolerances on mass per unit length****7.1.1 Case of billets**

The mass shall be between 88% and 100% inclusive of the theoretical mass per unit length corresponding to the nominal cross-sectional area (square or rectangle of the corresponding dimensions).

7.1.2 Case of blooms and slabs

The mass shall be between 94% and 100% inclusive of the theoretical mass per unit length corresponding to the nominal cross-sectional area (square or rectangle of the corresponding dimensions).

7.2 Tolerance on batch quantities

Tolerances between the theoretical mass and the delivered mass are:

- for a batch ≤ 5 tons ± 10%;
- for a batch > 5 tons ± 7%.

7.3 Wider tolerances than those specified in **7.1** and **7.2** may be agreed at the time of enquiry and order.



Figure 1 — Uniformly distributed deformation



Key

- 1 Deviation from straightness

Figure 2 — Local deformation