

---

**Prosto kovani jekleni izkovki za splošno tehnično uporabo - 1. del: Splošne zahteve**

Open die steel forgings for general engineering purposes - Part 1: General requirements

Freiformschmiedestücke aus Stahl für allgemeine Verwendung - Teil 1: Allgemeine Anforderungen

Pièces forgées en acier pour usage général - Partie 1: Exigences générales

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

**Ta slovenski standard je istoveten z: prEN 10250-1**

oSIST prEN 10250-1:2021  
<https://standards.iteh.ai/catalog/standards/sist/9573dadf-d4f4-41a6-b160-0d8520dd2064/osist-pren-10250-1-2021>

**ICS:**

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

**oSIST prEN 10250-1:2021****en,fr,de**

## **iTeh STANDARD PREVIEW (standards.iteh.ai)**

[oSIST prEN 10250-1:2021](https://standards.iteh.ai/catalog/standards/sist/9573dadf-d4f4-41a6-b160-0d8520dd2064/osist-pren-10250-1-2021)

<https://standards.iteh.ai/catalog/standards/sist/9573dadf-d4f4-41a6-b160-0d8520dd2064/osist-pren-10250-1-2021>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 10250-1**

November 2020

ICS 77.140.85

Will supersede EN 10250-1:1999

English Version

**Open die steel forgings for general engineering purposes -  
Part 1: General requirements**

Pièces forgées en acier pour usage général - Partie 1:  
Exigences générales

Freiformschmiedestücke aus Stahl für allgemeine  
Verwendung - Teil 1: Allgemeine Anforderungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 459/SC 11.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

<https://standards.iteh.ai/catalog/standards/sist/9573dadf-d4f4-41a6-b160-0d8520dd32064/osist-pr-en-10250-1-2021>

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

**Warning** : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

# Contents

Page

European foreword.....	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions .....	6
4 Classification and designation.....	6
4.1 Classification.....	6
4.2 Designation.....	6
5 Information to be supplied by the purchaser .....	7
5.1 Mandatory information .....	7
5.2 Options.....	7
6 Manufacture of the steel .....	7
6.1 Steelmaking process .....	7
6.2 Deoxidation .....	7
7 Manufacture of the product.....	7
7.1 Hot working.....	7
7.2 Forging reduction.....	8
7.3 Heat treatment.....	8
7.4 Weldability .....	8
8 Surface condition and internal soundness.....	8
8.1 General.....	8
8.2 Removal or surface defects.....	8
8.3 Dimensions, shape and tolerances and nominal mass .....	8
8.4 Compatibility with non-destructive testing (NDT) .....	8
9 Chemical composition .....	9
9.1 Cast analysis.....	9
9.2 Product analysis (optional requirement) .....	9
10 Mechanical properties.....	9
11 Sampling and preparation of test pieces .....	9
11.1 General.....	9
11.2 Methods used for the provision of samples.....	9
11.3 Preparation of test pieces .....	10
12 Mechanical test methods.....	11
12.1 General.....	11
12.2 Hardness tests .....	11
12.3 Tensile tests .....	11
12.4 Impact tests .....	11
12.5 Intergranular corrosion test.....	11
13 Retests and re-heat treatment .....	11
13.1 Retests.....	11
13.2 Re-heat treatment.....	11
14 Inspection .....	11

<b>15</b>	<b>Marking .....</b>	<b>12</b>
<b>Annex A (normative) Options.....</b>		<b>13</b>
<b>Annex B (informative) Ruling section and equivalent thickness .....</b>		<b>15</b>

## **iTeh STANDARD PREVIEW** **(standards.iteh.ai)**

[oSIST prEN 10250-1:2021](https://standards.iteh.ai/catalog/standards/sist/9573dadf-d4f4-41a6-b160-0d8520dd2064/osist-pren-10250-1-2021)

<https://standards.iteh.ai/catalog/standards/sist/9573dadf-d4f4-41a6-b160-0d8520dd2064/osist-pren-10250-1-2021>

**prEN 10250-1:2020 (E)****European foreword**

This document (prEN 10250-1:2020) has been prepared by Technical Committee CEN/TC 459 “Steel castings and forgings”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 10250-1:1999.

In comparison with the previous edition, the following technical modifications have been made:

- updating of normative references;
- alignment of the text with reference standards.

EN 10250, *Open die steel forgings for general engineering purposes*, consists of the following parts:

- *Part 1: General requirements;*
- *Part 2: Non-alloy quality and special steels;*
- *Part 3: Alloy special steels;*
- *Part 4: Stainless steels.*

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

<https://standards.iteh.ai/catalog/standards/sist/9573dadf-d4f4-41a6-b160-0d8520dd2064/osist-pren-10250-1-2021>

## 1 Scope

This document specifies the general technical delivery conditions for open die forgings, forged bars, and products pre-forged and finished in ring rolling mills, for general engineering purposes.

General information on technical delivery conditions is given in EN 10021.

## 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.

CEN/TR 10261, *Iron and steel - European standards for the determination of chemical composition*

EN 10020, *Definition and classification of grades of steel*

EN 10021, *General technical delivery conditions for steel products*

EN 10027-1, *Designation systems for steels - Part 1: Steel names*

EN 10027-2, *Designation systems for steels - Part 2: Numerical system*

EN 10079, *Definition of steel products*

EN 10168, *Steel products - Inspection documents - List of information and description*

EN 10204, *Metallic products - Types of inspection documents*

EN 10228-1, *Non-destructive testing of steel forgings - Part 1: Magnetic particle inspection*

EN 10228-2, *Non-destructive testing of steel forgings - Part 2: Penetrant testing*

EN 10228-3, *Non-destructive testing of steel forgings - Part 3: Ultrasonic testing of ferritic or martensitic steel forgings*

EN 10228-4, *Non-destructive testing of steel forgings - Part 4: Ultrasonic testing of austenitic and austenitic-ferritic stainless steel forgings*

prEN 10250-2, *Open die steel forgings for general engineering purposes - Part 2: Non-alloy quality and special steels*

prEN 10250-3, *Open die steel forgings for general engineering purposes - Part 3: Alloy special steels*

EN 10250-4, *Open die steel forgings for general engineering purposes - Part 4: Stainless steels*

EN ISO 148-1, *Metallic materials - Charpy pendulum impact test - Part 1: Test method (ISO 148-1)*

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

EN ISO 3651-2, *Determination of resistance to intergranular corrosion of stainless steels - Part 2: Ferritic, austenitic and ferritic-austenitic (duplex) stainless steels - Corrosion test in media containing sulfuric acid (ISO 3651-2)*

**prEN 10250-1:2020 (E)**

EN ISO 4885, *Ferrous materials - Heat treatments - Vocabulary (ISO 4885)*

EN ISO 6506-1, *Metallic materials - Brinell hardness test - Part 1: Test method (ISO 6506-1)*

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

EN ISO 9606-1, *Qualification testing of welders - Fusion welding - Part 1: Steels (ISO 9606-1)*

EN ISO 15607, *Specification and qualification of welding procedures for metallic materials - General rules (ISO 15607)*

EN ISO 15609-1, *Specification and qualification of welding procedures for metallic materials - Welding procedure specification - Part 1: Arc welding (ISO 15609-1)*

EN ISO 15614-1, *Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1)*

### 3 Terms and definitions

For the purposes of this document the terms and definitions given in EN 10020, EN 10021, EN 10079, EN ISO 377, EN ISO 4885, and the following apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>  
<https://standards.iteh.ai/catalog/standards/sist/9573dadf-d4f4-41a6-b160-0d8520dd2064/osist-pren-10250-1-2021>

#### 3.1 batch

forgings of similar dimensions from the same cast, made by the same forging procedure and from the same heat treatment charge

Note 1 to entry: "Similar dimensions" are to be taken as forgings having dimensions within  $\pm 10\%$  of the equivalent thickness.

### 4 Classification and designation

#### 4.1 Classification

The steels covered by this document are classified as follows:

- Non-alloy quality and special steels, see prEN 10250-2;
- Alloy special steels, see prEN 10250-3;
- Stainless steels, see EN 10250-4.

#### 4.2 Designation

The steels in prEN 10250-2, prEN 10250-3 and EN 10250-4 shall be designated in accordance with the requirements of EN 10027-1 and EN 10027-2.



## 5 Information to be supplied by the purchaser

### 5.1 Mandatory information

The purchaser shall select the steel type, the shape and dimensions of the forgings taking the intended use into account.

The purchaser shall provide in the order all the information necessary for describing the forging and its characteristics and details concerning delivery including the following:

- a) the quantity of forgings required;
- b) the forging dimensions, or the drawing number(s) containing the dimensions, tolerances and surface finish, with which the forging shall conform;
- c) the steel designation (name or number) of the material of which the forgings are made (see 4.2);
- d) whether the purchaser has any specific requirements on the hot working process or need to be informed of the forging procedure (see A.2 and A.3);
- e) whether production and testing of the forgings is to be witnessed by the purchaser's representative and if so, the particular stages in production and testing at which the purchaser's representative may require to be present (see Clause 14);
- f) any required options (see 5.2 and Annex A);
- g) if required, the type of inspection document in accordance with EN 10204.

### 5.2 Options

[oSIST prEN 10250-1:2021](https://standards.iteh.ai/catalog/standards/sist/9573dadf-d4f4-41a6-b160-1d857d10e64c/en-10250-1-2021)

<https://standards.iteh.ai/catalog/standards/sist/9573dadf-d4f4-41a6-b160-1d857d10e64c/en-10250-1-2021>

A number of options are available, and these are detailed in Annex A. Where any of the options given are specified at the time of the order, the forgings shall conform to the requirements of any such option, in addition to the mandatory requirements of this document.

If the purchaser does not specify any options at the time of enquiry and order, the manufacturer shall supply in accordance with the basic specification.

## 6 Manufacture of the steel

### 6.1 Steelmaking process

The steel shall be produced by an electric process or one of the basic oxygen processes (see A.1).

### 6.2 Deoxidation

The steel shall be fully killed.

## 7 Manufacture of the product

### 7.1 Hot working

The choice of hot working process shall be at the discretion of the manufacturer (see A.2).

**prEN 10250-1:2020 (E)****7.2 Forging reduction**

The forging shall receive a sufficient forging reduction to completely consolidate the forging and remove the cast structure (see A.3).

**7.3 Heat treatment**

The forgings shall be delivered in a heat treated condition as specified in the relevant Part of EN 10250, unless otherwise agreed at the time of enquiry and order.

**7.4 Weldability**

The steel in this document are generally regarded as being weldable. Welding shall be carried out in accordance with EN ISO 9606-1 and EN ISO 15607.

**8 Surface condition and internal soundness****8.1 General**

The forgings shall be sound and free from such segregation, cracks, laminations or defects that preclude their intended use (see A.4, A.5 and A.6).

**8.2 Removal or surface defects****8.2.1 Conformity to 8.1**

Before forgings are dispatched or presented for acceptance, surface defects shall be removed in order to conform to 8.1.

**8.2.2 Chipping and/or grinding**

Surface defects shall be removed by chipping and/or grinding providing the residual thickness meets the minimum tolerance and that the resulting depression does not undercut the rest of the surface. If the thickness is to be reduced to below the minimum tolerance, the repair shall only be carried out following agreement with the purchaser.

**8.2.3 Chipping and/or grinding and resurfacing by welding**

If resurfacing by welding is agreed by the purchaser, prior to the repair being carried out, surface defects exceeding the acceptance criteria shall be removed by chipping and/or grinding followed by resurfacing by welding and levelling the weld. Any welding operations shall be in accordance with EN ISO 9606-1, EN ISO 15607, EN ISO 15609-1 and EN ISO 15614-1.

**8.3 Dimensions, shape and tolerances and nominal mass**

The dimensions and shape of the product shall conform to the tolerances stated in the order.

Any calculation of the nominal mass of the product shall be based on the following density values:

- non-alloy and alloyed steels in prEN 10250-2 and prEN 10250-3 7,85 kg/dm<sup>3</sup>
- austenitic stainless CrNi steels in EN 10250-4 7,9 kg/dm<sup>3</sup>
- austenitic stainless CrNiMo steels in EN 10250-4 8,0 kg/dm<sup>3</sup>

**8.4 Compatibility with non-destructive testing (NDT)**

The agreed requirements for surface finish shall be compatible with the requirements of the applied NDT standards, see EN 10228-1 up to EN 10228-4.