# SLOVENSKI STANDARD
# oSIST prEN 10205:2023

**01-september-2023**

**Hladno valjani jekleni izdelki za embalažo - Črna pločevina**

Cold reduced tinmill products - Blackplate

Kaltgewalzte Verpackungsblecherzeugnisse - Feinstblech

Aciers pour emballage laminés à froid - Fer noir



**Ta slovenski standard je istoveten z:** **prEN 10205**



**ICS:**

| | | |
|---|---|---|
| 55.040 | Materiali in pripomočki za pakiranje | Packaging materials and accessories |
| 77.140.50 | Ploščati jekleni izdelki in polizdelki | Flat steel products and semi-products |

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EUROPEAN STANDARD

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# DRAFT
# prEN 10205

July 2023

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Will supersede EN 10205:2016

English Version

# Cold reduced tinmill products - Blackplate

Aciers pour emballage laminés à froid - Fer noir

Kaltgewalzte Verpackungsblecherzeugnisse - Feinstblech

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 459/SC 9.

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.

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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.



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

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Ref. No. prEN 10205:2023 E

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## European foreword

This document (prEN 10205:2023) has been prepared by Technical Committee CEN/TC 459/SC 9 “Coated and uncoated flat products to be used for cold forming”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 10205:2016.

The main changes compared to the previous edition are listed below:

— the scope and the normative references have been modified;

— the definition “anvil effect” has been deleted;

— Annexes C, D and E have been added;

— the bibliography has been modified.

# 1 Scope

This document specifies requirements for blackplate product in the form of coils intended for direct use and mostly for the production of electrolytically zinc coated plate, or coils electrolytically coated with either tin (tinplate) or chromium/chromium oxide (ECCS or ECCS-RC).

Blackplate can be a single or double reduced product and is specified in nominal thicknesses that are multiples of 0,005 mm from typical 0,10 mm up to 0,60 mm.

This document applies to coils in nominal minimum widths of 600 mm.

In addition to this document, the general technical delivery conditions of EN 10021 apply.

NOTE Standard width coils for specific uses, e.g. tab stock, can be slit into narrow strip for supply in coil form.

# 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.

EN 10204:2004, *Metallic products - Types of inspection documents*

EN ISO 6892-1:2019, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1:2019)*

EN 10334, *Steel for packaging - Flat steel products intended for use in contact with foodstuffs, products and beverages for human and animal consumption - Non-coated steel (blackplate)*



# 3 Terms and definitions



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

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

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

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

**3.1**
**single reduced blackplate**
blackplate which has been reduced to the desired thickness in a cold-reduction mill and subsequently annealed and temper rolled mostly without a water-based lubricant

**3.2**
**double reduced blackplate**
blackplate which has been reduced to the desired thickness in a cold-reduction mill and subsequently annealed and temper rolled mostly with the help of a water-based lubricant to achieve a higher gauge reduction often in excess of 5 %

**3.3**
**temper rolling**
secondary rolling process to obtain desired roughness and mechanical properties

**3.4**
**standard grade**
material that, having passed line inspection, is suitable under normal conditions of storage, not containing any defect that renders the material unsuitable for its intended use

**3.5**
**batch (box) annealing**
**BA**
process in which the cold reduced strip is heated in tight coil form, within a controlled atmosphere, for a pre-determined time/temperature cycle

**3.6**
**continuous annealing**
**CA**
process in which cold reduced coils are unwound and heated in strip form within a controlled atmosphere for a pre-determined time/temperature cycle

**3.7**
**surface appearance**
surface appearance of blackplate products determined by the surface characteristics of the steel

**3.8**
**finish**
finish of blackplate products determined by roughness average (Ra) and appearance of the surface of the blackplate resulting from controlled preparation of the work rolls used for the final stages of rolling



**3.8.1**
**bright finish**
finish resulting from the use of temper mill work rolls that have been ground to a high degree of polish



**3.8.2**
**stone finish**
finish characterized by a directional pattern, resulting from the use of final mill work rolls that have been ground to a lower degree of polish than those used for the bright finish

**3.8.3**
**matt**
finish resulting from the use of temper mill work rolls with surface textured by shot blast, electro discharge texturing (EDT), electron beam texturing (EBDT) or another similar method

**3.9**
**coil**
rolled flat strip product which is wound into regularly superimposed laps

**3.10**
**longitudinal bow**
residual curvature in the strip remaining along the direction of rolling

**3.11**
**transverse bow**
mode of curvature in the sheet such that the distances between its edges parallel to the rolling direction is less than the sheet width

**3.12**
**centre fullness**
intermittent vertical displacement occurring other than at the edge of the sheet or coil when the material is laid on a flat horizontal surface

**3.13**
**edge camber**
deviation of the coil from a straight line forming its chord

**3.14**
**edge wave**
intermittent vertical displacement occurring at the edge of a sheet or a sample from a coil when laid on a flat horizontal surface

**3.15**
**feather edge**
variation in thickness, characterized by a reduction of thickness close to the edges, at right angles to the rolling direction

**3.16**
**burr**
metal displaced beyond the plane of the surface of the strip by shearing action

Note 1 to entry: Blackplate is usually supplied with cut edges. Blackplate will then have burrs caused by cutting.



**3.17**
**rolling width**
width of the strip perpendicular to the rolling direction



**3.18**
**consignment**
quantity of material of the same specification made available for dispatch at the same time

**3.19**
**pallet**
base platform on which a coil is placed to facilitate ready transportation

**3.20**
**line inspection**
final inspection of the finished product performed by instruments and/or by visual examination at normal production line speeds

**3.21**
**mill edge**
un-trimmed edge therefore leading to higher width tolerances

## 4 Classification and designation

### 4.1 Classification

The classification of the relevant steel grades is in accordance with EN 10020. Steel grades for cold reduced blackplate for the manufacturing of tinplate or ECCS are generally classified as non-alloy quality steels, but in some cases low-alloy quality steels can be encountered.

### 4.2 Designation

For the steel grades covered by this document, the steel names as given in the relevant tables are allocated in accordance with EN 10027-1. TS grades are batch annealed grades and TH grades are continuous annealed grades. The steel numbers as given in the relevant tables are allocated in accordance with EN 10027-2.

## 5 Information to be supplied by the purchaser

### 5.1 Mandatory information

The following information shall be given by the purchaser on the enquiry and order to assist the manufacturer in supplying the correct material:

a) quantity expressed in length or mass;

b) description of the material (blackplate coil);

c) dimensions (thickness and width);

d) edge condition, see 6.4 (T for trimmed edges and M for mill edges);

e) number of this document (prEN 10205);

f) steel name or steel number (see Table 3);

g) appearance (see 6.5);

h) finish (see 6.5);

i) surface condition (oiling), see 6.6;

j) intended use of the material e.g. stamping, drawing, beading, bending and assembly work such as. joint forming, soldering and welding, surface coating (metallic and organic coating);

k) dispatch and packaging conditions (see Clause 14), e.g. inner diameter of coils, coil winding direction, maximum and minimum mass and/or outside diameter of coils;

l) if required, standard designation for a test report 2.2 or an inspection certificate 3.1 or 3.2 in accordance with EN 10204:2004 (see 10.1).



### 5.2 Options

In addition to the information in 5.1, the purchaser shall provide further information to the supplier to ensure that the order requirements are consistent with the end use of the product.

It is generally recommended that supplier and purchaser agree on the best product specifications to fit the targeted use and other requirements. Eventually, the purchaser is responsible for the product designation in the order.

### 5.3 Ordering example

**a)** **Example 1:** 5 t blackplate coil, thickness 0,22 mm, rolling width 800 mm with trimmed edges in accordance with this document of steel grade TS275, appearance A, stone finish with test report 2.2 according to EN 10204:2004 shall be designated:

1) 5 t blackplate coil 0,22 × 800 EN 10205-TS275-A-ST, EN 10204:2004 – 2.2;

2) 5 t blackplate coil 0,22 × 800 EN 10205-1.0375-A-ST, EN 10204:2004 – 2.2.

**b)** **Example 2:** 5 t blackplate coil, thickness 0,18 mm, rolling width 750 mm with trimmed edges in accordance with this document of steel grade TH620, appearance B, stone finish, with inspection certificate 3.1 according to EN 10204:2004 shall be designated:

1) 5 t blackplate coil 0,18 × 750 EN 10205-TH620-B-ST, EN 10204:2004 – 3.1;

2) 5 t blackplate coil 0,18 × 750 EN 10205-1.0374-B-ST, EN 10204:2004 – 3.1.

NOTE The designation does not cover variations in all material properties.

## 6 Steelmaking process

### 6.1 General



The steelmaking process is under the responsibility of the manufacturer with the exception that the steel is continuously cast. All steels shall be fully killed.

The purchaser should be informed of any change made to the method of manufacture if the manufacturer suspects that the change can affect the ordered end use of the product.



The choice of a suitable physical or chemical analytical method for the analysis shall be at the discretion of the manufacturer. For product analysis the relevant existing European or International Standards should be taken into account.

If the product is ordered for food contact, the product should be manufactured in accordance with food safety regulations. The steel shall be manufactured in accordance with EN 10334. If the product is not ordered for food contact, a different steelmaking process may be agreed between manufacturer and purchaser.

The purchaser shall inform the manufacturer about all relevant regulations which can influence the manufacturing of the product.

### 6.2 Annealing

Annealing for blackplate products shall be either batch annealing or continuous annealing.

### 6.3 Product traceability

Each product shall be traceable to the cast.

### 6.4 Mill edges/trimmed edges

If not specified otherwise at the time of enquiry and order the products shall be delivered with trimmed edges.

### 6.5 Surface characteristics

Surface characteristics concern surface appearance (see Table 1) and surface finish (see Table 2).

It is recommended that the purchaser and the supplier come to an agreement on surface appearance and finish, however if not specified at the time of enquiry and order, the material shall be delivered with surface appearance B and surface finish stone.

**Table 1 — Surface appearance**

| Symbol | Characteristics |
|---|---|
| A | Bright, metallically clean surface. Pitting, small defects and scratches are permitted. |
| B | Bright, metallically clean surface. Pitting, grooves, and scratches are permitted as long as the uniform smooth appearance is not substantially impaired when viewed with the naked eye. |
| C | Bright, metallically clean surface. Pitting, grooves, and scratches are permitted as long as the uniform smooth appearance of the mirror surface is not impaired. |

**Table 2 — Surface finish**

| Surface finish | Code | Normal surface roughness, $R_a$, µm |
|---|---|---|
| Bright | BT | ≤ 0,35 |
| Fine stone | FS | 0,25 to 0,45 |
| Stone | ST | 0,35 to 0,60 |
| Matt | MM | ≥ 0,90 |



NOTE For guidance on the measurement of surface roughness, refer to EN ISO 4288.

## 6.6 Oiling



To avoid corrosion blackplate shall normally be supplied with a sufficient layer of suitable, non-mineral, protective oil. The oil shall be removed by an adequate inline cleaning process before any subsequent coating.

Blackplate is normally supplied oiled on both sides.

The selection of oils and the oiling quantity may be the subject of a separate agreement.

If blackplate is temper rolled with a water based lubricant the blackplate is deemed suitable for immediate further processing without further inline cleaning.

If the blackplate is to be supplied in the as-rolled condition, or without oil, there is an increased risk of scratching and rust formation during transportation and storage.