

# SLOVENSKI STANDARD

## SIST EN 10028-5:2017

01-oktober-2017

Nadomešča:  
SIST EN 10028-5:2009

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**Ploščati jekleni izdelki za tlačne posode - 5. del: Variva drobnozrnata jekla, termomehansko valjana**

Flat products made of steels for pressure purposes - Part 5: Weldable fine grain steels, thermomechanically rolled

Flacherzeugnisse aus Druckbehälterstählen - Teil 5: Schweißgeeignete Feinkornbaustähle, thermomechanisch gewalzt

Produits plats en acier pour appareils à pression - Partie 5: Aciers soudable à grains fins, laminés thermomécaniquement

**Ta slovenski standard je istoveten z: EN 10028-5:2017**

**ICS:**

77.140.30	Jekla za uporabo pod tlakom	Steels for pressure purposes
77.140.50	Ploščati jekleni izdelki in polizdelki	Flat steel products and semi-products

**SIST EN 10028-5:2017**

**en,fr,de**

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EUROPEAN STANDARD

EN 10028-5

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2017

ICS 77.140.30; 77.140.50

Supersedes EN 10028-5:2009

English Version

## Flat products made of steels for pressure purposes - Part 5: Weldable fine grain steels, thermomechanically rolled

Produits plats en acier pour appareils à pression -  
Partie 5 : Aciers soudable à grains fins, laminés  
thermomécaniquement

Flacherzeugnisse aus Druckbehälterstählen - Teil 5:  
Schweißgeeignete Feinkornbaustähle,  
thermomechanisch gewalzt

This European Standard was approved by CEN on 7 May 2017.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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## European foreword

This document (EN 10028-5:2017) has been prepared by Technical Committee ECISS/TC 107 “Steels for pressure purposes”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by January 2018 and conflicting national standards shall be withdrawn at the latest by January 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 10028-5:2009.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of Directive 2014/68/EU.

For relationship with Directive 2014/68/EU, see informative Annex ZA, which is an integral part of this document.

A list of changes between this document and the previous version can be found in Annex B.

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

**EN 10028-5:2017 (E)****1 Scope**

This European Standard specifies the requirements for flat products for pressure equipment made of weldable fine grain thermomechanically rolled steels as specified in Table 1.

The steels are not suitable for hot forming.

NOTE 1 At the time of publication of this European Standard, no sufficient data for the standardization of the elevated temperature properties of these steels was available.

If their use at such temperatures is intended the conditions for this should be specially agreed between the interested parties.

The requirements of EN 10028-1:2017 also apply.

NOTE 2 Once this European Standard is published in the EU Official Journal (OJEU) under Directive 2014/68/EU, presumption of conformity to the Essential Safety Requirements (ESRs) of Directive 2014/68/EU is limited to technical data of materials in this European Standard (Part 1 and the other relevant part of the series) and does not presume adequacy of the material to a specific item of equipment. Consequently, the assessment of the technical data stated in this material standard against the design requirements of this specific item of equipment to verify that the ESRs of Directive 2014/68/EU are satisfied, needs to be done.

**2 Normative references**

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1011-1:2009, *Welding — Recommendations for welding of metallic materials — Part 1: General guidance for arc welding*

EN 1011-2:2001, *Welding — Recommendations for welding of metallic materials — Part 2: Arc welding of ferritic steels*

EN 10020:2000, *Definition and classification of grades of steel*

EN 10028-1:2017, *Flat products made of steels for pressure purposes — Part 1: General requirements*

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

**3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 10028-1:2017 apply.

**4 Tolerances on dimensions**

See EN 10028-1:2017.

**5 Calculation of mass**

See EN 10028-1:2017.

## 6 Classification and designation

### 6.1 Classification

**6.1.1** This European Standard covers the steel grades given in Table 1 in three qualities:

- a) the basic series (P...M);
- b) series with low temperature properties down to  $-40\text{ °C}$  (P...ML1);
- c) series with low temperature properties down to  $-50\text{ °C}$  (P...ML2).

**6.1.2** In accordance with EN 10020:2000 all the steels specified in this document are alloy special steels.

### 6.2 Designation

See EN 10028-1:2017.

## 7 Information to be supplied by the purchaser

### 7.1 Mandatory information

See EN 10028-1:2017.

### 7.2 Options

A number of options are specified in this document and listed below. Additionally the relevant options of EN 10028-1:2017 apply. If the purchaser does not indicate a wish to implement any of these options at the time of enquiry and order, the products shall be supplied in accordance with the basic specification (see also EN 10028-1:2017):

- 1) providing data on suitable welding conditions (see 8.2.2);
- 2) maximum carbon equivalent (see 8.3.3);
- 3) specification of a minimum impact energy of 40 J (see 8.4 and Table 5);
- 4) mid thickness test pieces for the impact test (see Clause 10).

### 7.3 Example for ordering

10 plates with nominal dimensions, thickness = 50 mm, width = 2 000 mm, length = 10 000 mm, made of a steel grade with the name P355ML2 and the number 1.8833 as specified in EN 10028-5, inspection certificate 3.1 as specified in EN 10204:

**10 plates – 50 × 2 000 × 10 000 – EN 10028-5 – P355ML2 – Inspection certificate 3.1**

or

**10 plates – 50 × 2 000 × 10 000 – EN 10028-5 – 1.8833 – Inspection certificate 3.1**

## EN 10028-5:2017 (E)

### 8 Requirements

#### 8.1 Steelmaking process

See EN 10028-1:2017.

#### 8.2 Delivery condition

**8.2.1** The products covered by this European Standard shall be supplied in the thermomechanically rolled condition.

**8.2.2** Information on weldability are given in Annex A of this standard.

#### 8.3 Chemical composition

**8.3.1** The requirements of Table 1 apply for the chemical composition according to the cast analysis.

**8.3.2** The product analysis shall not deviate from the specified values for the cast analysis as specified in Table 1 by more than the values given in Table 2.

**8.3.3** A maximum value for the carbon equivalent in accordance with Table 3 may be agreed at time of enquiry and order.

#### 8.4 Mechanical properties

The values given in Tables 4 and 5 (see also EN 10028-1:2017 and Clause 10) shall apply.

Optionally, a minimum impact energy value of 40 J may be specified for temperatures where lower minimum values are specified (see Table 5, footnote a).

#### 8.5 Surface condition

See EN 10028-1:2017.

#### 8.6 Internal soundness

See EN 10028-1:2017.

### 9 Inspection

#### 9.1 Types of inspection and inspection documents

See EN 10028-1:2017.

#### 9.2 Tests to be carried out

See EN 10028-1:2017.

#### 9.3 Retests, sorting and reprocessing

See EN 10028-1:2017.



## 10 Sampling

See EN 10028-1:2017.

For the impact test, deviating from EN 10028-1:2017, Table 4, footnote g, the preparation of test pieces taken from the mid thickness may be agreed at the time of enquiry and order. In this case, test temperatures and minimum impact energy values shall also be agreed.

## 11 Test methods

See EN 10028-1:2017.

## 12 Marking

See EN 10028-1:2017.

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