



SLOVENSKI STANDARD
SIST EN 988:1998

01-april-1998

Cink in cinkove zlitine - Specifikacije za valjane ploščate izdelke za gradbeništvo

Zinc and zinc alloys - Specifications for rolled flat products for building

Zink und Zinklegierungen - Anforderungen an gewalzte Flacherzeugnisse für das Bauwesen

Zinc et alliages de zinc - Spécifications pour produits laminés plats pour le bâtiment

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Ta slovenski standard je istoveten z: EN 988:1996

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ICS:

77.150.60 Svinčeni, cinkovi in kositrovi izdelki Lead, zinc and tin products

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en

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EUROPEAN STANDARD

EN 988

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 1996

ICS 77.120.60; 77.140.90

Descriptors: rolled products, steel strips, zinc products, zinc alloys, buildings, chemical composition, mechanical properties, dimensions, tests, designation, marking, packing

English version

Zinc and zinc alloys - Specifications for rolled flat products for building

Zinc et alliages de zinc - Specifications pour produits laminés plats pour le bâtiment

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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.

The European Standards exist 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 209 "Zinc and zinc alloys", the secretariat of which is held by AFNOR.

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 December 1996, and conflicting national standards shall be withdrawn at the latest by December 1996.

This standard defines product requirements, derived from performance requirements established for various applications in building, and is supported by separate standards for specific and common test methods in the framework of CEN/TC 209/SC 3.

Annex A (informative) gives information on the physical properties of rolled zinc-copper-titanium products.

Annex B (informative) gives guidance to the user in calculating masses of the product for a range of thickness.

According to CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This European Standard specifies requirements for rolled flat products for building purposes made from zinc-copper-titanium alloy, in the form of strip, sheet or cut length. It covers products in the range 0,6 mm up to and including 1,0 mm thickness and from 100 mm up to and including 1 000 mm width.

This standard does not cover formed or shaped products or products prefabricated by any means other than cutting to size.

NOTE: By agreement between the purchaser and the supplier at the time of ordering this standard or parts of this standard can be applied on other thicknesses or widths of rolled flat products made from zinc-copper-titanium alloy.

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 referred to applies.

EN 1179

Zinc and zinc alloys – Primary zinc

EN 10002-1 : 1990

Metallic materials – Tensile testing – Part 1: Method of test (at ambient temperature)

EN 10204

Metallic products – Types of inspection documents

prEN 12019

Zinc and zinc alloys – Optical emission spectrometric analysis

ISO 7438 : 1985

Metallic materials – Bend test

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3 Definitions

For the purposes of this standard, the following definitions apply:

3.1 flat product

Product manufactured by rolling, having a rectangular cross section, the width being much greater than the thickness and the nominal thickness being the same throughout its length.

3.2 strip

Flat product which after final rolling, and/or treatment if any, is wound to form a coil. No distinction is made between strip rolled to final width or strip slit from a wider strip.

3.3 coil

Delivery form of strip not less than 600 mm in width, wound in regularly superimposed laps.

3.4 slit coil

Delivery form of strip less than 600 mm in width, wound in regularly superimposed laps, obtained by slitting a coil.

3.5 sheet

Rectangular or square flat product not less than 600 mm in width delivered flat and cut from strip.

3.6 cut length

Rectangular or square flat product less than 600 mm in width delivered flat and cut from strip or sheet.

4 Requirements

4.1 Manufacturing

Zinc-copper-titanium alloy shall be made from zinc grade Z1 conforming to EN 1179, that is 99,995 % minimum zinc content, with addition of alloying elements.

The flat product shall be made either from casting in slabs or by continuous casting, but either of these shall subsequently be rolled to produce the coil.

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4.2 Chemical composition

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The alloy composition shall conform to the requirements given in table 1. The chemical composition shall be determined in accordance with 6.1 and 6.2.

Table 1: Chemical composition

Chemical composition in % (m/m)			
Cu	Ti	Al	Zn ¹⁾
min. 0,08	min. 0,06	-	Remainder
max. 1,0	max. 0,2	max. 0,015	
1) Zinc of grade Z1, see 4.1			

4.3 Mechanical properties

The product shall conform to the requirements given in table 2. The tests shall be carried out in accordance with 6.1 and 6.3.

Table 2: Mechanical properties

0,2% proof strength, non-proportional extension $R_{p0,2}$ N/mm ² min.	Tensile strength R_m N/mm ² min.	Percentage total elongation at fracture A_{50mm} % min.	Percentage elongation after fracture in creep test % max.	Bend test
100	150	35	0,1	no cracks on fold

4.4 Other requirements

The surface shall be smooth, free from blisters, cracks, deep striations other than usual rolling marks. Any surface marks shall not affect any kind of normal mechanical processing.

NOTE: Slight discolouration, white rust, grease or oiling spots are acceptable since they fade when weathering patina forms, without affecting mechanical or physical properties of the product.

Special decorative requirements such as preweathered or organic coated surfaces shall be specified at the time of order and agreed between the purchaser and the supplier.

5 Dimensions and tolerances

5.1 Thickness

The maximum deviation from the ordered nominal thickness, when measured at least 30 mm from the edge of the strip or sheet shall not exceed $\pm 0,03$ mm.

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NOTE: Sheet and strip are normally supplied in the following preferred nominal thicknesses: 0,60 mm; 0,65 mm; 0,70 mm; 0,80 mm; 1,00 mm.

5.2 Width

The maximum deviation from the ordered nominal width shall not exceed $+ \frac{2}{0}$ mm.

NOTE: Minimum nominal width is 100 mm, and maximum 1 000 mm.

5.3 Length

The maximum deviation from the ordered nominal length of sheet or cut length shall not exceed $+ \frac{10}{0}$ mm.

NOTE: Preferred lengths are 2 000 mm and 3 000 mm.

5.4 Lateral curvature

Deviation from straightness, dimension d in figure 1, shall not exceed 1,5 mm/m when tested in accordance with 6.4.2.

5.5 Flatness

Deviation from flatness, dimension d in figures 2 to 5, shall not exceed 2 mm when tested in accordance with 6.4.3.

6 Sampling and test methods

6.1 Sampling

6.1.1 Test units

For the determination of the chemical composition, the test unit shall consist of one melt of the alloy in the furnace.

For the determination of the mechanical or shape characteristics, the test unit shall consist of one coil rolled to final thickness per melt.

6.1.2 Test samples

For the determination of the chemical composition, one test sample shall be taken during the casting of the melt.

For the determination of the mechanical or shape characteristics of coil or slit coil, one test sample shall be taken at the beginning or end of one of the products, with the sample length not exceeding 2 m. For sheet or cut length, the selection of the sample shall be left to the discretion of the inspector carrying out the tests.

6.1.3 Test pieces

For the determination of the chemical composition the test piece shall be prepared in accordance with prEN 12019.

For the determination of the shape characteristics the test piece shall be the test sample.

For the determination of the mechanical characteristics the test piece shall be taken at a distance of at least 50 mm from the edge of the test sample.

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6.2 Test method for chemical composition

The test for chemical composition shall be carried out in accordance with prEN 12019.

6.3 Test methods for mechanical properties

6.3.1 General

All tests for mechanical properties shall be carried out at $(20 \pm 2)^\circ\text{C}$.

6.3.2 Tensile testing

Tensile testing shall be carried out in accordance with EN 10002-1 using a test piece taken parallel to the rolling direction.

The shape of the test piece shall be in accordance with test piece type 1 given in A.2.1 of EN 10002-1 : 1990.

6.3.3 Creep test

Creep test shall be carried out on a device exerting a constant load to the test piece as defined in 6.3.2.

A constant stress of $(50 \pm 1) \text{ N/mm}^2$ shall be applied for $(60 \pm 1) \text{ min}$ to the test piece. The percentage permanent elongation shall be measured after removal of the load.