SIST

SLOVENSKI STANDARD
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Vroče valjani ploščati izdelki iz jekel z veliko napetostjo tečenja za preoblikovanje v hladnem - 2. del: Tehnični dobavni pogoji za termomehansko valjana jekla

Hot rolled flat products made of high yield strength steels for cold forming - Part 2: Technical delivery conditions for thermomechanically rolled steels

Warmgewalzte Flacherzeugnisse aus Stählen mit hoher Streckgrenze zum Kaltumformen - Teil 2: Technische Lieferbedingungen für thermomechanisch gewalzte Stähle

Produits plats laminés à chaud en aciers à haute limite d'élasticité pour formage à froid - Partie 2: Conditions de livraison des aciers obtenus par laminage thermomécanique

Ta slovenski standard je istoveten z: EN 10149-2:2013

ICS:

77.140.10	Jekla za toplotno obdelavo	Heat-treatable steels
77.140.50	Ploščati jekleni izdelki in polizdelki	Flat steel products and semi-products

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EUROPEAN STANDARD

NORME EUROPÉENNE

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ICS 77.140.50

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English Version

Hot rolled flat products made of high yield strength steels for cold forming - Part 2: Technical delivery conditions for thermomechanically rolled steels

Produits plats laminés à chaud en aciers à haute limite d'élasticité pour formage à froid - Partie 2: Conditions techniques de livraison des aciers obtenus par laminage thermomécanique

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This European Standard was approved by CEN on 17 August 2013.

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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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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 10149-2:2013) has been prepared by Technical Committee ECISS/TC 103 “Structural steel other than reinforcements”, 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 March 2014, and conflicting national standards shall be withdrawn at the latest by March 2014.

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 10149-2:1995.

In comparison with EN 10149-2:1995, the following significant technical changes were made:

— Scope was modified;

— subclause 6.1 was revised;

— subclause 7.4.1 was modified;

— subclause 7.5.3 was completely revised;

— Option 13) was added in Clause 11;

— steel grades S900MC and S960MC were added in Tables 1, 2 and B.1;

— footnotes f and g were added in Table 2.

The titles of the other Parts of this European Standard are:

— *Part 1: General technical delivery conditions*;

— *Part 3: Technical delivery conditions for normalized or normalized rolled steels*.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard, in addition to EN 10149-1, specifies requirements for flat products made of weldable, hot-rolled, high yield strength steels for cold forming.

The grades are given in Table 1 (chemical composition) and Table 2 (mechanical properties) and are supplied in the thermomechanically rolled delivery condition as given in 7.2.

The steels specified in this European Standard are applicable to hot-rolled flat products in the thickness range of:

— 1,5 mm to 20 mm for the steels which have a specified minimum yield strength of 315 MPa[1)] up to and including 460 MPa[1)];

— 1,5 mm to 16 mm for the steels which have a specified minimum yield strength of 500 MPa[1)] up to and including 700 MPa[1)]; and

— from 2 mm up to 10 mm for the steels with a minimum yield stress in the range from 900 MPa[1)] to 960 MPa[1)].

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 10029, *Hot-rolled plates 3 mm thick or above - Tolerances on dimensions and shape*

EN 10051, *Continuously hot-rolled strip and plate/sheet cut from wide strip of non-alloy and alloy steels - Tolerances on dimensions and shape*

EN 10149-1:2013*, Hot rolled flat products made of high yield strength steels for cold forming - Part 1: General technical delivery conditions*

EN ISO 14713-2:2009, *Zinc coatings - Guidelines and recommendations for the protection against corrosion of iron and steel in structures - Part 2: Hot dip galvanizing (ISO 14713-2:2009)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10149-1:2013 apply.

4 Information to be supplied by the purchaser

4.1 General

The information to be supplied by the purchaser shall be in accordance with EN 10149-1.

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1) 1 MPa = 1 N/mm^2.

4.2 Options

The options given in EN 10149-1 and Clause 11 shall apply.

5 Dimensions, mass and tolerances

5.1 Dimensions and tolerances

The dimensions and tolerances shall be in accordance with EN 10149-1.

For hot rolled plate tolerances, the basic requirements shall be in accordance with EN 10029, including thickness tolerances to class A, unless otherwise agreed at the time of the order.

For plates cut from continuously hot rolled strip, the thickness tolerances shall be in accordance with EN 10051.

5.2 Mass of steel

The calculated mass of steel shall be determined in accordance with EN 10149-1.

6 Classification and designation

6.1 Classification

The steel grades S315MC, S355MC, S420MC, S460MC, S500MC and S550MC of this European Standard are alloy quality steels and the steel grades S600MC, S650MC, S700MC, S900MC and S960MC of this European Standard are alloy special steels according to EN 10020.

6.2 Designation

The designation shall comply with EN 10149-1.

7 Technical requirements

7.1 Steel manufacturing process

The steel manufacturing process shall be in accordance with EN 10149-1.

See EN 10149-1:2013, Clause 11, option 1).

7.2 Delivery condition

The products shall be supplied in the thermomechanically rolled delivery condition.

The surface protection of descaled products shall be in accordance with EN 10149-1.

See EN 10149-1:2013, Clause 11, option 2).

7.3 Chemical composition

The requirements of EN 10149-1 shall apply.

The chemical composition determined by ladle analysis shall comply with the specified values of Table 1.

See EN 10149-1:2013, Clause 11, option 3).

7.4 Mechanical properties

7.4.1 General

Under the inspection and testing conditions as specified in Clause 8 and in the delivery condition as specified in 7.2, the mechanical properties shall comply with the values given in Table 2.

Heating of grades S900MC and S960MC above 400 °C is not recommended. If the purchaser intends to heat grades S900MC and S960MC at temperatures above 400 °C, the mechanical properties after such heating should be agreed at the time of order.

See EN 10149-1:2013, Clause 11, option 13).

7.4.2 Impact energy

If agreed at the time of the order, the verification of the impact energy value shall be carried out in accordance with EN 10149-1.

See EN 10149-1:2013, Clause 11, option 5).

7.5 Technological properties

7.5.1 Weldability

Weldability shall be in accordance with EN 10149-1.

7.5.2 Formability

7.5.2.1 General

NOTE Recommendations regarding cold forming are laid down in CEN/TR 10347. The products supplied according to this standard are not suitable for hot forming.

7.5.2.2 Cold forming

7.5.2.2.1 General

Annex B contains indicative values for the inside bend radii for cold forming.

7.5.2.2.2 Flangeability

The products are suitable for flanging without cracking.

7.5.2.2.3 Roll forming

The suitability for roll forming shall be in accordance with EN 10149-1.

See EN 10149-1:2013, Clause 11, option 6).

7.5.3 Hot-dip zinc-coating

For grades S315MC to S700MC, requirements for chemical composition of steels to be hot-dip zinc coated shall be separately agreed between manufacturer and purchaser.

EN ISO 1461 should be used to specify coating requirements. EN ISO 14713-2 provides further guidance, including information on the influence of various factors, including steel chemical composition, on the coating formation.

Option 7) (see EN 10149-1:2013, Clause 11) can be used to order steels with a chemical composition required for hot-dip zinc coating. When option 7) is implemented, the purchaser and manufacturer shall agree with a steel composition (ladle analysis) of silicon and phosphorous according to either Category A (or steels satisfying the formula Si ≤ 0,03 % and Si+2.5P ≤ 0,09 %) or Category B (limited to 0,14 % < Si ≤ 0,25 %) or Category D (limited to 0,25 % < Si ≤ 0,35 %) with required values as cited by the ranges given in EN ISO 14713-2:2009, Table 1, column 2.

NOTE EN ISO 14713-2:2009, Table 1, gives guidance on typical coating characteristics associated with certain steel compositions on the basis of the surface composition of silicon and phosphorous.

In some cases, steels above S460 may be sensitive to cracking during galvanizing and therefore special care should be taken.

7.6 Surface finish

The surface finish shall be in accordance with EN 10149-1.

See EN 10149-1:2013, Clause 11, option 8).

7.7 Internal soundness

The internal soundness shall be in accordance with EN 10149-1.

See EN 10149-1:2013, Clause 11, option 9).

8 Inspection and testing

8.1 General

The products shall be supplied in accordance with EN 10149-1:2013, 8.1.

See EN 10149-1:2013, Clause 11, option 10).

8.2 Sampling

Sampling shall be in accordance with EN 10149-1.

8.3 Test units

The test unit shall be in accordance with EN 10149-1.

8.4 Verification of chemical composition

The verification of the chemical composition shall be in accordance with EN 10149-1.

See EN 10149-1:2013, Clause 11, option 4).