SLOVENSKI STANDARD
SIST EN 10139:2016+A1:2020

01-junij-2020

Hladno valjani ozki trakovi iz maloogljičnega (mehkega) jekla za preoblikovanje v hladnem - Tehnični dobavni pogoji

Cold rolled uncoated low carbon steel narrow strip for cold forming - Technical delivery conditions

Kaltband ohne Überzug aus weichen Stählen zum Kaltumformen - Technische Lieferbedingungen

Feuillards non revêtus laminés à froid en aciers à bas carbone pour formage à froid - Conditions techniques de livraison

Ta slovenski standard je istoveten z: **EN 10139:2016+A1:2020**

ICS:

77.140.50	Ploščati jekleni izdelki in polizdelki	Flat steel products and semi-products

SIST EN 10139:2016+A1:2020 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 10139:2016+A1

April 2020

ICS 77.140.50

English Version

Cold rolled uncoated low carbon steel narrow strip for cold forming - Technical delivery conditions

Feuillards non revêtus laminés à froid en aciers à bas carbone pour formage à froid - Conditions techniques de livraison

Kaltband ohne Überzug aus weichen Stählen zum Kaltumformen - Technische Lieferbedingungen

This European Standard was approved by CEN on 13 December 2015 and includes Amendment 1 approved by CEN on 4 February 2019.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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.

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.

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

This document (EN 10139:2016+A1:2020) has been prepared by Technical Committee ECISS/TC 109 “Coated and uncoated flat products to be used for cold forming”, 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 October 2020, and conflicting national standards shall be withdrawn at the latest by October 2020.

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 A1 EN 10139:2016 A1.

This document includes Amendment 1 approved by CEN on 2020-02-13.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

1.1 This European Standard applies to cold rolled narrow strip in coils and cut lengths in thicknesses up to 10 mm and of widths less than 600 mm, made from low carbon, unalloyed and alloyed steels in accordance with Table 1.

These products are suitable for cold forming. They are also suitable for surface coating. On the other hand, they are not suitable for hardening treatment followed by tempering.

1.2 This European Standard does not cover cold rolled flat products for which a separate standard already exists, particularly the following products:

— cold rolled non-oriented electrical steel sheet and strip delivered in the fully processed state (EN 10106);

— grain-oriented electrical steel sheet and strip delivered in the fully processed state (EN 10107);

— cold rolled electrical non-alloy and alloy steel sheet and strip delivered in the semi-processed state (EN 10341);

— cold rolled narrow steel strip for heat treatment (EN 10132-1 to −4);

— cold rolled steel flat products with higher yield strength for cold forming (EN 10268);

— cold rolled low carbon steel flat products for cold forming (EN 10130);

— cold reduced blackplate in coil form for the production of tinplate or electrolytic chromium/chromium oxide coated steel (EN 10205);

— cold rolled low carbon steel flat products for vitreous enamelling (EN 10209).

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 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 10049, *Measurement of roughness average Ra and peak count RPc on metallic flat products*

EN 10079, *Definition of steel products*

EN 10140:2006, *Cold rolled narrow steel strip - Tolerances on dimensions and shape*

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

EN ISO 377, *Steel and steel products - Location and preparation of samples and test pieces for mechanical testing (ISO 377:2013, Corrected version 2015-06-01)*

EN ISO 6507 (all parts), *Metallic materials — Vickers hardness test (ISO 6507)*

EN ISO 6892-1:2009, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1:2009)*

ISO 10113, *Metallic materials — Sheet and strip — Determination of plastic strain ratio*

ISO 10275, *Metallic materials — Sheet and strip — Determination of tensile strain hardening exponent*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10079 apply.

4 Classification and designation

4.1 This European Standard specifies the grades listed in Table 1. In the case of steel grade DC01, the deoxidation method shall be left to the manufacturer's discretion. Steel grades DC03, DC04, DC05, DC06 and DC07 shall be supplied fully killed.

4.2 Products manufactured from these steels may be ordered and supplied in different delivery conditions (see Table 1) and with different surface characteristics (see 6.4 and Table 2).

4.3 For the purposes of the specifications of this European Standard, the selection of steel grade, delivery condition and surface characteristics are of the responsibility of the purchaser.

NOTE 1 In case of narrow widths, strip complying with this European Standard can also be wound in layers and supplied in the form of a bobbin wound coil.

NOTE 2 After uncoiling and shearing, strip can be supplied in cut lengths.

5 Designation

The symbol designation of the steel grades in this European Standard is in accordance with EN 10027-1 and the numerical designation is allocated in accordance with EN 10027-2.

The standard designation consists of the words narrow strip or cut lengths, followed in order by ▌A1⟩ reference to European Standard EN 10140:2006 and the nominal dimensions of the product and for the steel grade ⟨A1▐:

a) reference to this European Standard, EN 10139;

b) the symbol DC, followed by the grade designation (01, 03, 04, 05, 06 and 07);

c) the symbol for delivery condition (see Table 1);

d) the symbol for surface appearance (MA, MB or MC, see Table 2);

e) the symbol for surface finish where appropriate (RN, RL, RM or RR, see 6.4.3 and Table 2).

EXAMPLE 1 Designation of cold rolled narrow strip, 1,50 mm thick, having a normal tolerance on the nominal thickness, a width of 200 mm, having a normal tolerance on the nominal width, slit edges (GK) and made from steel grade DC04, in a lightly skin-passed condition (LC) with a smooth and uniform surface appearance (MB) and a "matt" surface finish (RM):

Narrow strip EN 10140:2006 — 1,50 × 200 — GK
Steel EN 10139 — DC04 + LC — MB — RM

EXAMPLE 2 Designation of cold rolled narrow strip, 2,00 mm thick, having a normal tolerance on the nominal thickness, a width of 450 mm, having a normal tolerance on the nominal width, slit edges (GK) and made from steel grade DC03, in the annealed condition (A), with a bright, metallically clean surface appearance (MA) and a smooth surface finish (RL):

Narrow strip EN 10140:2006 — 2,00 × 450 — GK
Steel EN 10139 — DC03 + A — MA — RL

6 Properties

6.1 Steel making process and chemical composition

6.1.1 The steel making process shall be left to the discretion of the manufacturer.

6.1.2 The chemical composition based on ladle analysis shall be as given in Table 1.

6.2 Choice of properties

The products covered by this European Standard shall comply with the specifications given in Table 1. If agreed separately, they may be supplied with a special suitability for making a particular part; in this case, a maximum percentage of processing scrap may be fixed by common agreement and acceptance tests on the basis of the mechanical properties shall not apply.

6.3 Mechanical and technological properties

6.3.1 The mechanical and technological properties of the products are given in Table 1. These properties are guaranteed for the periods specified in Table 1 with effect from the date that the products are made available for delivery. The purchaser shall be informed of this date when the products are to be made available, with a warning appropriate to the guarantee of mechanical properties. Storage of grade DC01 products for more than 3 months may cause a change in the mechanical properties likely to give rise to a reduction in the suitability for forming and drawing.

6.3.2 The usual test for checking the mechanical properties given in Table 1 is the tensile test. However, if agreed at the time of ordering, hardness values may be specified instead of tensile test properties, but not both.

6.3.3 The tensile test values shall apply to longitudinal test pieces.

6.4 Surface characteristics

6.4.1 General

Surface characteristics concern surface appearance and surface finish. These shall be specified by the purchaser at the time of ordering. Unless otherwise specified at the time of ordering, the products shall be supplied with a surface appearance MA and a smooth surface finish RL ($Ra \leq 0{,}6$ µm).

6.4.2 Surface appearance

6.4.2.1 Cold rolled flat products covered by this European Standard may be supplied with surface appearances MA, MB or MC as described in Table 2.

The required surface appearance shall be stated in the designation (see Clause 5).

6.4.2.2 The characteristics indicated in Table 2 apply to the surface actually inspected, which is generally the outside surface of coils and the top surface of lengths. The appearance of the uninspected surface shall correspond at least to surface appearance MA.

These characteristics shall not apply to the first two inner and outer laps of coil or to lengths cut from them.

6.4.3 Surface finish

6.4.3.1 The surface finish may be rough, matt, smooth or mirror finish, as given in Table 2.

Products with surface appearances MA and MB are generally supplied with a smooth surface finish (RL). If rough (RR) or matt (RM) finishes are required, the corresponding symbol shall be given in the designation (see Clause 5).

The surface appearance MC shall only be supplied with a “mirror” finish (RN).

6.4.3.2 The different surfaces finishes are characterized by the following reference values of mean roughness R_a:

RR: rough: $R_a \geq 1{,}5$ µm;

RM: matt: 0,6 µm < $R_a \leq 1{,}8$ µm;

RL: smooth: $R_a \leq 0{,}6$ µm;

RN: mirror finish: $R_a \leq 0{,}2$ µm.

6.5 Stretcher strain marks

The tendency towards the formation of fractures or stretcher strain marks during forming may be eliminated for a time by light skin-passing (LC) after annealing. It is in the purchaser interest to form the products as soon as possible as the tendency to form such marks may reappear a certain time after the skin-pass.

The guarantee period of freedom from stretcher strain marks is three months for grade DC01 and six months for grades DC03, DC04 and DC05, from the agreed date when the product is available for delivery.

Products of grades DC06 and DC07 do not exhibit stretcher strain marks, whether delivered skin-passed or non-skin-passed.

6.6 Suitability for the application of surface coating

6.6.1 The products covered by this European Standard are suitable for surface coatings taking into account the following requirements:

a) all the products shall be suitable for organic coating;