SLOVENSKI STANDARD
SIST EN 10139:1998

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

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

Kaltband ohne Überzug aus weichen Stählen zum Kaltumformen - Technische Lieferbedingungen

Feuillards non revetus laminés à froid en aciers doux pour formage a froid - Conditions techniques de livraison

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ICS:

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

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Descriptors: cold rolled products, strips, low carbon steels, unalloyed steels, cold-working, classifications, grades:quality, delivery conditions, designation, characteristics, tests

English version

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

Feuillards non revêtus laminés à froid en aciers doux 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 24 November 1996.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This European Standard has been prepared by Technical Committee ECISS/TC 13 "Flat products for cold working - Qualities, dimensions, tolerances and specific tests", the secretariat of which is held by IBN/BIN.

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 May 1998, and conflicting national standards shall be withdrawn at the latest by May 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland 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 mild, 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 magnetic steel sheet and strip (EN 10106);
- grain-oriented magnetic steel sheet and strip (EN 10107);
- semi-processed steel strip for the construction of magnetic circuits (EN 10126 and EN 10165);
- cold rolled narrow strip for the manufacture of springs (EURONORM 132);
- high yield strength steels for cold forming (EN 10268);
- cold rolled uncoated low carbon steel flat products for cold forming (EN 10130);
- cold reduced blackplate (EN 10205);
- sheet and strip for enamelling (EN 10209).

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate place 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 10002-1	Metallic materials - Tensile test - Part 1: Method of test (at ambient temperature)

EN 10002-2	Metallic materials - Tensile test Part 2: Verification of the force measuring system of the tensile testing machines
EN 10002-4[1)]	Metallic materials - Tensile test Part 4: Verification of extensometer used in uniaxial testing
EN 10020	Definition and classification of grades of steel
EN 10021	Steels and iron and steel products - General technical delivery conditions
EN 10027-1	Designation systems for steel Part 1: Steel names, principal symbols
EN 10027-2	Designation systems for steel Part 2: Numerical system
EN 10079	Definition of steel products
EN 10140	Cold rolled narrow strip - Tolerances on dimensions and shape
EN 10204	Metallic products - Types of inspection documents
EURONORM 5 (1979)[2)]	Vickers hardness test for steel
EURONORM 18 (1979)[2)]	Sampling and preparation of test pieces for steel and iron and steel products
EURONORM 49 (1972)[2)]	Measurement of the roughness of thin products made of cold rolled and uncoated steels
CR 10260	Designation systems for steel - Additional symbols for steel names

[1)] Currently at draft stage.

[2)] Until they are transformed into European Standards, either the EURONORMS or the corresponding national standards listed in annex C of this European Standard may be used.

3 Definitions

3.1 For the purposes of this European Standard, the definitions of cold rolled flat products given in clause 1 are identical to those given in EN 10079.

NOTE: In the case of narrow widths, strip complying with this standard may also be wound in layers and supplied in the form of a bobbin wound coil.

3.2 After uncoiling and shearing, strip may be supplied in cut lengths.

4 Classification of grades and delivery condition

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 and DC06 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 appearances (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 finish are the responsibility of the purchaser.

5 Designation

The symbol designation of the steel grades in this European Standard is in conformity with EN 10027-1 and Information Circular ECISS IC 10 - the numerical designation is allocated in conformity with EN 10027-2.

The standard designation consists of the words narrow strip or cut lengths, followed in order by:

a) reference to this European Standard, EN 10139;

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

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 (RM or RR, see 6.4.3 and table 2).

Examples of standard designations:

Designation of cold rolled steel narrow strip, grade DC04, in a lightly skin-passed condition (LC), with a 'scratch and pit-free' surface appearance (MB) and a 'matt' surface finish (RM):

Narrow strip EN 10139-DC04 + LC MB RM

Designation of cold rolled steel narrow strip, grade DC03, in the annealed condition (A), with 'bright' (MA) surface appearance and a 'smooth' surface finish:

Narrow strip EN 10139-DC03 + AMA

6 Properties

6.1 Production processes and chemical composition

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

The production process of the product - where not stipulated in the order - shall also remain at the manufacturer's discretion.

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 of this standard. 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. The requirements of 3.3.2 of EURONORM 18-79, shall not apply.

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; with $R_a \leq 0{,}6$ 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 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:

rough: $R_a \geq 1{,}5\ \mu m$;

matt: $0{,}6\ \mu m < R_a \leq 1{,}8\ \mu m$;

smooth: $R_a \leq 0{,}6\ \mu m$;

mirror finish: $R_a \leq 0{,}2\ \mu m$.

6.5 Stretcher strains

The tendency towards the formation of fractures or stretcher strains during forming may be eliminated for a time by light skin-passing (LC).

The period of freedom from stretcher strains can be assumed to be three months for grade DC01 and six months for the other grades, from the agreed date when the product is available for delivery.

6.6 Suitability for the application of surface coatings

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;

b) all the products shall be suitable for the application of a metallic coating, e.g. zinc, tin or lead by means of hot dipping or thermal spraying;

c) all the products with surface appearances MB or MC shall be suitable for electrolytic coating.