

SVENSK STANDARD

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Kallvalsade platta produkter av höghållfasta stål för kallformning – Tekniska leveransbestämmelser

**Cold rolled steel flat products with high yield strength for cold
forming – Technical delivery conditions**

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Denna standard ersätter SS-EN 10268:2006, utgåva 2.

The European Standard EN 10268:2006+A1:2013 has the status of a Swedish Standard. This document contains the official version of EN 10268:2006+A1:2013.

This standard supersedes the Swedish Standard SS-EN 10268:2006, edition 2.

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EUROPEAN STANDARD

EN 10268:2006+A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2013

ICS 77.140.50

Supersedes EN 10268:2006

English Version

Cold rolled steel flat products with high yield strength for cold forming - Technical delivery conditions

Produits plats laminés à froid à haute limite d'élasticité pour formage à froid - Conditions techniques de livraison

Kaltgewalzte Flacherzeugnisse aus Stählen mit hoher Streckgrenze zum Kaltumformen - Technische Lieferbedingungen

This European Standard was approved by CEN on 12 June 2006 and includes Amendment 1 approved by CEN on 5 July 2013.

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

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Foreword

This document (EN 10268:2006+A1:2013) 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of an identical text or by endorsement, at the latest by March 2014, and conflicting national standards shall be withdrawn at the latest by March 2014.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 includes Amendment 1 approved by CEN on 5 July 2013.

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

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1 Scope

This European Standard applies to cold rolled uncoated steel flat products for cold forming with high yield strength. The thickness is equal to or less than 3 mm.

These products are delivered in sheet, wide strip, slit wide strip, narrow strip or cut lengths obtained from slit wide strip, narrow strip or sheet.

2 Normative references

[A1] 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. **[A1]**

[A1] *deleted text* **[A1]**

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

[A1] EN 10021:2006, *General technical delivery conditions for steel products* **[A1]**

EN 10027-1, *Designation systems for steels - Part 1: Steel names*

EN 10027-2, *Designation systems for steels - Part 2: Numerical system*

[A1] EN 10079:2007 **[A1]**, *Definition of steel products*

EN 10130, *Cold rolled low carbon steel flat products for cold forming - Technical delivery conditions*

EN 10131, *Cold rolled uncoated low carbon and high yield strength steel flat products for cold forming - Tolerances on dimensions and shape*

EN 10139, *Cold rolled uncoated mild steel narrow strip for cold forming - Technical delivery conditions*

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

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

[A1] EN 10325, *Steel — Determination of yield strength increase by the effect of heat treatment [Bake-Hardening-Index]* **[A1]**

EN ISO 377, *Steel and steel products - Location and preparation of samples and test pieces for mechanical testing (ISO 377:1997)*

[A1] EN ISO 6892-1:2009, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1:2009)* **[A1]**

EN ISO 14284, *Steel and iron - Sampling and preparation of samples for the determination of chemical composition (ISO 14284:1996)*

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

A1 For the purposes of this document, the terms and definitions given in EN 10020:2000, EN 10021:2006, EN 10079:2007 and EN 10204:2004 and the following apply. **A1**

3.1

bake-hardening steels (B)

steels that demonstrate a defined increase in proof strength following heating in the region of 170 °C for 20 minutes

A1 Note 1 to entry: **A1** These steels have a good suitability for cold forming and present a high resistance to plastic straining which is increased on finished parts during the heat treatment. Dent resistance is improved. These steels are often used in car body outer parts.

A1 *deleted text* **A1**

A1 3.2

low alloy / micro-alloyed steels (LA)

steels containing one or more of alloys Nb, Ti and V to achieve required proof strength levels

Note 1 to entry: Combined precipitation and grain refinement hardening modes allow reaching a high mechanical resistance while reducing the content of alloying elements. Suitability for welding is improved and cold forming is limited. These steels are used in reinforcing structural parts and have good impact and fatigue strengths.

Note 2 to entry: Alternatively, carbon-manganese alloying concepts in combination with grain refinement can be used.

3.3

high strength interstitial free steels (Y)

steels whose composition is controlled to achieve improved plastic strain ratio r and strain hardening exponent n values

Note 1 to entry: These steels have both a high mechanical strength and an excellent suitability for cold forming due to their solid solution hardening and interstitial free microstructure. They are used for complex components involving deep drawing processes.

3.4

isotropic steels (I)

steels with limited plastic strain ratio r value

Note 1 to entry: These steels have excellent stretch formability due to their isotropic behaviour. They are used in the automotive industry for bonnets and doors. **A1**

4 Designation


The steel names are in compliance with EN 10027-1; the steel numbers with EN 10027-2.

The designation consists of the word "sheet", "cold rolled wide strip", "cold rolled narrow strip", "slit cold rolled wide strip" or "cut length" followed in order by:

- reference to this European Standard EN 10268;
- steel name or the steel number (see Table 1 or Table 2);
- symbol concerning the surface quality (A or B);
- if applicable, the symbol relating to the surface finish.

A1 EXAMPLE 1 Designation of sheet made of steel grade HC260LA (1.0480), surface quality A, surface finish normal (m):

Sheet EN 10268-HC260LA-A-m

or
Sheet EN 10268-1.0480-A-m. 

EXAMPLE 2 Designation of coil made of steel grade HC220B (1.0396), surface quality B, surface finish normal (m):

Coil EN 10268-HC220B-B-m

or

Coil EN 10268-1.0396-B-m.

5 Requirements

5.1 Steelmaking and manufacturing processes

Unless otherwise agreed at the time of enquiry or order, the steelmaking and manufacturing processes are left to the discretion of the manufacturer.

If specified by the purchaser, he or she will be informed of these processes.

5.2 Chemical composition

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

5.3 Delivery conditions

5.3.1 The products are supplied in the skin-passed condition only.

5.3.2 Usually the products are supplied oiled. In this case, both sides are corrosion protected by a layer of neutral non-drying oil, free of impurities and uniformly spread so that under the normal packing, transportation, loading and storage conditions, there will be no corrosion for up to three months.

The layer of oils shall be capable of being removed by alkaline solutions or usual solvents.

The choice of protective oils may be subject to a special agreement.

If the purchaser does not require the surfaces to be oiled, this shall be clearly indicated at the time of order.

If the conditions of transportation or storage are such that special protection against corrosion is required, the purchaser shall inform the manufacturer at the time of enquiry and order.

NOTE If the order is for un-oiled products, the manufacturer is not responsible for the risk of corrosion. The purchaser is also advised that there is a greater risk of the appearance of light scratches during handling, transportation and application.

A1

Table 1 — Ladle analysis chemical composition

Steel name	Steel number	C max %	Si max %	Mn max %	P max %	S max %	Al min %	Ti max a b %	Nb max a b %
HC180Y	1.0922	0,01	0,3	0,7	0,06	0,025	0,01	0,12	0,09
HC180B	1.0395	0,06	0,5	0,7	0,06	0,030	0,015		
HC220Y	1.0925	0,01	0,3	0,9	0,08	0,025	0,01	0,12	0,09
HC220I	1.0346	0,07	0,5	0,6	0,05	0,025	0,015	0,05	
HC220B	1.0396	0,08	0,5	0,7	0,085	0,030	0,015		
HC260Y	1.0928	0,01	0,3	1,6	0,1	0,025	0,01	0,12	0,09
HC260I	1.0349	0,07	0,5	1,2	0,05	0,025	0,015	0,05	
HC260B	1.0400	0,1	0,5	1,0	0,1	0,030	0,015		
HC260LA	1.0480	0,1	0,5	1,0	0,030	0,025	0,015	0,15	0,09
HC300I	1.0447	0,08	0,5	0,7	0,08	0,025	0,015	0,05	
HC300B	1.0444	0,1	0,5	1,0	0,12	0,030	0,015		
HC300LA	1.0489	0,12	0,5	1,4	0,030	0,025	0,015	0,15	0,09
HC340LA	1.0548	0,12	0,5	1,5	0,030	0,025	0,015	0,15	0,09
HC380LA	1.0550	0,12	0,5	1,6	0,030	0,025	0,015	0,15	0,09
HC420LA	1.0556	0,14	0,5	1,6	0,030	0,025	0,015	0,15	0,09
HC460LA	1.0574	0,14	0,6	1,8	0,030	0,025	0,015	0,15	0,09
HC500LA	1.0573	0,14	0,6	1,8	0,030	0,025	0,015	0,15	0,09

^a These additional elements may be used individually or in combination where they appear in the definition of the steel within the composition limits indicated. Vanadium and boron may also be added. However, the sum of the contents of these four dispersoidal elements shall not exceed 0,22 %.

^b For all interstitial free (Y) grades, Nb may be added alternatively or in combination with Ti. For all grades containing "I" in its designation, Ti can be substituted by Nb or B.

A1

5.4 Mechanical properties

The products shall comply with the requirements for transverse test pieces given in Table 2. By agreement, they may be delivered as suitable for making a particular part; in this case a maximum percentage of scrap may be agreed and acceptance on the basis of mechanical properties is not applicable.

The mechanical properties given in Table 2 and Table 3 are valid for a period of at least 6 months from the date on which the products are made available.

By agreement, special formability criteria can be defined between producer and purchaser.