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Utgåva 1

Kallvalsad elektroplåt av olegerade och legerade stål levererad utan slutglödning

Cold rolled electrical non-alloy and alloy steel sheet and strip delivered in the semi-processed state

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The European Standard EN 10341:2006 has the status of a Swedish Standard. This document contains the official English version of EN 10341:2006.

This standard supersedes the Swedish Standards SS-EN 10126, edition 1 and SS-EN 10165, edition 1.

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English Version

Cold rolled electrical non-alloy and alloy steel sheet and strip delivered in the semi-processed state

Bandes et tôles magnétiques laminées à froid en acier non
allié et en acier allié livrées à l'état semi-fini

Kaltgewalztes Elektroblech und -band aus unlegierten und
legierten Stählen im nicht schlussgeglühten Zustand

This European Standard was approved by CEN on 20 April 2006.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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Contents

Page

Foreword.....	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Classification and designation.....	6
4.1 Classification.....	6
4.2 Designation	6
5 Information to be supplied by the purchaser	7
5.1 Mandatory information.....	7
5.2 Options	7
6 General requirements.....	8
6.1 Production process	8
6.2 Form of supply	8
6.3 Delivery condition.....	8
6.4 Surface condition.....	8
6.5 Suitability for cutting.....	9
7 Technical requirements	9
7.1 Magnetic properties.....	9
7.2 Geometrical characteristics and tolerances	11
7.3 Other properties.....	12
8 Inspection and testing.....	13
8.1 General.....	13
8.2 Sampling.....	13
8.3 Preparation of test specimens	13
8.4 Test methods.....	14
8.5 Retests	14
9 Marking, labelling and packing	15
10 Complaints	15
Annex A (informative) Maximum specific total loss at 1,0 T.....	16
Annex B (informative) Density determination	17
Bibliography.....	18

Foreword

This document (EN 10341:2006) has been prepared by Technical Committee ECISS/TC 24 “Electrical steel sheet and strip qualities - Qualities, dimensions, tolerances and specific tests”, 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 November 2006, and conflicting national standards shall be withdrawn at the latest by November 2006.

This document supersedes EN 10126:1995 and EN 10165:1995.

This document is based on IEC 60404-8-3:2005 which was technically changed.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EN 10341:2006 (E)

Introduction

This document has been prepared by merging EN 10126:1995 and EN 10165:1995, taking into consideration corresponding decisions of IEC/TC 68 on relevant IEC documents IEC 60404-8-2:1998 and IEC 60404-8-3:1998 which are being merged at the same time. The merged document published as IEC 60404-8-3:2005 was the basis of this European Standard.

The intention of this merging was to specify no longer non-alloy and alloy steel grades for cold rolled electrical steel sheet and strip, but to leave the type of steel open. Therefore, it has been decided to use a new letter "K" instead of previous used "D" or "E" for the designation of electrical steels specified in this European Standard.

The dew point of the gas used for the heat treatment specified in 7.1.1 is $+ 20 \text{ °C} \pm 2 \text{ °C}$ at atmospheric pressure. This is the value stated in EN 10165:1995 but it differs from the temperature of $+ 35 \text{ °C}$ stated in EN 10126:1995.

As the final annealing of cold-rolled electrical non-alloy and alloy steel sheet and strip delivered in the semi-processed state is the responsibility of the purchaser, attention is drawn to the importance of this treatment for the properties of the material.

For this reason the magnetic properties in Table 1 are given for a reference condition (see 7.1.1) obtained by a suitable heat treatment. To ensure that the properties in use are equivalent to those specified, it is important that the heat treatment carried out by the user is equivalent to that used to define the reference condition.

It is recognized that these materials may be used in the semi-processed state, in which case the magnetic properties are not subject to the specifications of this standard.

1 Scope

This document specifies cold-rolled electrical non-oriented non-alloy¹⁾ or alloy²⁾ steel sheet and strip delivered in nominal thicknesses of 0,50 mm and 0,65 mm in the semi-processed condition, that is without final heat treatment; in particular, it specifies general requirements, magnetic properties, geometric characteristics and tolerances and technological characteristics, as well as the inspection procedure.

This document applies to material intended for the construction of magnetic circuits.

These magnetic materials correspond respectively to subclauses C21 and B2 of IEC 60404-1:2000.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 10021, *General technical delivery requirements for steel and iron products*

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

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

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

EN 10251, *Magnetic materials - Methods of determination of the geometrical characteristics of electrical steel sheet and strip*

EN 60404-2, *Magnetic materials — Part 2: Methods of measurement of the magnetic properties of electrical steel sheet and strip by means of an Epstein frame (IEC 60404-2:1996)*

IEC 60050-121:1998, *International Electrotechnical Vocabulary — Part 121: Electromagnetism*

IEC 60050-221:1990, *International Electrotechnical Vocabulary — Part 221: Magnetic materials and components*

IEC 60404-1:2000, *Magnetic materials — Part 1 : Classification*

IEC 60404-13, *Magnetic materials — Part 13 : Methods of measurement of density, resistivity and stacking factor of electrical steel sheet and strip*

3 Terms and definitions

For the purposes of this document, the definitions of the principal terms relating to magnetic properties given in IEC 60050-121:1998 and IEC 60050-221:1990 apply. In addition, the following terms and definitions apply.

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- 1) Non-alloy steel is that steel the basic constituent of which is iron containing alloying elements in amounts smaller than the limiting values fixed by EN 10020.
 - 2) Alloy steel is that steel the basic constituent of which is iron containing alloying elements in amounts equal to or greater than the limiting values fixed by EN 10020.

EN 10341:2006 (E)

3.1 edge camber
greatest distance between a longitudinal edge of the sheet or strip and the line joining the two extremities of the measured length of this edge

3.2 flatness
property of a sheet or a length of strip which is characterized by the wave factor, i.e. the relation of the height of the wave to its length

3.3 residual curvature
permanent curvature in the direction of rolling of an unwound strip

3.4 internal stresses
stresses which are characterized by a deviation in relation to the line of cutting

4 Classification and designation

4.1 Classification

The steel grades covered by this document are classified according to the specified value of maximum specific total loss in watts per kilogram at 1,5 T after a reference heat treatment (see 7.1.1) and according to the nominal thickness of the material (0,50 mm, 0,65 mm).

4.2 Designation

4.2.1 For the steel grades covered by this document, the steel names are allocated in accordance with EN 10027-1. The steel numbers are allocated in accordance with EN 10027-2.

The steel name comprises the following in the order given:

- 1) the letter M for electrical steel;
- 2) one hundred times the specified value of maximum specific total loss at 50 Hz, in watts per kilogram, corresponding to the nominal product thickness, at 1,5 T;
- 3) one hundred times the nominal thickness of the material, in millimetres;
- 4) the letter K for non-alloy or alloy electrical steel sheet or strip delivered in the semi-processed state.

EXAMPLE M660-50K for electrical non-alloy or alloy steel sheet or strip with a specified maximum specific total loss at 1,5 T of 6,60 W/kg at 50 Hz and a nominal thickness of 0,50 mm, supplied in a semi-processed state.