

**Grain-oriented electrical steel strip and sheet delivered  
in the fully processed state**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

|                                                                                                                     |                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| See Eesti standard EVS-EN 10107:2014 sisaldab Euroopa standardi EN 10107:2014 inglisekeelset teksti.                | This Estonian standard EVS-EN 10107:2014 consists of the English text of the European standard EN 10107:2014.                      |
| Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.                                                  | This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation. |
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## English Version

**Grain-oriented electrical steel strip and sheet delivered in the fully processed state**

Bandes et tôles magnétiques en acier à grains orientés  
livrées à l'état fini

Kornorientiertes Elektroband und -blech im  
schlussgeglühten Zustand

This European Standard was approved by CEN on 6 February 2014.

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**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## Foreword

This document (EN 10107:2014) has been prepared by Technical Committee ECISS/TC 108 “Steel sheet and strip for electrical applications”, 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of an identical text or by endorsement, at the latest by September 2014 and conflicting national standards shall be withdrawn at the latest by September 2014.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 10107:2005.

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, 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 defines the steel grades of grain-oriented electrical strip and sheet in nominal thicknesses of 0,23 mm, 0,27 mm, 0,30 mm and 0,35 mm and specifies in particular, general requirements, magnetic properties, geometric characteristics and tolerances and technological characteristics, as well as inspection procedures.

This European Standard applies to Goss textured grain-oriented electrical strip and sheet supplied in the final annealed condition in sheets or coils, and intended for the construction of magnetic circuits.

The materials are grouped into two classes:

- a) conventional grain oriented material;
- b) high permeability grain oriented material.

They correspond to Clause C.22 of IEC 60404-1:2000.

## 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 10021, *General technical delivery conditions for steel products*

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

EN 10027-2, *Designation systems for steels — 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 10280, *Magnetic materials — Methods of measurement of the magnetic properties of electrical sheet and strip by means of a single sheet tester*

EN 10282:2001, *Magnetic materials — Method of test for the determination of surface insulation resistance of electrical sheet and strip*

EN 10342, *Magnetic materials — Classification of surface insulations of electrical steel sheet, strip and laminations*

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)*

EN 60404-11:2013, *Magnetic materials — Part 11: method of test for the determination of surface insulation resistance of magnetic sheet and strip*

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

EN ISO 7799:2000, *Metallic materials — Sheet and strip 3 mm thick or less — Reverse bend test (ISO 7799:1985)*

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

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

IEC 60404-3, *Magnetic materials — Part 3: Methods of measurement of the magnetic properties of electrical steel strip and sheet by means of a single sheet tester*

### 3 Terms and definitions

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

#### 3.1

##### **edge camber**

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

#### 3.2

##### **flatness**

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

#### 3.3

##### **number of bends**

number of alternate bends possible before the appearance of the first crack in the base metal visible to the naked eye indicating the ductility of the material

#### 3.4

##### **internal stresses**

stresses which are characterised by a deviation in relation to the line of cutting

### 4 Classification and designation

#### 4.1 Classification

The steel grades covered by this European Standard are classified according to the value of maximum specific total loss in watts per kilogram and according to the nominal thickness of the material (0,23 mm; 0,27 mm; 0,30 mm; 0,35 mm).

#### 4.2 Designation

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

**4.2.2** The steel names comprise the following in the order given:

- a) capital letter M for electrical steel;
- b) a number of one hundred times the specified value of maximum specific total loss at 1,7 T and 50 Hz, in watts per kilogram corresponding to the nominal product thickness;
- c) one hundred times the nominal thickness of the product, in millimetres;
- d) the characteristic letter:
  - S for conventional grain oriented products;