IEC 60404-8-3

Edition 4.0 2023-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Magnetic materials –
Part 8-3: Specifications for individual materials – Cold-rolled non-oriented electrical steel strip and sheet delivered in the semi-processed state

Matériaux magnétiques –
Partie 8-3: Spécifications pour matériaux particuliers – Bandes et tôles magnétiques en acier à grains non orientés, laminées à froid et livrées à l'état semi fini

IEC 60404-8-3:2023-11(en-fr)

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MAGNETIC MATERIALS –

Part 8-3: Specifications for individual materials – Cold-rolled non-oriented electrical steel strip and sheet delivered in the semi-processed state

FOREWORD

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IEC 60404-8-3 has been prepared by IEC technical committee 68: Magnetic alloys and steels. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2005. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Modification of terms and technical requirements concerning geometrical characteristics to be consistent with IEC 60404-9:2018;
b) Insertion of Table 3 – Tolerances on nominal thickness;

c) Change of the length of the test specimen for determination of geometrical characteristics from 2 m to 1 m;

d) Deletion of Annex A with the European numerical system of designation of steels.

The text of this International Standard is based on the following documents:

Draft	Report on voting
68/736/CDV	68/747/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 60404 series, published under the general title *Magnetic materials*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

TC 68 followed the recommendation of the maintenance inquiry, 68/649/INF, to revise this standard in order to maintain consistency with other standard adaptions of the IEC 60404 series. Moreover, the revision is made mainly regarding testing and definitions of geometrical characteristics in accordance with IEC 60404-9. The length of the test specimen for determination of geometrical characteristics is changed from 2 m to 1 m. The term of "flatness" is divided into "edge wave (wave factor)" and "residual curvature". This revision also includes corrections in order to improve consistency with other IEC 60404-8 series. For example, the supply in the form of coils is considered before the supply in sheets, which reflects the current priority.

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

For this reason the magnetic properties in Table 1 and Table 2 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 recognised that these products can be used in the semi-processed state, in which case the magnetic properties are not subject to the specifications of this document.

MAGNETIC MATERIALS –

Part 8-3: Specifications for individual materials – Cold-rolled non-oriented electrical steel strip and sheet delivered in the semi-processed state

1 Scope

This part of IEC 60404 defines the grades of cold-rolled non-oriented electrical steel strip and sheet delivered in the semi-processed state in nominal thicknesses of 0,47 mm, 0,50 mm, 0,64 mm, 0,65 mm and 0,79 mm. It gives general requirements, magnetic properties, geometric characteristics, tolerances and technical characteristics as well as inspection procedures. The nominal thicknesses of 0,47 mm, 0,64 mm and 0,79 mm apply to the grades for use at 60 Hz only.

This document applies to cold-rolled non-oriented electrical steel strip and sheet delivered in the semi-processed state, i.e. without final heat treatment, in coils or sheets, and intended for the construction of magnetic circuits. This document does not apply to materials supplied in the fully-processed state.

These materials correspond respectively to classes B2 and C21 of IEC 60404-1.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60050-121, *International Electrotechnical Vocabulary (IEV) – Part 121: Electromagnetism*

IEC 60050-221, *International Electrotechnical Vocabulary (IEV) – Chapter 221: Magnetic materials and components*

IEC 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 60404-9, *Magnetic materials – Part 9: Methods of determination of the geometrical characteristics of electrical steel strip and sheet*

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

ISO 404, *Steel and steel products – General technical delivery requirements*

ISO 10474:1991, *Steel and steel products – Inspection documents*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-121, IEC 60050-221 and the following apply.