Irish Standard
I.S. EN IEC 60404-7:2020

Magnetic materials - Part 7: Method of measurement of the coercivity (up to 160 kA/m) of magnetic materials in an open magnetic circuit

I.S. EN IEC 60404-7:2020

Incorporating amendments/corrigenda/National Annexes issued since publication:

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National Foreword

I.S. EN IEC 60404-7:2020 is the adopted Irish version of the European Document EN IEC 60404-7:2020, Magnetic materials - Part 7: Method of measurement of the coercivity (up to 160 kA/m) of magnetic materials in an open magnetic circuit

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60404-7

April 2020

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Supersedes EN 10330:2015 and all of its amendments and corrigenda (if any)

English Version

Magnetic materials - Part 7: Method of measurement of the coercivity (up to 160 kA/m) of magnetic materials in an open magnetic circuit (IEC 60404-7:2019)

Matériaux magnétiques - Partie 7: Méthode de mesure de la coercitivité (jusqu'à 160 kA/m) des matériaux magnétiques en circuit magnétique ouvert (IEC 60404-7:2019)

Magnetische Materialien - Teil 7: Verfahren zur Messung der Koerzitivfeldstärke (bis160 kA/m) von magnetischen Werkstoffen in einem offenen Magnetkreis (IEC 60404-7:2019)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 68/596/CDV, future edition 2 of IEC 60404-7, prepared by IEC/TC 68 "Magnetic alloys and steels" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60404-7:2020.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2020-10-24
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2023-04-24

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Endorsement notice

The text of the International Standard IEC 60404-7:2019 was approved by CENELEC as a European Standard without any modification.

IEC 60404-7

Edition 2.0 2019-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Magnetic materials –
Part 7: Method of measurement of the coercivity (up to 160 kA/m) of magnetic materials in an open magnetic circuit

Matériaux magnétiques –
Partie 7: Méthode de mesure de la coercitivité (jusqu'à 160 kA/m) des matériaux magnétiques en circuit magnétique ouvert

IEC 60404-7:2019-01(en-fr)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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IEC 60404-7

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INTERNATIONAL STANDARD

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CONTENTS

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MAGNETIC MATERIALS –

Part 7: Method of measurement of the coercivity (up to 160 kA/m) of magnetic materials in an open magnetic circuit

FOREWORD

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International Standard IEC 60404-9 has been prepared by IEC technical committee 68: Magnetic alloys and steels.

This second edition cancels and replaces the first published in 1982. This edition constitutes a technical revision.

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

a) Clause 1: The scope includes a more detailed description of the magnetic materials which applies to this standard;
b) Clause 4: Figure 2 – circuit diagram for methods A and B was simplified and the fluxgate probes inside the solenoid have been added;
c) Clause 7: Compensation for the earth's magnetic field and for static and dynamic magnetic noise fields has been added;

d) Clause 8: Magnetic shielding of the measuring region has been added;

e) 9.2.2: The measuring methods for local and integral measurement of the flux in the test specimen have been separated and the limitations in size and shape of the test specimen have been considered.

f) 9:3: The method C with a VSM (Vibrating Sample Magnetometer) has been moved from 9.3 to the Annex B.

g) The term "complex shaped test specimen" has been replaced in several clauses by "test specimen different from ellipsoids".

h) The character of Annex A has been changed from “informative” to “normative”.

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

CDV	Report on voting
68/596/CDV	68/608A/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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 "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

MAGNETIC MATERIALS –

Part 7: Method of measurement of the coercivity (up to 160 kA/m) of magnetic materials in an open magnetic circuit

1 Scope

This part of IEC 60404 specifies a method of measurement of the coercivity of magnetic materials in an open magnetic circuit.

This document is applicable to all magnetic materials with coercivities from 0,2 A/m to 160 kA/m.

NOTE Examples of magnetic materials covered by this document are amorphous alloys, nanocrystalline alloys, all softmagnetic crystalline materials (e.g. Fe, FeSi-, CoFe- and FeNi-alloys), soft ferrites, hard metals, semi-hard magnetic alloys (e.g. FeCoTiAl-, FeCoV-, FeCrCo- and AlNiCo-alloys) [1][1].

Special precautions are to be taken in measuring coercivities below 40 A/m, in materials with high conductivity and in test specimens which have a shape different from ellipsoids (see Annex A).

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.

There are no normative references in this document.

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

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3.1
coercivity H_{cJ}
value of the coercive field strength in a material when the magnetic flux density, magnetic polarization or magnetization is brought from saturation by a monotonically changing magnetic field to zero

Note 1 to entry: The parameter that is varied should be stated, and the appropriate symbol used as follows: H_{cB} for the coercivity relating to the magnetic flux density, H_{cJ} for the coercivity relating to the magnetic polarization, H_{cM} for the coercivity relating to the magnetization. The first two symbols supersede H_{cB} and H_{cJ} respectively.

[1] Numbers in square brackets refer to the Bibliography.