SLOVENSKI STANDARD
SIST EN 60404-15:2013

01-marec-2013

Magnetni materiali - 15. del: Metode za ugotavljanje relativne magnetne permeabilnosti mehkomagnetnih materialov

Magnetic materials - Part 15: Methods for the determination of the relative magnetic permeability of feebly magnetic materials

Matériaux magnétiques - Partie 15: Méthode de détermination de la perméabilité magnétique relative des matériaux faiblement magnétiques

Ta slovenski standard je istoveten z: **EN 60404-15:2012**

ICS:

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities
29.030	Magnetni materiali	Magnetic materials

SIST EN 60404-15:2013 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60404-15

November 2012

ICS 17.220.01; 29.030

English version

Magnetic materials - Part 15: Methods for the determination of the relative magnetic permeability of feebly magnetic materials

(IEC 60404-15:2012)

Matériaux magnétiques -
Partie 15: Méthodes de détermination de la perméabilité magnétique relative des matériaux faiblement magnétiques
(CEI 60404-15:2012)

Magnetische Werkstoffe -
Teil 15: Verfahren zur Bestimmung der Permeabilitätszahl schwachmagnetischer Werkstoffe
(IEC 60404-15:2012)

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CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 60404-15:2012 E

Foreword

The text of document 68/442/FDIS, future edition 1 of IEC 60404-15, prepared by IEC/TC 68 "Magnetic alloys and steels" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60404-15:2012.

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)	2013-07-23
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2015-10-23

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The text of the International Standard IEC 60404-15:2012 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60050	Series	International electrotechnical vocabulary	-	-
ISO/IEC Guide 98-3	2008	Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)	-	-

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Magnetic materials –
Part 15: Methods for the determination of the relative magnetic permeability of feebly magnetic materials

Matériaux magnétiques –
Partie 15: Méthodes de détermination de la perméabilité magnétique relative des matériaux faiblement magnétiques

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CONTENTS

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MAGNETIC MATERIALS –

Part 15: Methods for the determination of the relative magnetic permeability of feebly magnetic materials

FOREWORD

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International Standard IEC 60404-15 has been prepared by IEC technical committee 68: Magnetic alloys and steels.

The text of this standard is based on the following documents:

FDIS	Report on voting
68/442/FDIS	68/443/RVD

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

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

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

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

INTRODUCTION

The determination of the relative magnetic permeability of feebly magnetic materials is often required to assess their effect on the ambient magnetic field. Typical feebly magnetic materials are austenitic stainless steels and "non-magnetic" brass.

The relative magnetic permeability of some of these materials can vary significantly with the applied magnetic field strength. In the majority of cases, these materials find application in the ambient earth's magnetic field. This field in Europe is 35 A/m to 40 A/m, in the far East, it is 25 A/m to 35 A/m and in North America, it is 25 A/m to 35 A/m. However, at present, methods of measurement are not available to determine the relative magnetic permeability of feebly magnetic materials at such a low value of magnetic field strength.

Studies of the properties of feebly magnetic materials have been carried out, primarily with a view to the production of improved reference materials. These studies have shown [1][1] that it is possible to produce reference materials which have a substantially constant relative magnetic permeability over the range from the earth's magnetic field to at least a magnetic field strength of 100 kA/m.

Since conventional metallic materials can also be used as reference materials their relative magnetic permeability can be determined using the reference method. It is important that the magnetic field strength used during the determination of the relative magnetic permeability is stated for all materials but in particular for conventional materials since the changes with applied magnetic field can be large. This behaviour also needs to be considered when using reference materials made from conventional materials to calibrate comparator methods. This is because these methods use magnetic fields that vary through the volume of the material being tested and this makes it difficult to know the relative magnetic permeability to use for the calibration.

Where the effect of a feebly magnetic material on the ambient earth's magnetic field is critical, the direct measurement of this effect using a sensitive magnetometer should be considered.

1 Figures in square brackets refer to the bibliography.