

Magnetic materials —

Part 14: Methods of measurement of the magnetic dipole moment of a ferromagnetic material specimen by the withdrawal or rotation method

The European Standard EN 60404-14:2002 has the status of a British Standard

ICS 17.220.20; 29.030

National foreword

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The UK participation in its preparation was entrusted to Technical Committee ISE/NFE/5, Magnetic alloys and steels, which has the responsibility to:

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This British Standard, having been prepared under the direction of the Engineering Sector Policy and Strategy Committee, was published under the authority of the Standards Policy and Strategy Committee on 7 November 2002

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 15 and a back cover.

The BSI copyright date displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

© BSI 7 November 2002

ISBN 0 580 40686 5

Magnetic materials
Part 14: Methods of measurement of the magnetic dipole moment
of a ferromagnetic material specimen
by the withdrawal or rotation method
(IEC 60404-14:2002)

Matériaux magnétiques
Partie 14: Méthode de mesure du moment
magnétique coulombien d'une éprouvette
de matériau ferromagnétique
par la méthode du retrait
ou la méthode par rotation
(CEI 60404-14:2002)

Magnetische Werkstoffe
Teil 14: Verfahren zur Messung
des magnetischen Dipolmomentes
einer Probe aus ferromagnetischem
Werkstoff mit dem Abzieh-
oder dem Drehverfahren
(IEC 60404-14:2002)

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CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 68/254/FDIS, future edition 1 of IEC 60404-14, prepared by IEC TC 68, Magnetic alloys and steels, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60404-14 on 2002-10-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2003-07-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2005-10-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annex ZA is normative and annexes A, B and C are informative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60404-14:2002 was approved by CENELEC as a European Standard without any modification.

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INTRODUCTION

The magnetic dipole moment j of a ferromagnetic material specimen is a useful parameter for comparing properties, particularly of permanent magnet materials. The measurement of the saturation magnetic dipole moment per unit mass (specific saturation magnetic polarization σ_s) is a special case widely used to characterize cemented carbide metals. Whilst these materials are essentially non-magnetic in character, cobalt or nickel is used as the binder and it is required to achieve an optimum composition and geometrical arrangement of the binder phase with high reproducibility. The determination of the specific saturation magnetic polarization has gained acceptance in the carbide metal industry as a simple, fast and non-destructive measurement method.

The measurement of magnetic moment is, within broad limits, independent of the shape and size of the test specimen. If the material, as in the case of cemented carbide metal, contains only one ferromagnetic component (cobalt or nickel), it is possible to determine its percentage proportion with high resolution.

Another useful parameter which can be derived from the measurement of the magnetic dipole moment of a test specimen and its volume V is the magnetic polarization J . The value of saturation magnetic polarization is of particular interest for certain magnetic materials. Spherical, ellipsoidal and cylindrical reference specimens of nickel of measured saturation magnetic polarization are used in the calibration of vibrating sample magnetometers.