



NSAI
Standards

Irish Standard
I.S. EN 10330:2015

Magnetic materials - Method of measurement of the coercivity of magnetic materials in an open magnetic circuit

I.S. EN 10330:2015

Incorporating amendments/corrigenda/National Annexes issued since publication:

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This document is based on:

EN 10330:2015

Published:

2015-08-26

This document was published under the authority of the NSAI and comes into effect on:

2015-09-14

ICS number:

29.030

NOTE: If blank see CEN/CENELEC cover page

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National Foreword

I.S. EN 10330:2015 is the adopted Irish version of the European Document EN 10330:2015, Magnetic materials - Method of measurement of the coercivity of magnetic materials in an open magnetic circuit

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EUROPEAN STANDARD

EN 10330

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2015

ICS 29.030

Supersedes EN 10330:2003

English Version

Magnetic materials - Method of measurement of the coercivity of magnetic materials in an open magnetic circuit

Matériaux magnétiques - Méthode de mesure du champ coercitif des matériaux magnétiques en circuit magnétique ouvert

Magnetische Werkstoffe - Verfahren zur Messung der Koerzivität magnetischer Werkstoffe in einem offenen Magnetkreis

This European Standard was approved by CEN on 23 July 2015.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



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European foreword

This document (EN 10330:2015) 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 February 2016, and conflicting national standards shall be withdrawn at the latest by February 2016.

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 10330:2003.

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.

EN 10330:2015 (E)**1 Scope**

This European Standard specifies the method of measurement of the coercivity of magnetic materials in an open magnetic circuit.

It applies to magnetic materials having a coercivity up to 500 kA/m. Special precautions to take in measuring coercivities below 40 A/m and above 160 kA/m are given in Annex A.

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.

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

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

3 Terms and definitions

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

**3.1
coercivity**

H_{cJ}
magnetic field strength required to reduce the magnetic polarization to zero in a magnetic specimen which has previously been magnetized to saturation

Note 1 to entry: The coercivities H_{cB} and H_{cJ} are respectively discriminated depending on the hysteresis loop being defined in the $B = f(H)$, or $J = f(H)$ system (see Figure 1). It can be shown that, for materials of high-incremental permeability in the region $B = 0$, the difference between the intrinsic coercivity H_{cJ} and the coercivity H_{cB} is negligible since:

$$H_{cB} = H_{cJ} \left(1 - \mu_0 \frac{\Delta H}{\Delta B} \right)$$

where

H_{cB} is the induction coercivity, in amperes per metre;

H_{cJ} is the polarization coercivity, in amperes per metre;

ΔB is the incremental change in magnetic flux density, in tesla (for $B = 0$);

ΔH is the corresponding change in magnetic field strength, in amperes per metre;

μ_0 is the magnetic constant = $4\pi \times 10^{-7}$ H/m (henrys per metre).

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