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Standards

Irish Standard  
I.S. EN ISO 15549:2019

# Non-destructive testing - Eddy current testing - General principles (ISO 15549:2019)

**I.S. EN ISO 15549:2019**

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NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

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## National Foreword

I.S. EN ISO 15549:2019 is the adopted Irish version of the European Document EN ISO 15549:2019, Non-destructive testing - Eddy current testing - General principles (ISO 15549:2019)

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EUROPEAN STANDARD

EN ISO 15549

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2019

ICS 19.100

Supersedes EN ISO 15549:2010

English Version

## Non-destructive testing - Eddy current testing - General principles (ISO 15549:2019)

Essais non destructifs - Contrôle par courants de Foucault - Principes généraux (ISO 15549:2019)

Zerstörungsfreie Prüfung - Wirbelstromprüfung - Allgemeine Grundlagen (ISO 15549:2019)

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

**EN ISO 15549:2019 (E)**

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## **European foreword**

This document (EN ISO 15549:2019) has been prepared by Technical Committee ISO/TC 135 "Non-destructive testing" in collaboration with Technical Committee CEN/TC 138 "Non-destructive testing" the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by November 2019, and conflicting national standards shall be withdrawn at the latest by November 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 15549:2010.

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## **Endorsement notice**

The text of ISO 15549:2019 has been approved by CEN as EN ISO 15549:2019 without any modification.

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STANDARD**

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**Non-destructive testing — Eddy  
current testing — General principles**

*Essais non destructifs — Contrôle par courants de Foucault —  
Principes généraux*



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ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

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## ISO 15549:2019(E)

### Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 4, *Eddy current testing*.

This second edition cancels and replaces the first edition (ISO 15549:2008), which has been technically revised.

The main change compared to the previous edition is as follows:

- rewriting of [Clause 5](#) "Qualification of personnel".

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

# Non-destructive testing — Eddy current testing — General principles

## 1 Scope

This document defines the general principles to be applied to non-destructive eddy current examination of products and materials in order to ensure defined and repeatable performance.

It includes guidelines for the preparation of application documents which describe the specific requirements for the application of the eddy current method to a particular type of product.

## 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.

ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel*

ISO 12718<sup>1)</sup>, *Non-destructive testing — Eddy current testing — Vocabulary*

ISO 15548-1, *Non-destructive testing — Equipment for eddy current examination — Part 1: Instrument characteristics and verification*

ISO 15548-2, *Non-destructive testing — Equipment for eddy current examination — Part 2: Probe characteristics and verification*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12718 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

## 4 General principles

The eddy current examination is based upon the induction of an alternating electric current in a conducting material. The quantity measured and analysed is related to the distribution of the induced currents and it is represented by a vector in the complex plane.

The distribution of eddy currents in the depth of a material is governed by physical laws, the density of the currents decreasing drastically with the increasing depth. For a given frequency, this decrease is an exponential function of the depth.

The following properties, alone or in combination, of the product to be tested influence the measured quantity:

- the electrical conductivity of the material;
- the magnetic permeability of the material;

1) Under preparation.

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