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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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Foreword

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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.

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".

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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[1)], *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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