



**International
Standard**

ISO 22500

**Non-destructive testing — Magnetic
flux leakage testing — Corrosion
of steel plates and steel pipes of in-
service equipment**

*Essais non destructifs — Essai de fuite de flux magnétique —
Corrosion des plaques et tuyaux en acier des équipements en
service*

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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 document 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).

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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 2, *Surface methods*.

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.

Introduction

Industrial applications of magnetic flux leakage (MFL) testing for steel pipelines, pressure vessels and atmospheric storage tanks have been gaining wider usage alongside marked improvement of MFL testing technologies. The effectiveness of any application of MFL testing depends upon proper and correct use of the MFL testing instruments and test techniques.

There is currently a lack of relevant International Standards for MFL testing, and this document provides requirements for the testing equipment, testing procedures and evaluation method of test results for MFL testing for corrosion of steel plates and steel pipes of in-service equipment.

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Non-destructive testing — Magnetic flux leakage testing — Corrosion of steel plates and steel pipes of in-service equipment

1 Scope

This document specifies a magnetic flux leakage (MFL) testing method and evaluation of results for in-use equipment made of ferromagnetic materials. This document is mainly applicable for the detection of volume defects such as corrosion and mechanical damage on the test surface and the opposite surface of plate and tubular structures. A coating with a maximum thickness of 6 mm is allowed on the test surface.

This document applies to external MFL testing of in-use ferromagnetic seamless steel pipes and base metal of pressure vessel shells with an outer diameter of not less than 38 mm and a wall thickness of not more than 20 mm. This document is also applicable to MFL testing of base metal of pressure vessels and storage tank bottom plates with a wall thickness of not more than 20 mm.

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 12707, *Non-destructive testing — Magnetic particle testing — Vocabulary*

ISO 12718, *Non-destructive testing — Eddy current testing — Vocabulary*

ISO 16809, *Non-destructive testing — Ultrasonic thickness determination*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12707, ISO 12718 and the following apply.

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

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

3.1 defect equivalent

value characterizing a defect, determined by analysis of signal features obtained during MFL testing

3.2 channel

combination of a magnetic field sensor and associated signal acquisition unit within a magnetic flux leakage testing probe

Note 1 to entry: A probe can comprise multiple magnetic field sensors.