International Standard

ISO 3882

Fourth edition
2024-01

# Metallic and other inorganic coatings — Review of methods of measurement of thickness

*Revêtements métalliques et autres revêtements inorganiques — Revue des méthodes de mesurage de l'épaisseur*



Reference number
ISO 3882:2024(en)



ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

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# Foreword

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This document was prepared by Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 262, *Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 3882:2003), which has been technically revised.



The main changes are as follows:

— editorial revisions;

— restructuring of the document;

— former Tables 2 and 3 moved to Annex A;

— new subclause 6.5.1.2 for the STEP method;

— review of measurement uncertainties;

— phase-sensitive eddy current, as described in ISO 21968, added to measurement methods and Tables A.1 and A.2.

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# Introduction

This document summarizes the various methods used for the measurement of coating thickness and describes their working principles. Methods of measuring coating thickness are either destructive or non-destructive (see Table 1). The information given in Annex A, Table A.1 will assist in the choice of typical instrumental methods suitable for thickness measurements. For all instrumental methods, manufacturers' instructions contain useful information on the correct handling of the instruments.

The thickness ranges covered by the different methods depend on the coating materials, thickness of the coating, substrates and instruments used (see Annex A, Table A.2); for example, although X-ray spectrometry can be used to measure the thickness of a chromium coating, thicknesses of 20 µm or more cannot be measured with sufficient precision. Similarly, while magnetic methods can be used to measure the thickness of a gold coating over a magnetic steel substrate, many magnetic instruments do not have the sensitivity to measure accurately thicknesses of gold coatings less than 2 µm.

Where a referee method is required, the appropriate coating specification can contain useful information on the preferred method.