

Metallic coatings — Measurement of coating thickness — X-ray spectrometric methods

The European Standard EN ISO 3497:2000 has the status of a British Standard

ICS 17.040.20; 25.220.40

National foreword

This British Standard is the official English language version of EN ISO 3497:2000. It is identical with ISO 3497:2000. It supersedes BS 5411-8:1991 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee STI/37, Methods of test for metallic and related coatings, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement these international or European publications may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN ISO title page, the EN ISO foreword page, the ISO title page, pages ii to iv, pages 1 to 18, an inside back cover and a back cover.

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This European Standard was approved by CEN on 15 December 2000.

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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 Management Centre has the same status as the official versions.

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Foreword

The text of the International Standard ISO 3497:2000 has been prepared by Technical Committee ISO/TC 107 "Metallic and other inorganic coatings" in collaboration with Technical Committee CEN/TC 262 "Metallic and other inorganic coatings", the secretariat of which is held by BSI.

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 June 2001, and conflicting national standards shall be withdrawn at the latest by June 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

NOTE FROM CMC: The foreword is susceptible to be amended on reception of the German language version. The confirmed or amended foreword, and when appropriate, the normative annex ZA for the references to international publications with their relevant European publications will be circulated with the German version.

Endorsement notice

The text of the International Standard ISO 3497:2000 was approved by CEN as a European Standard without any modification.

INTERNATIONAL STANDARD

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**ISO
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Metallic coatings — Measurement of coating thickness — X-ray spectrometric methods

*Revêtements métalliques — Mesurage de l'épaisseur du revêtement —
Méthodes par spectrométrie de rayons X*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

International Standard ISO 3497 was prepared by Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*, Subcommittee SC 2, *Test methods*.

This third edition cancels and replaces the second edition (ISO 3497:1990), which has been technically revised.

Annex A of this International Standard is for information only.

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1 Scope

WARNING Problems concerning protection of personnel against X-rays are not covered by this International Standard. For information on this important aspect, reference should be made to current international and national standards, and to local regulations, where these exist.

1.1 This International Standard specifies methods for measuring the thickness of metallic coatings by the use of X-ray spectrometric methods.

1.2 The measuring methods to which this International Standard applies are fundamentally those that determine the mass per unit area. Using a knowledge of the density of the coating material, the results of measurements can also be expressed as linear thickness of the coating.

1.3 The measuring methods permit simultaneous measurement of coating systems with up to three layers, or simultaneous measurement of thickness and compositions of layers with up to three components.

1.4 The practical measurement ranges of given coating materials are largely determined by the energy of the characteristic X-ray fluorescence to be analysed and by the acceptable measurement uncertainty and can differ depending upon the instrument system and operating procedure used.

2 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.

2.1

X-ray fluorescence XRF

secondary radiation occurring when a high intensity incident X-ray beam impinges upon a material placed in the path of the incident beam

NOTE The secondary emission has wavelengths and energies characteristic of that material.

2.2

intensity of fluorescent radiation

radiation intensity, x , measured by the instrument, expressed in counts (radiation pulses) per second

2.3

saturation thickness

thickness that, if exceeded, does not produce any detectable change in fluorescent intensity

NOTE Saturation thickness depends upon the energy or wavelength of the fluorescent radiation, density and atomic number of the material and on the angle of incident and fluorescent radiation with respect to the surface of the material.