

Paints and varnishes — Determination of film thickness

The European Standard EN ISO 2808:1999 has the status of a British Standard

ICS 87.040

National foreword

This British Standard is the official English language version of EN ISO 2808:1999. It is identical with ISO 2808:1997.

The UK participation in its preparation was entrusted to Technical Committee STI/10, Test methods for paints, which has the responsibility to:

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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 23 and a back cover.

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This British Standard, having been prepared under the direction of the Sector Board for Materials and Chemicals, was published under the authority of the Standards Board and comes into effect on 15 December 1997
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Amendments issued since publication

Amd. No.	Date	Comments
10893	March 2001	Implementation of the European Standard

English version

Paints and varnishes — Determination of film thickness

(ISO 2808:1997)

Peintures et vernis — Détermination de l'épaisseur
du feuil (ISO 2808:1997)

Beschichtungsstoffe — Bestimmung der
Schichtdicke (ISO 2808:1997)

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

The text of the International Standard from Technical Committee ISO/TC 35, Paints and varnishes, of the International Organization for Standardization (ISO) has been taken over as an European Standard by Technical Committee CEN/TC 139, Paints and varnishes, the Secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by January 1999, and conflicting national standards shall be withdrawn at the latest by January 1999.

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.

INTERNATIONAL STANDARD

**ISO
2808**

Third edition
1997-09-15

Paints and varnishes — Determination of film thickness

Peintures et vernis — Détermination de l'épaisseur du feuil



Reference number
ISO 2808:1997(E)

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Descriptors: Paints, varnishes, paint coats, tests, determination, thickness.

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.

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.

International Standard ISO 2808 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

This third edition cancels and replaces the second edition (ISO 2808:1991) of which it constitutes a technical revision.

The main technical changes are:

- a) Addition of the following methods of film thickness determination:
 - 1) Gravimetric (dissolving) method (Method 9)
 - 2) Determination of dry-film thickness on blast-cleaned steel substrates (Method 10).
 - b) Table 1 includes typical instrument bias and precision for each method.
- Annex A forms an integral part of this International Standard.

1 Scope

This International Standard reviews and specifies a number of methods that are applicable to the measurement of the thickness of organic coatings applied to a substrate. It does not apply to metallic coatings. Some of the techniques described can be adapted for the measurement of the thickness of detached coatings. The principles of the methods, their particular field of application and the expected precision are given in Table 1.

This International Standard also defines terms concerning the determination of film thickness.

2 Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1463:1982, *Metallic and oxide coatings — Measurement of coating thickness — Microscopical method*.

ISO 1514:1993, *Paints and varnishes — Standard panels for testing*.

ISO 2178:1982, *Non-magnetic coatings on magnetic substrates — Measurement of coating thickness — Magnetic method*.

ISO 2360:1982, *Non-conductive coatings on non-magnetic basis metals — Measurement of coating thickness — Eddy current method*.

ISO 2811:1997, *Paints and varnishes — Determination of density — Part 1: Pycnometer method — Part 2: Immersed body (plummet) method — Part 3: Oscillation method — Part 4: Pressure cup method*.

ISO 3233:1984, *Paints and varnishes — Determination of volume of dry coating (non-volatile matters) obtained from a given volume of liquid coating¹⁾*.

ISO 3497:1990, *Metallic coatings — Measurement of coating thickness — X-ray spectrometric methods*.

ISO 3543:1981, *Metallic and non-metallic coatings — Measurement of thickness — Beta backscatter method*.

ISO 4518:1980, *Metallic coatings — Measurement of coating thickness — Profilometric method*.

ISO 7254:1984, *Paints and varnishes — Assessment of natural spreading rate — Brush application*.

ISO 8503-1:1988, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 1: Specifications and definitions for ISO surface profile comparators for the assessment of abrasive blast-cleaned surfaces*.

3 Required supplementary information

The methods of measurement specified require to be completed, for any particular application, by the following supplementary information.

This information should be derived from the International Standard or national standard or other document for the product under test or, if appropriate, may be the subject of agreement between the interested parties.

- a) The method of application of the coating to the substrate and whether it is a single coating or a multi-coat system.
- b) The duration and conditions of drying (or stoving) and ageing (if applicable) of the coming before measurement.
- c) The method of film thickness measurement to be used (see Table 1).
- d) The significant area (see 4.2) of the coated article and, if necessary, the number of measurements.

¹⁾ Under revision.

Table 1 — Methods of film thickness measurement

NOTE 1 Many of the methods referred to below may be adapted for use with detached films.			
Number and description	Techniques and applications	Typical instrument bias ^a and precision	Remarks
Method No. 1	A Comb gauge	-----	Measurements give an approximate indication of the thickness of the wet film.
Assessment of wet-film thickness	B Wheel gauge	Bias: $\pm 2,5 \% + 1 \mu\text{m}$	May be used in laboratories and on site.
	C By weighing For measurement of wet-film thickness of freshly painted surfaces.	Reproducibility: $\pm 15 \mu\text{m}$	Method 1C may also be used for determining the dry-film thickness, but in the laboratory only.
Method No. 2	For use on films too soft to be measured by methods which use a presser foot or probe.	Determinations are not precise	Provides a check that the mean thickness lies between specified limits. The film remains undamaged.
Determination of dry-film thickness by calculation from the ratio of dry-film mass to dry-film area			
Method No. 3	A Micrometer method. For use on test panels or painted surfaces that are substantially plane.	Bias: $\pm 2 \mu\text{m}$	The film has to be hard enough to resist indentation on closing the micrometer jaws. The film is damaged in the test. The film thickness shall be greater than $25 \mu\text{F}$
Measurement of dry-film thickness by mechanically contacting instruments	B Dial gauge method Test panels or painted surfaces that are substantially plane or have a curvature in one direction	Reproducibility: $\pm 10 \%$, with a lower limit of 2 of $2 \mu\text{m}$.	The film has to be hard enough to resist indentation on lowering the gauge or electric-device presser foot.
Method No. 4	Recommended as a referee method for painted surfaces that are substantially plane.	Reproducibility: $\pm 10 \%$, with a lower limit of $2 \mu\text{m}$	The film has to be hard enough to resist indentation by the profile-tracing stylus. The film is damaged in the test.
Measurement of dry-film thickness by the profilometric method			