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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 13452.2-2008

**Paints and varnishes -- Determination of film thickness
(English Translation)**

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Foreword

GB/T 13452 Paints and Varnishes can be divided into the following parts.

--- Part 1 is GB/T 13452.1-1992 Paints and Varnishes - Determination of Total Lead - Flame Atomic Absorption Spectrometric Method;

--- Part 2 is GB/T 13452.2-2008 Paints and Varnishes - Determination of Film Thickness;

--- Part 3 is GB/T 13452.3-1992 Paints and Varnishes - Determination of Hiding Power - Part 1.Kubelka-Munk Method for White and Light-Colored Paints;

--- Part 4 is GB/T 13452.4-2008 Paints and Varnishes - Determination of Resistance to Filiform Corrosion on Steel.

This Part is Part 2 of GB/T 13452.

This Part equivalently adopts the international standard ISO 2808-2007 Paints and Varnishes -

Determination of Film Thickness (English Version).

For the benefit of use, this Standard made the following editorial modifications against ISO 2808.2007.

a) Delete the Foreword and Introduction of the internal standard;

b) Change ISO 2811-1 in the Bibliography of this Part into the national standard GB/T 6750 that equivalently adopts this international standard; and Change ISO 3233 into national standard GB/T 9272 that modifies and adopts this international standard.

This Part replaced GB/T 13452.2-1992 Paints and Varnishes - Determination of Film Thickness.

Compared with the previous edition GB/T 13452.2-1992, the major technical differences with

this Part are as follows.

--- Add Clause 3 Terms and Definitions in this Part;

--- The test of this Part is divided into four clauses based on wet-film thickness, dry-film thickness, thickness of uncured powder layer and paint film thickness on rough surface; while each clause is further divided into the relevant test methods. However, the previous edition only arranges on a clue of single test method;

--- Add the test methods and categories of the wet-film thickness and dry-film thickness in Clauses 4 and 5 of this Part;

--- Add the thickness of uncured powder layer and paint film thickness on rough surface in Clauses 6 and 7 of this Part;

--- Add test methods using photothermal technology, radiation technology and acoustic technology in Clauses 4 and 6 of this Part;

--- Add Annex A to summarize the relevant test methods of various paint film thicknesses in tabular form in this Part; and specifies the applicable substrates, scope of application, existing standards and precision data for each test method.

--- Add Bibliography of this Part.

The Annex A of this Part is informative.

This Part was proposed by China Petrol and Chemical Industry Association.

This Part shall be under the jurisdiction of National Technical Committee on Paints & Pigments

of Standardization Administration of China.

Drafting organization of this Part. CNCCC Changzhou Paint and Coatings Chemical Industry

Research Institute.

Chief drafting staffs of this Part. Peng Jufang.

This Part was first-time published in 1992; and it is the first-time revised hereby.

Paints and Varnishes - Determination of Film Thickness

1 Scope

This Standard describes a number of methods that are applicable to the measurement of the

thickness of coatings applied to a substrate. Methods for determining wet-film thickness, dry-

film thickness and the film thickness of uncured powder layers are described. Reference is made

to individual standards where these exist. Otherwise, the method is described in detail.

2 Normative References

The provisions in following documents become the provisions of this Part through reference in

this Part of GB/T 13452. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document

applies.

ISO 463 Geometrical Product Specifications (GPS) - Dimensional Measuring Equipment
- Design and Metrological Characteristics of Mechanical Dial Gauges

3 Terms and Definitions

For the purposes of this Document, the terms and definitions given in ISO 4618:2006 and the

following apply.

Continuous layer formed from a single or multiple application of a coating material to a substrate.

4 Determination of Wet-Film Thickness

The mechanical principle is suitable for all film-substrate combinations. The substrate has to be flat in at least one direction in the area where the measurement is conducted. Curvature of

the surface in a single plane is permissible (e.g., internal or external surface of pipes).

Operate the apparatus and measure the film thickness in accordance with the manufacturer's

instructions.

5 Determination of Dry-Film Thickness

The mechanical principle is basically suitable for all film-substrate combinations. Where mechanical gauging is used, the substrate and coating shall be hard enough to prevent the reading from being falsified as a result of the measuring tip creating an indentation.

The micrometer shall be capable of measuring to the nearest 5µm. It shall be fitted with a ratchet

to limit the force exerted by the spindle on the test surface.

6 Determination of Thickness of Uncured Powder Layers

The film thickness of the uncured powder layer, t_p , in micrometers is calculated from the difference between the mass of the uncoated specimen and that of the coated specimen using

the following Formula (4).

Using the gravimetric method yields the mean value of the film thickness over the entire coated

surface area. When applying the powder, the reverse side of the specimen shall be masked to

prevent measurement errors resulting from partial coating of the reverse (overspray).

7 Measurement of Film Thickness on Rough Surfaces

It is advisable to take at least three readings evenly spread in each test area.

As a guide, it is recommended that there be two test areas every square meter for flat plates,