



Designation: D1212 – 91 (Reapproved 2007)<sup>ε1</sup>

## Standard Test Methods for Measurement of Wet Film Thickness of Organic Coatings<sup>1</sup>

This standard is issued under the fixed designation D1212; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

<sup>ε1</sup> NOTE—Research report was added editorially to Test Method B in April 2012.

### 1. Scope

1.1 These test methods cover the determination of wet film thickness of organic coatings such as paint, varnish, and lacquer. Two methods are described as follows:

1.1.1 In *Test Method A*, the Wet Film Thickness Gage (English or Metric graduation (see 5.1)) is used to measure wet film thicknesses up to 60 mils on the English scale series, and up to 700  $\mu\text{m}$  on the metric scale series (Sections 5-8).

1.1.2 In *Test Method B*, the Pfund Gage is used to measure wet film thicknesses up to 14.2 mils (360  $\mu\text{m}$ ) (Sections 9-13).

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

### 2. Referenced Documents

- 2.1 *ASTM Standards*:<sup>2</sup>  
[D823 Practices for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels](#)

### 3. Summary of Test Methods

3.1 The material is applied in the laboratory to plane, rigid test panels or in the field to the surface being coated. The wet film thickness is determined as quickly as possible to reduce shrinkage due to solvent loss.

<sup>1</sup> These test methods are under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and are the direct responsibility of Subcommittee D01.23 on Physical Properties of Applied Paint Films.

Current edition approved June 1, 2007. Published June 2007. Originally approved in 1952. Last previous edition approved in 2001 as D1212 - 91 (2001). DOI: 10.1520/D1212-91R07E01.

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

3.2 In *Test Method A*, a gage with one eccentric and two concentric wheels is rolled over the surface and the point where the eccentric wheel first touches the wet film is determined.

3.3 In *Test Method B*, a gage with a convex lower surface is pushed into the wet film until the center touches the substrate. The diameter of the spot of wet coating left on the convex surface is measured and the film thickness calculated from the diameter of the spot and the radius of curvature.

### 4. Significance and Use

4.1 Wet film thickness measurements aid in the prediction of dry film thickness. In instances where dry film thickness cannot be measured nondestructively, wet film thickness is frequently specified. Also, the ability to determine wet film thickness during application can provide the opportunity to correct the application procedures.

## TEST METHOD A

### 5. Apparatus

5.1 *Wet Film Thickness Gage*—Two versions of the gage are now in use:<sup>3</sup> The original design as shown in Fig. 1 and a later design as shown in Fig. 2. Both designs consists of an eccentric center wheel supported by two concentric wheels so as to provide two scales that are bilaterally symmetrical. As the gage is rolled on the film, there is a change in clearance between the wet film and the eccentric wheel. The point at which the film first touches the center wheel measures the thickness of the film.

5.2 The later design shown in Fig. 2, moves the eccentric wheel from between the concentric wheels, as shown in Fig. 1, to the outside of the gage and closer to one of the concentric wheels. Gage reading errors of parallax across the gage are eliminated as the two scales are placed directly on the eccentric

<sup>3</sup> Both versions of this gage (Interchemical (INMONT) and Model "C") are covered by U.S. Patents 2 507 592 and 3 128 558 and are issued to Maynard R. Euverard. Interested parties are invited to submit information regarding the identification of acceptable alternatives to this patented item to the Committee on Standards, ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend.

wheel and errors when measuring on uneven support surfaces

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