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Standard Practice for Preparation of Uniform Free Films of Organic Coatings[1]

This standard is issued under the fixed designation D 4708; 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 (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This practice covers the preparation of free films of organic coatings for use in determining the physical properties of the coatings. Procedures are given for preparing free films on ~~four~~three alternative substrates. These substrates are ~~dental foil,~~ treated FEP (fluorinated ethylene-propylene) sheet, silicone coated paper, and halo-silane coated glass plates.

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.* ~~A specific hazard statement is given in 6.1.~~

2. Referenced Documents

2.1 *ASTM Standards:* [2]

D 823 Practices for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels

D 1005 Test ~~Methods~~Method for Measurement of Dry-Film Thickness of Organic Coatings Using Micrometers

D 1653 Test Methods for Water Vapor Transmission of Organic Coating Films

D 2370 Test Method for Tensile Properties of Organic Coatings

3. Summary of Test Method

3.1 Free films are prepared by depositing a uniform wet coating of the test material on a release substrate. The applied films are dried or baked, cut into appropriate size for the intended physical property test, and then stripped from the release substrate.

4. Significance and Use

4.1 Free films are required for conducting tests to evaluate physical properties such as tensile and elongation (Test Method D 2370), moisture vapor permeability (Test Methods D 1653), and other physical properties of organic coatings where the substrate may interfere with the determination.

~~4.2The tin foil/mercury amalgamation procedure should be used only in cases where other substrates may be affected by high-temperature baking or may affect the test results.~~

5. Apparatus and Materials

5.1 *Equipment*, for applying films of uniform thickness as described in Practices D 823.

5.2 *Micrometer Film Thickness Gage* , as described in Test ~~Methods~~Method D 1005.

5.3 *Alternative Release Substrates* :

5.3.1 ~~*Dental Tin Foil*, preferably 25-µm (1-mil) thick.~~

~~5.3.2~~*Sheet of FEP*—(*polyhexafluoropropylene*), preferably 50-µm (2-mils) thick, coated with a thin film of a dry lubricant.[3,4]

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[1] This practice is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.23 on Physical Properties of Applied Paint Films.

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[2] 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] Teflon FEP 2-mil film thickness (Card No. 03111, Item #29499) from E.I. du Pont de Nemours & Co., Inc., Wilmington, DE 19898, was found suitable for this purpose. However, it is no longer available. Other substrates that may be suitable are 250-µm (10-mil) thick polyethylene, photographic paper, polished steel, and fluoropolymer coated metal panels.~~

[3] The sole source of supply of dry lubricant (MS-122 Fluorocarbon Release Agent) known to the committee at this time is Miller-Stephenson Chemical Co., Inc., 55 Backus Ave., Danbury, CT 06810.

~~[4] The sole source of supply of dry lubricant (MS-122 Fluorocarbon Release Agent) known to the committee at this time is Miller-Stephenson Chemical Co., Inc., 55 Backus Ave., Danbury, CT 06810. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,[1]~~

***A Summary of Changes section appears at the end of this standard.**