



Standard Test Methods for Resistance of Dried Films of Varnishes to Water and Alkali¹

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ε¹ NOTE—Keywords and the unit measurement statement were added editorially in October 1996.

1. Scope

1.1 These test methods cover the determination of the resistance of dried varnish films to immersion in water and dilute alkali at room temperature.

1.2 The values stated in inch-pound 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:

D 609 Practice for Preparation of Cold-Rolled Steel Panels for Testing Paint, Varnish, Conversion Coatings, and Related Coating Products²

D 1193 Specification for Reagent Water³

D 3924 Specification for Standard Environment for Conditioning and Testing Paint, Varnish, Lacquers, and Related Materials²

3. Summary of Test Methods

3.1 *Test Method A*—The material under test is flowed onto tinplate panels and dried for 48 h. The panels are then immersed to half their length in reagent water for 18 h, or other agreed upon time, removed, and examined visually.

3.2 *Test Method B*—The material under test is applied to glass test tubes by dipping and dried for 72 h. The tubes are then suspended in dilute sodium hydroxide for periods ranging from 1 to 24 h, removed, rinsed, and after drying for 30 min, examined visually.

4. Significance and Use

4.1 Dried Varnish Films are a source of primary protection for surfaces. Exposure to water and dilute alkali solutions are

two factors which tend to break down this protective coating. This test method can be used as a comparison basis between manufacturer and consumer to determine the ability of the varnish to resist water and dilute alkali.

5. Reagents

5.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.⁴

5.2 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean reagent water as defined by Type IV of Specification D 1193.

TEST METHOD A—WATER RESISTANCE OF DRIED FILMS

6. Apparatus and Materials

6.1 *Beaker*, glass, 600 mL or larger.

6.2 *Tinplate Panels*, 3 by 5 in. (75 by 125 mm) cut from commercial No. 31 gage (0.225-mm) bright tin plate, weighing 0.4 to 0.5 lb/ft² (1.90 to 2.50 kg/m²) and carefully cleaned and dried before use in accordance with Methods B or C of Practice D 609.

7. Procedure

7.1 Flow the varnish onto the tin panels, allow to drain in a nearly vertical position, and dry for 48 h in the standard atmosphere described in Specification D 3924.

7.2 Place the panels in a beaker containing about 2.5 in. (65 mm) of water at room temperature, immersing the ends that were uppermost during drying, and allow to remain in the water for 18 h, or other suitable period as agreed upon between the purchaser and the seller.

7.3 Remove the panels from the water, wipe carefully, and allow to dry at room temperature. Note the time required for whitening, if any, to disappear. Blooming, which sometimes

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² *Annual Book of ASTM Standards*, Vol 06.01.

³ *Annual Book of ASTM Standards*, Vol 11.01.

⁴ *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopeia and National Formulary*, U.S. Pharmacopeial Convention, Inc. (USPC), Rockville, MD.