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AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Test Method for Blocking Resistance of Architectural Paints¹

This standard is issued under the fixed designation D 4946; 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 test method describes an accelerated procedure for evaluating the face-to-face blocking resistance of trades sales paints. This is not to be confused with blocking resistance Test Method D 3003 which is concerned with blocking of industrial coatings on metal substrates, nor with Test Method D 2793 which is concerned specifically with wood product finishes and reports results on a satisfactory or not satisfactory basis, rather than by the degree of blocking tendency as in this test method.

1.2 The values stated in the SI units of measurement 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 2793 Test Method for Block Resistance of Organic Coatings on Wood Substrates²

D 3003 Test Method for Pressure Mottling and Blocking Resistance of Organic Coatings on Metal Substrates²

3. Terminology

3.1 Definition:

3.1.1 *blocking*—The undesirable sticking together of two painted surfaces when pressed together or placed in contact with each other for an extended period of time.

4. Summary of Test Method

4.1 Dried paint films are placed face-to-face and a pressure of about 127 g/cm² (1.8 psi) is applied. These paint films are put into an oven for 30 min to make the test more stringent. After cooling, the blocked panels are peeled apart. The degree of blocking is rated subjectively for tack or seal using a series of standard descriptive terms corresponding to numerical ASTM values of 10 to 0.

¹ This test method is under the jurisdiction of ASTM Committee D-1 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.42 on Architectural Finishes.

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² Annual Book of ASTM Standards, Vol 06.02.

5. Significance and Use

5.1 Dry paint often comes in contact with itself especially in window and door areas and, depending on its hardness, the pressure, temperature, humidity, and duration of time the surfaces are in contact, sometimes sticks to itself (blocks). This stringent test method can be used to compare and rate subjectively the resistance of paints to blocking.

6. Apparatus

6.1 *Conditioned Room*, at 18 to 29.5°C (65 to 85°F) and 40 to 60 % relative humidity.

6.2 *Sealed Paper Test Charts*, approximately 190 by 280 mm (7.5 by 11 in.).

6.3 *Applicator Blade*, 13 to 15 cm (5 to 6 in.) wide, 0.15–mm (6–mil) clearance.

6.4 *Oven*, 48 to 52°C (115 to 125°F).

6.5 *Rubber Stoppers*, No. 8, 3.2 cm (1.25 in.) smaller diameter.

6.6 *Weights*, 1000 g.

6.7 *Scissors*.

6.8 *Aluminum Tray or Pan*, flat.

7. Procedure

7.1 Cast the paint to be tested on a sealed test chart using the applicator blade. Condition coated panels in the conditioned room for seven days. All painted panels should be kept free of grease, oil, or fingerprints since these will affect block resistance.

7.2 After the panels have been conditioned, cut out six 3.8 by 3.8-cm (1½ by 1½-in.) sections from the painted chart. Start the cut at least 1.3 cm (½ in.) away from the edge of the drawdown.

7.3 Place the cut sections with the paint surfaces face-to-face for each paint to be tested.

7.4 The weights, stoppers, and tray should be temperature equilibrated in the oven prior to running the test.

7.5 Place the face-to-face specimens in the oven on a flat aluminum tray. Place a No. 8 stopper on top, with the small diameter in contact with the specimens, then place a 1000-g weight on top of the stopper. This results in a pressure of 127 g/cm² (1.8 psi) on the specimens. One weight and stopper is to be used for each specimen to be tested. It is recommended that “pass” and “fail” paint controls be used in each test run and that the tests be run in triplicate.