Designation: D2064 – 91 (Reapproved 2016)

Standard Test Method for Print Resistance of Architectural Paints[1]

This standard is issued under the fixed designation D2064; 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 covers an accelerated procedure for evaluating the print resistance of architectural paints. It differs from print resistance Test Method D2091 in that the latter is concerned with lacquer finishes under packaging, shipping, and warehousing conditions, whereas this test method is concerned with decorative coatings undergoing random on-site pressure contact.

NOTE 1—Printing should not be confused with blocking, which is measured in Test Method D4946. The former relates to the indentation of a surface, and the latter, the sticking together of two surfaces.

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:*[2]

D2091 Test Method for Print Resistance of Lacquers

D4946 Test Method for Blocking Resistance of Architectural Paints

3. Terminology

3.1 *Definitions:*

3.1.1 *print resistance, n*—the ability of a paint film to resist forming a permanent impression in a semihardened film as a result of a pressure from an object placed on it.

3.2 For additional definitions of terms, refer to *Paint/Coatings Dictionary*.[3]

4. Summary of Test Method

4.1 A piece of cheesecloth is placed on the painted surface and topped with a No. 8 rubber stopper (position smaller diameter of stopper on the cheesecloth) and a 500-g weight to create a pressure of about 0.9 psi (6.2 kPa). This assembly is placed in a 140°F (60°C), or other agreed upon temperature, oven for 1 h. When cooled, the resulting paint surfaces are rated on the numerical scale of 0 to 10, which corresponds to a subjective rating of an impression resulting from their being in contact with the cheesecloth.

5. Significance and Use

5.1 The ability of a coating to resist printing is important because its appearance is adversely affected if the smoothness of the coating film is altered by contact with another surface, particularly one with a texture. Interior paint systems, particularly gloss and semigloss on window sills and other horizontal surfaces, often have objects such as flower pots placed on them that may tend to leave a permanent impression. This tendency for a paint film to "print" is a function of the hardness of the coating, the pressure, temperature, humidity, and the duration of time that the object is in contact with the painted surface.

6. Apparatus

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

6.2 *Glass Slides,* approximately 3 by 6 in. (75 by 150 mm).

6.3 *Drawdown Applicator,* 3-in. (75-mm) wide with a clearance of 6 mils (150 μm).

6.4 *Oven,* maintained at 140 ± 3.5°F (60 ± 2°C) or, other agreed upon temperature.

6.5 *Rubber Stoppers,* No. 8 (40-mm top diameter and 32-mm bottom diameter).

6.6 *Cheesecloth,* medium weave, 24/20, bleached cotton.

6.7 *Scissors.*

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

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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] *Paint/Coatings Dictionary*, available from the Federation of Societies for Coatings Technology, Blue Bell, PA, 1978.

6.8 *Weight,* 500-g.

7. Procedure

7.1 Cast the paints being tested on glass slides using a drawdown applicator with a clearance of 6 mils (150 μm). Allow the coated glass slides to dry in the conditioned room for 7 days.

7.2 Cut out approximately 1½ by 1½-in. (40 by 40-mm) pieces of cheesecloth, one piece for each slide. Use cheesecloth that is usually supplied with 4 intact layers. Do not separate the layers.

7.3 Place the test slides on a horizontal tray, painted face upward, then place one piece of cheesecloth over each slide and top with the small diameter face of a No. 8 stopper and a 500-g weight, one weight and stopper for each specimen. (Weights and stoppers should be equilibrated in the oven prior to running the test.) It is recommended that control paints of known satisfactory and unsatisfactory performance be used in each test run and that the tests be run in duplicate.

7.4 Place the entire assembly in the oven and remove it after exactly 1 h. Immediately lift off the weights and stoppers without disturbing the cheesecloth and allow to cool.

7.5 After approximately ½ h, remove the cheesecloths and carefully examine the appearance of the films underneath. Note the depth and amount of cheesecloth pattern left in the paint film. If necessary examine the panel, for better perception of indentations, by viewing it at a low (grazing) angle of illumination.

8. Interpretation of Results

8.1 Rate print resistance is rated on a numerical scale of 0 to 10 corresponding to a subjective rating of the degree to which the paint film has been imprinted. Record the numerical value for print resistance in accordance with the following ASTM style rating or scoring system:

Numerical Rating	Qualitative Characterization (Resistance to Printing)	Quantitative Description (Amount of Printing)
10	perfect	none
8	very good	very slight
6	good	slight
4	fair	moderate
2	poor	considerable
0	very poor	very great

9. Report

9.1 Report the print resistance rating determined in accordance with 8.1. Specify temperature used.

10. Precision

10.1 Data are unavailable for a conventional intra- and interlaboratory precision statement. However, based on actual laboratory experience, with experienced operators, the repeatability is estimated to be plus or minus one unit. The employment of common control paints with mutually agreed ratings should make it possible for interlaboratory agreement (reproducibility) to approach intralaboratory agreement (repeatability). Although numerical ratings may differ with different operators or at different times, ranking should be about the same. As in many tests the precision improves with practice.

11. Keywords

11.1 print resistance