



Designation: **D4958 – 10 (Reapproved 2016) D4958 – 24**

Standard Test Method for Comparison of the Brush Drag of Latex Paints¹

This standard is issued under the fixed designation D4958; 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 is a standardized brushout procedure for comparing the brush drag of architectural type solvent-borne paints.

1.2 With slight modifications this test method is also applicable to solvent-borne paints.

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

1.4 *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 safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

D1475 Test Method for Density of Liquid Coatings, Inks, and Related Products

D3924 Specification for Standard Environment for Conditioning and Testing Paint, Varnish, Lacquer, and Related Materials

D3925 Practice for Sampling Liquid Paints and Related Pigmented Coatings

D4287 Test Method for High-Shear Viscosity Using a Cone/Plate Viscometer

D5068 Practice for Preparation of Paint Brushes for Evaluation

3. Terminology

3.1 *Definitions: Definitions of Terms Specific to This Standard:*—See Paint/Coatings Dictionary for definition of terms used in this test method.

3.1.1 *brush drag*—*brush-drag, n*—resistance encountered when applying a coating by brush.

4. Summary of Test Method

4.1 A ~~50-mm (2-in.)~~ 50 mm (2 in.) polyester brush is used to apply the test paint on a ~~1000-cm²~~ test area, approximately 1000 cm² (1.076 ft² (1.076-ft²)) test area. The application is made at a spreading rate of ~~9.82~~ approximately 9.82 m²/L (400 ft²/gal) and is

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.

completed in ≈ 30 s to 35 s. The degree of brush drag is rated subjectively using a series of standard descriptive terms corresponding to numerical values of 1 to 10. The rank order of a set of samples is thereby established.

5. Significance and Use

5.1 As the brush drag of a paint increases, any natural tendency on the part of the painter to overspread the paint is reduced. When all other factors are held constant, increased brush drag will result in greater film thickness with consequent improvement in durability and hiding. Conversely, sometimes it might be preferred to have a lesser degree of brush drag for easier application (that is, the amount of time and effort in applying a paint to a specific area is reduced with a lesser degree of brush drag).

5.2 This test method provides a standardized brushout procedure for the evaluation of brush drag as an alternative to customary informal ad hoc procedures. Its objective is to maximize the reliability and precision with which this characteristic may be determined.

NOTE 1—The brush drag of paints is directly related to their high-shear viscosity. There is generally good rank order agreement between results obtained by this method and Test Method **D4287**. The sensitivity of this brushout method has been found sufficient to distinguish between brushabilities corresponding to high-shear viscosity differences not lower than 0.3 poise (0.03 Pa.s). Round robin data show that rank order agreement between the brushout and viscometric methods is poor when ~~latex~~ both latex and solvent-borne paints are part of the same comparison group. This is the result of these two paint types having markedly different rheological properties that affect the relative perception of brush drag.³

6. Apparatus

6.1 *Brush*, ~~50-mm (2-in.)~~ 50 mm (2 in.) polyester filament, ~~70-mm (2¾-in.)~~ 70 mm (2¾ in.) length-out, 14 mm (½ in.) thick, with a chiseled tip.

NOTE 2—All tests of a given series of paints, within or between laboratories, should be carried out with commercially identical brushes.

6.2 *Stopwatch*.

6.3 *Balance*, capable of weighing accurately to 0.1 g.

6.4 *Test charts*, with a sealed surface, having approximately 1000 cm² (~~1.076~~ 1.1 ft²) of test area.⁴

7. Sampling and Conditioning

7.1 Sample in accordance with Practice **D3925**.

7.2 Condition the samples in accordance with the Conditioning and Testing section of Specification **D3924**.

7.3 All testing ~~should~~must be performed under the same conditions.

8. Procedure

8.1 Do not change operators during the running of a series of specimens, since this will invalidate any conclusions as to rank order.

8.2 Determine the density in kilograms per litre (pounds per gallon) of the paint sample in accordance with Test Method **D1475**.

8.3 Multiply the density by 10.2 to obtain the weight of paint in grams to apply on the specified test chart to obtain a spreading rate of 9.82 m²/L (multiply density in pounds per gallon by 1.22 to obtain a spreading rate of 400 ft²/gal).

8.4 Load the brush with the specified paint and condition the brush for testing in accordance with Practice **D5068**.

³ Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR:D01-1072. Contact ASTM Customer Service at service@astm.org.

⁴ Leneta Form 8H-BW, obtainable from The Leneta Co., P.O. Box 86, Ho-Ho-Kus, NJ 07423, has 15 Whitney Road, Mahwah, NJ 07430-3129, has been found satisfactory for this purpose.