



Designation: D7489 – 09 (Reapproved 2017)

Standard Practice for Evaluating Touch-Up Properties of Architectural Coatings under Various Environmental Conditions¹

This standard is issued under the fixed designation D7489; 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 determines the ability of a paint to be recoated or “touched up” in small areas. Variations in color, gloss, and sheen that result in a different appearance from the original paint can be evaluated visually.

1.2 This practice describes evaluation of touch-up characteristics in a laboratory-scale controlled environment as opposed to a full-scale field environment.

1.3 Evaluation of touch-up properties under constant drying conditions is described. Environmental conditions can be adjusted to incorporate high or low temperature drying, or both. The changes in application temperature can lead to larger differences in touch-up than applying both coats under the same environmental conditions.

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 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

[D344 Test Method for Relative Hiding Power of Paints by the Visual Evaluation of Brushouts](#)

[D523 Test Method for Specular Gloss](#)

[D1475 Test Method For Density of Liquid Coatings, Inks, and Related Products](#)

[D1729 Practice for Visual Appraisal of Colors and Color Differences of Diffusely-Illuminated Opaque Materials](#)

[D5068 Practice for Preparation of Paint Brushes for Evaluation](#)

[D5069 Practice for Preparation of Paint-Roller Covers for Evaluation of Architectural Coatings](#)

[D6762 Test Method for Determining the Hiding Power of Paint by Visual Evaluation of Spray Applied Coatings](#)

[E1347 Test Method for Color and Color-Difference Measurement by Tristimulus Colorimetry](#)

3. Terminology

3.1 Definitions:

3.1.1 *touch-up, n*—to repair visual differences in a painted surface by recoating small areas with the same paint that was used for the original coat.

3.1.1.1 *Discussion*—This includes color and sheen differences in the dry film.

4. Summary of Practice

4.1 Paints, application tools, and drying conditions are selected before starting this practice. Relevant color(s) for testing and any specific primers should also be selected at this time.

4.2 Multiple coats of the test paint are applied to a specified substrate in a prescribed manner to simulate touch-up conditions. The results are visually evaluated for variations in color, gloss, and sheen between the touch-up coating and the first and second coat.

4.3 A qualitative rating scale for the touch-up result is described.

5. Significance and Use

5.1 During construction of a home, paints are subjected to a wide variety of drying conditions, and this may exhibit differences between the original coat and the touched-up area in appearance after its full cure. Therefore, it is essential for the paint to be able to perform under a wide variety of drying conditions. A paint that does this is very advantageous to the contractor.

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 D01.42 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.

5.2 It is possible for a paint to have excellent color touch-up, but poor sheen touch-up, or vice-versa. The ideal paint will have both excellent color and sheen touch-up under testing conditions.

5.3 Color, gloss and base choice can have a major impact on touch-up of the paint.

6. Apparatus and Materials

6.1 *Tinted Test Paint.*

6.2 *Dry Wall Panels, Upson Board,* or other accepted material. Minimum size 30 by 30 cm (1 ft by 1 ft).

6.3 *Primary Applicator,* which could be:

6.3.1 Good quality paint roller with 3/8 in. nap.

6.3.2 Airless spray unit capable of 1000 to 3000 psi and appropriate spray tip.

NOTE 1—If using an airless spray unit, typically a larger test panel is required.

6.3.3 Other applicators, as agreed upon.

6.4 *Secondary Applicator,* which could be:

6.4.1 Good quality paint roller with 1 cm (3/8 in.) nap.

6.4.2 Good quality polyester/nylon paint brush.

6.4.3 A natural or synthetic sponge.

6.4.4 Other applicators, as agreed upon.

6.5 *Controlled Temperature Drying Area/Cabinet,* such as:

6.5.1 Cold cabinet (refrigerator), maintaining 4 ± 2°C (40 ± 5°F).

6.5.2 Constant temperature room, maintaining 25 ± 2°C (77 ± 5°F).

6.5.3 May be done in a cabinet maintained at other temperatures or humidities, or both, as agreed.

6.6 *Gloss Meter (optional),* to read gloss differences on test panel.

6.7 *Spectrophotometer (optional),* to read color differences on test panel.

6.8 *Bench Scale (optional),* to measure weight of paint applied to test.

6.9 *Ruler (optional),* or other measuring device to measure area of paint application.

7. Procedure

7.1 Before starting this method, agree upon paints, tinted color, applicator types for first coat, second coat and touch-up area(s), as well as temperature under which each will be applied and dried.

7.2 Select a convenient and suitable spreading rate, mutually agreeable to all parties involved in the testing program, and preferably in the range from 8.6 to 11.0 m²/L (350 to 450 ft²/gal). See Appendix X1 for examples of typical touch-up applicator and drying conditions.

7.2.1 Results may be highly dependent on film thickness; therefore, it is essential that the test paints be weighed on accurately, particularly for small test areas. The amount of paint in grams required for a specific spread rate can be determined from the following equation:

$$g = ((Am * D) / Sm) * 1000 \tag{1}$$

where:

Am = area, square metres,

D = density, g/mL or kg/L, and

Sm = spreading rate, square metres/L.

or the following imperial units equation:

$$g = ((A * W) / S) * 3.15 \tag{2}$$

where:

A = area, sq. in.,

W = weight per gal. (Test Method D1475), lb./gal, and

S = spreading rate, square ft/gal.

NOTE 2—The gallon unit here and throughout this test method is the U. S. gallon (3.78 L).

NOTE 3—To avoid variations in initial gloss, the substrate may require priming.

7.3 Application of First Coat:

7.3.1 The test substrate, applicator for the first coat (applicator A) and paint are placed in an area (oven, refrigerator, or constant temperature room) that corresponds with drying conditions for first coat (drying conditions A), and allowed to equilibrate for at least 4 h.

7.3.2 Applicator is broken in or conditioned for use (for example, Practice D5068 for paint brushes and Practice D5069 for paint rollers).

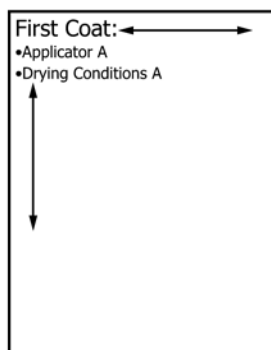


Figure 1. First Coat

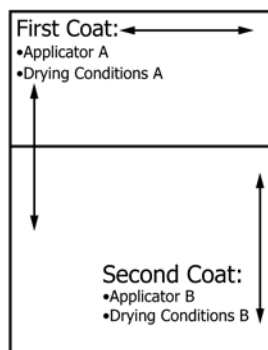


Figure 2. Second Coat

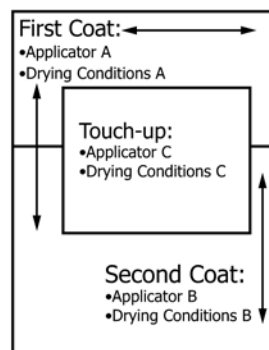


Figure 3. Touch-up

FIG. 1 Graphic Representation of First and Second Coats and Touch-up Areas