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Standard Test Method for COLOR PERMANENCE OF WHITE ARCHITECTURAL ENAMELS¹

This standard is issued under the fixed designation D 1543; 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 a laboratory procedure for evaluating the color permanence of white architectural enamels.

1.2 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems 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 Document

2.1 *ASTM Standard:*
D2224 Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates²

3. Summary of Method

3.1 Panels coated with the test enamels are exposed in the dark to an atmosphere of dry sulfur dioxide (SO₂) for 24 h. Color measurements before and after exposure are made to determine the color change.

4. Significance and Use

4.1 Interior white enamels change color frequently in use. This test method describes a procedure in which enamels are exposed to a synthetic atmosphere that has been found to cause color changes approximately equal to those caused by home atmospheres.

5. Apparatus

5.1 The apparatus for causing accelerated color change shall be assembled as shown in Fig.

1 and shall consist of the following components:

5.1.1 *Glass Bottles*, three 8-oz (250-mL) capacity, with a minimum inside diameter of 2 in. (50 mm).

5.1.2 *Specimen Rack*, corrosion-resistant that fits into the test chamber to hold test panels suspended from corrosion-resistant hooks spaced on the rack so that the panels do not touch each other or the container.

5.1.3 *Test Chamber*, gas-tight 5-gal (19-L) container, coated to prevent corrosion or made of corrosion-resisting material. Inlet and outlet tubes shall be provided.

5.1.4 *Tubing*—Sufficient tubing having ¼-in. (6.4-mm) inside diameter to connect the cylinder of sulfur dioxide, the bottle of sulfuric acid, the empty bottle, and the test chamber. The tubing shall be arranged so that the inlet openings are located near the bottom of each container (Fig. 1).

6. Reagents

6.1 *Sulfur Dioxide* (SO₂).

6.2 *Sulfuric Acid* (sp gr 1.84)—Concentrated sulfuric acid (H₂SO₄).

7. Procedure

7.1 Determine the color of the unexposed panels by measuring them in accordance with a test method mutually agreed upon between the purchaser and the manufacturer.

¹ This test method is under the jurisdiction of ASTM Committee D-1 on Paint and Related Coatings and Materials and is the direct responsibility of Subcommittee D01.27 on Accelerated Testing.

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