



Designation: D3723 – 05

Standard Test Method for Pigment Content of Water-Emulsion Paints by Low- Temperature Ashing¹

This standard is issued under the fixed designation D3723; 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 a procedure for the pigment content determination of water-based paints. It is applicable only to pigments that do not decompose or lose weight at temperatures below 500°C. Such pigments include most metal oxides, silicates, and a majority of anhydrous inorganic salts.

1.2 Many water-based paints contain pigments and organic colorants that lose water of hydration or decompose at this temperature. The residual ash should be carefully inspected for changes in color or texture that could indicate a pigment alteration and hence lead to erroneous results. Caution should therefore be exercised when applying this test method to samples containing unknown pigment compositions.

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 practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards*:²

D1193 Specification for Reagent Water

3. Significance and Use

3.1 This test method is used by paint producers and consumers for product process control and for product acceptance.

4. Apparatus

4.1 *Oven*, forced draft, maintained at $105 \pm 2^\circ\text{C}$.

4.2 *Furnace*, muffle, maintained at $450 \pm 25^\circ\text{C}$.

4.3 *Syringe*, 5-mL.

4.4 *Aluminum Foil Dish*, 58 mm in diameter by 18 mm high with a flat bottom. The bottom of the dish should be as nearly flat as possible so that a uniform film is produced.

5. Reagents

5.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.³ Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

5.2 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean reagent water conforming to Type III of Specification D1193.

5.3 *Ammonium Hydroxide*⁴—Add 1 volume of concentrated NH_4OH (sp gr 0.90) to 3 volumes of water.

6. Procedure

6.1 Mix samples until homogeneous, preferably on a mechanical shaker. If air bubbles become entrapped in a sample, stir it by hand.

6.2 Draw approximately 1.5 g of the test paint into a 5-mL syringe and weigh to 1 mg. Add the paint dropwise (about 30 drops) into a tared-aluminum foil dish that contains 2 mL of water (5.2). Swirl the dish during the addition and continue the swirling until the specimen is completely dispersed. Reweigh the syringe to 1 mg. Transfer between 0.4 and 0.6 g of sample to the dish. If not, adjust the transferred volume and prepare a new specimen. If the specimen agglomerates or forms a lump that cannot be dispersed, a drop or two of ammonia (5.3) may facilitate the dispersement. If the lumping persists, discard the specimen and prepare a new one. Prepare a duplicate specimen in the same manner.

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 D01.21 on Chemical Analysis of Paints and Paint Materials.

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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 *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopeia and National Formulary*, U.S. Pharmacopeial Convention, Inc. (USPC), Rockville, MD.

⁴ For guidance in the safe handling of ammonium hydroxide consult the Manufacturing Chemists Association's Chemical Safety Data Sheet.