



Designation: D716 – 86 (Reapproved 2019)

Standard Test Methods for Evaluating Mica Pigment¹

This standard is issued under the fixed designation D716; 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 These test methods cover the evaluation of mica pigment.

1.2 The values stated in SI 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 associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *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

D185 Test Methods for Coarse Particles in Pigments

D280 Test Methods for Hygroscopic Moisture (and Other Matter Volatile Under the Test Conditions) in Pigments

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

3. Significance and Use

3.1 These test methods are used to determine apparent density of mica pigments and the grit level. This information is significant to the user of mica pigments for inclusion in coatings.

¹ These test methods are under the jurisdiction of ASTM Committee **D01** on Paint and Related Coatings, Materials, and Applications and are the direct responsibility of Subcommittee **D01.31** on Pigment Specifications.

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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.

APPARENT DENSITY

4. Apparatus

4.1 *Volumeter*—A Scott volumeter or similar apparatus modified as follows: The screen used shall conform to the requirements of a No. 40 (425- μ m) sieve as prescribed in Specification **E11**. The funnel below the screen shall be replaced by a conical funnel having a bottom opening 25 mm (1 in.) in diameter. It may be found necessary to replace the top glass baffle with one that is longer to ensure that all of the sifted mica is caught.

5. Procedure

5.1 Transfer convenient quantities of the mica pigment to the funnel of the modified volumeter and brush the pigment through the screen with a camel-hair brush until the receiver is slightly more than full. Scrape off the excess and weigh the pigment. Care must be taken not to jar the apparatus during the procedure.

6. Calculation

6.1 Calculate the apparent density of the mica pigment and convert to pounds per cubic foot.

7. Report

7.1 Report the mean of three determinations as the apparent density of the mica pigment.

8. Reproducibility of Results

8.1 The mean of the three determinations should check within 5 %.

MOISTURE AND OTHER VOLATILE MATTER

9. Procedure

9.1 Determine the moisture and other volatile matter in accordance with Test Methods **D280**.

GRIT

10. Apparatus

10.1 *Beaker*, 600-mL, low-form.

10.2 *Metal Tubing*—An L-shape metal tube (**Fig. 1**) 6.4 mm ($\frac{1}{4}$ in.) in outside diameter with a foot 25 mm (1 in.) in length.

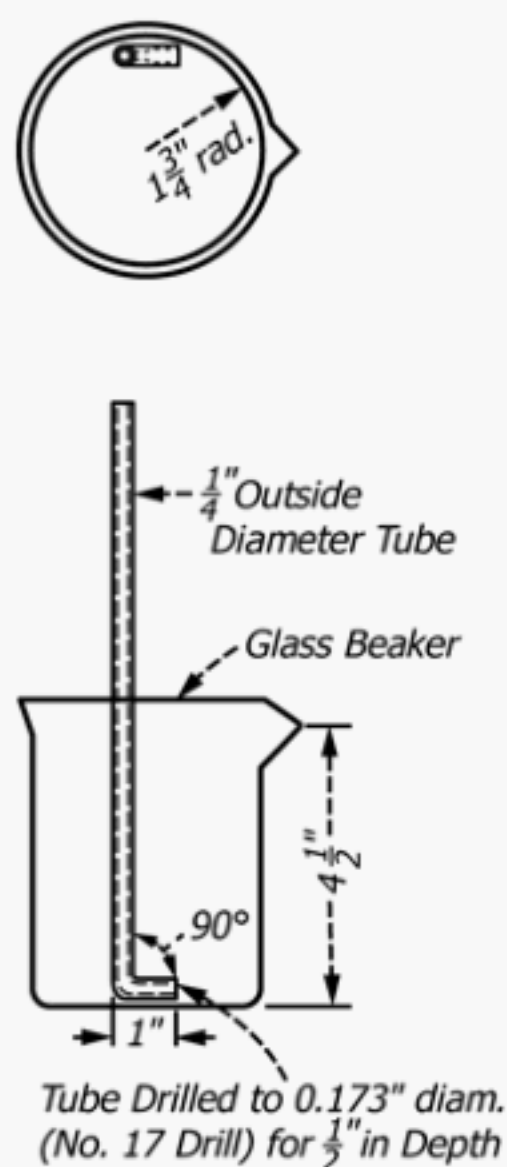


FIG. 1 Grit Test Apparatus

The foot of the tube shall be drilled to 4.4 mm (0.173 in.) (No. 17 drill) in inside diameter for a depth of 12.7 mm (1/2 in.). The tube shall be placed in the beaker with the long arm in the vertical position, and the foot of the L parallel to the bottom of the beaker and perpendicular to the radius of the bottom at a point such that there is about 1.5-mm (1/16-in.) clearance between the tubing and both the bottom and side of the beaker. The center of the foot shall be placed 90° from the lip of the beaker.

11. Procedure

11.1 Transfer 10 g of the sample to the 600-mL beaker, add 100 mL of water, and swirl the beaker until the mica is dispersed. Insert the metal tubing into the beaker as described in 10.2 and connect the upper end to a water faucet. Regulate the flow of water by a constant head to a rate of 800 mL/min over the lip of the beaker. When the elutriation has progressed so that the body of the water in the beaker is clear, stop the flow, and lower the water level to prevent spilling.

11.2 Swirl the beaker again to bring the remaining mica pigment into suspension and repeat the elutriation procedure as described in 11.1 three times. After final clearing, decant part

of the water, and filter the residue. Transfer the paper and residue to a weighed crucible, and ash slowly, cool, and weigh.

12. Calculation

12.1 Calculate the percent grit, G , as follows:

$$G, \% = [(A - B)/S] \times 100 \quad (1)$$

where:

A = ash, g,
 B = filter paper ash, g, and
 S = sample used, g.

COARSE PARTICLES

13. Procedure

13.1 Determine the coarse particles in accordance with Test Methods D185.

COLOR

14. Standard Pigments

14.1 *Standard Mica Pigment.*

14.2 *Standard Zinc Oxide.*

15. Procedure

15.1 Compare pastes made by rubbing a standard mica pigment and standard zinc oxide, mutually agreed upon by the purchaser and the seller, in linseed oil with a similar paste using the sample to be tested. Rub 9 g of zinc oxide, and 3 g of mica pigment on a glass plate with a glass muller or rubber spatula to avoid staining, with 4 mL of bleached linseed oil. Spread the pastes adjacently on a clear glass plate and determine the color by viewing the spreadouts on the glass.

16. Precision and Bias

16.1 Insufficient data are available to develop acceptable precision and bias statements. The information presented in Section 8 (Reproducibility of Results) was obtained in 1943, and no documentation is currently available. The information will remain in Section 8.

17. Keywords

17.1 analysis of; detection in mica pigment; grit; mica pigment; pigment

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