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Standard Specification for Calcium Borosilicate Pigments[1]

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1. Scope

1.1 This specification covers three grades of pigment commercially known as calcium borosilicate composite pigment. The two types differ in chemical composition while the two classes of Type I differ in oil absorption.

2. Referenced Documents

2.1 *ASTM Standards:*

C 958 Test Method for Particle Size Distribution of Alumina or Quartz by X-Ray Monitoring of Gravity Sedimentation[2]

D 185 Test Methods for Coarse Particles in Pigments, Pastes, and Paints[3]

D 281 Test Method for Oil Absorption of Pigments by Spatula Rub-Out[4]

D 1366 Practice for Reporting Particle Size Characteristics of Pigments[3]

D 3360 Test Method for Particle Size Distribution by Hydrometer of the Common White Extender Pigments[3]

D 4487 Test Methods for Analysis of Calcium Borosilicate[3]

3. Composition and Properties

3.1 All types of pigment shall consist of a complex composite of alkaline earth silicates and borates and shall conform to the requirements of Table 1.

3.2 The mass color of the dry pigment is white. The shade and tinting strength when specified shall be equal to that of a reference sample mutually agreed upon between the purchaser and the seller.

3.3 *Particle Size*:

3.3.1 All types are characterized by major amounts of particles in the 1 to 10-μm range. Coarse particles retained on a 45-μm (No. 325) sieve shall be less than 0.3 %. The maximum specific surface diameter (SSD) shall be 2.5-μm.

3.3.2 Where closer control within a class or type is required, the fineness requirements shall be as agreed upon between the purchaser and the seller.

4. Sampling

4.1 Two samples shall be taken at random from different packages from each lot, batch, day's pack, or other unit of production in a shipment. When no markings distinguishing between units of production appear, samples shall be taken from different packages, in the ratio of two samples for each 10,000 lb (5,000 kg), except that for shipments of less than 10,000 lb two samples shall be taken. At the option of the purchaser, the samples may be tested separately or after blending in equal quantities the samples from the same production unit to form a composite sample.

5. Test Methods

5.1 Tests shall be conducted in accordance with the following ASTM test methods. Test procedures not covered by ASTM test methods shall be mutually agreed upon between the purchaser and the seller.

5.2 *Chemical Analysis*—Test Methods D 4487.

5.3 *Ignition Loss*—Test Methods D 4487.

5.4 *Particle Size*—To be determined by Test Method D 3360 or equivalent instrumental technique.[5]

5.5 *Specific Surface Diameter*—Particle Size by Sedimentation Methods section of Practice D 1366.

5.6 *Oil Absorption*—Test Method D 281.

5.7 *Coarse Particles*—The Insoluble Dry Pigments section of Test Methods D 185.

6. Keywords

6.1 alkaline earth silicates; borates; calcium borosilicate; pigment; silicates

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[1] This specification is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.31 on Pigment Specifications.

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[2] *Annual Book of ASTM Standards*, Vol 15.02.

[3] *Annual Book of ASTM Standards*, Vol 06.03.

[4] *Annual Book of ASTM Standards*, Vol 06.01.

[5] The Micromeritics Sedigraph 5000D Particle Size Analyzer, manufactured by Micromeritics Instrument Corp., 568 Goshen Springs Rd., Norcross, GA 30093, has been found satisfactory for this purpose. See Test Method C 958 for operating instructions. Other instruments having a similar slurry density measurement function may also be used.