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Standard Specification for Natural Red and Brown Iron Oxide Pigments¹

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1. Scope

1.1 This specification covers dry and wet ground naturally occurring iron oxide, dry and wet ground calcined naturally occurring iron oxide, and mixtures of these with synthetic iron oxides. These pigments are suitable for use in paints or coatings.

2. Referenced Documents

2.1 ASTM Standards:

- D 50 Test Methods for Chemical Analysis of Yellow, Orange, Red, and Brown Pigments Containing Iron and Manganese²
- D 185 Test Methods for Coarse Particles in Pigments, Pastes, and Paints²
- D 280 Test Methods for Hygroscopic Moisture (and Other Matter Volatile Under the Test Conditions) in Pigments²
- D 387 Test Method for Color and Strength of Color Pigments with a Mechanical Muller³
- D 1208 Test Methods for Common Properties of Certain Pigments²

3. Composition and Properties

3.1 The pigments shall conform to the following requirements:

Total iron as Fe_2O_3 , min, %	70.0
Moisture and other volatile matter, max, %	1.0
Organic coloring matter	none
Total sulfates expressed as SO_3	2.0
Matter soluble in water, max, %	2.0
Matter soluble in water, max, % (primer pigments)	1.0

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

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² *Annual Book of ASTM Standards*, Vol 06.03.

³ *Annual Book of ASTM Standards*, Vol 06.01.

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Coarse particles (total residue retained on a No. 325 (45- μm) sieve) max, % 2.0

3.2 Inasmuch as iron oxide pigments are available in a range of colors, the mass color and, if desired by the purchaser, the character of the tint and the tinting strength shall be within mutually agreed upon limits of a reference sample acceptable to both the seller and the purchaser when tested in accordance with Test Method D 387.

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 5 tons (inch-pound or SI), 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 appropriate ASTM test methods. Test procedures not covered by ASTM test methods shall be mutually agreed upon between the purchaser and the seller.

5.1.1 *Total Iron Oxide, Sulfur, and Organic Coloring Matter*—Test Methods D 50.

5.1.2 *Moisture and Other Volatile Matter*— Test Method D 280, Method A.

5.1.3 *Matter Soluble in Water*—Test Method D 1208.

5.1.4 *Coarse Particles in Dry Pigments*— Test Method D 185.

6. Keywords

6.1 iron oxide; natural brown; pigments