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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, coatings, and many other applications.

2. Referenced Documents

2.1 ASTM Standards:²

D50 Test Methods for Chemical Analysis of Yellow, Orange, Red, and Brown Pigments Containing Iron and Manganese

D185 Test Methods for Coarse Particles in Pigments

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

D1208 Test Methods for Common Properties of Certain Pigments

3. Composition and Properties

3.1 The pigments shall conform to the following requirements:

Total iron as Fe ₂ O ₃ , min, %	40.0
Moisture and other volatile matter, max, %	1.0
Organic coloring matter	none
Total sulfates expressed as SO ₃ , max, %	2.0
Matter soluble in water, max, %	2.0
Matter soluble in water, max, % (primer pigments)	1.0
Coarse particles (total residue retained on a No. 325 (45- μ m) sieve) max, %	2.0

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 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.

3.2 The mass color and character of the tint and the tinting strength formed by a mixture with a white pigment shall be within mutually agreed upon limits of a standard acceptable to both 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 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 **D50**.

5.1.2 *Moisture and Other Volatile Matter*—Test Method **D280**, Method A.

5.1.3 *Matter Soluble in Water*—Test Method **D1208**.

5.1.4 *Coarse Particles in Dry Pigments*—Test Method **D185**.

6. Keywords

6.1 iron oxide; natural brown; pigments