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Standard Specification for Black Synthetic Iron Oxide[1]

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1. Scope

1.1 This specification covers the pigment commercially known as black synthetic iron oxide.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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

D387 Test Method for Color and Strength of Chromatic Pigments with a Mechanical Muller

D1208 Test Methods for Common Properties of Certain Pigments

D3872 Test Method for Ferrous Iron in Iron Oxides

3. Composition and Properties

3.1 The pigment shall be a manufactured ferrous-ferric oxide obtained by chemical reaction. It shall be a soft dry finely powdered pigment, free of admixtures of other substances and shall conform to the following requirements:

Total ferrous and ferric oxide, min %	93
Ferrous oxide (FeO), min, %	20
Water-soluble matter, max, %	0.5
Moisture and other volatile matter, max, %	1.0
Coarse particles (total residue retained on a No. 325 (45-μm) sieve), max, %	0.5
Hydrogen ion concentration (pH value)	4.5 to 8.5

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 4540 kg or 10 000 lb, 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 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 Oxides*—Test Methods D50.

5.1.2 *Ferrous Iron in Iron Oxides*—Test Method D3872.

5.1.3 *Water Soluble Matter, Maximum, Percent*—Test Methods D1208.

5.1.4 *Moisture and Other Volatile Matter, Maximum, Percent*—Test Methods D280.

5.1.5 *Coarse Particles (Total Residue Retained on a 325-mesh sieve (45 μm), Maximum, Percent*—Test Methods D185.

5.1.6 *Hydrogen Ion Concentration (pH value)*—Test Methods D1208.

5.1.7 *Mass Color and Tinting Strength*—Test Method D387.

6. Keywords

6.1 black iron oxide; ferric oxide; ferrous oxide; iron oxide; manganese; pigment; synthetic iron oxide

[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.