



# Standard Specification for Synthetic Red Iron Oxide Pigment<sup>1</sup>

This standard is issued under the fixed designation D3721; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification covers synthetic red iron oxide for use in paints and coatings manufactured by any of the following:

- 1.1.1 Calcination of iron salts.
- 1.1.2 Precipitation from iron salts.
- 1.1.3 Calcination of synthetic iron oxide.
- 1.1.4 Product of organic reduction.

## 2. Referenced Documents

2.1 *ASTM Standards*:<sup>2</sup>

**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

## 3. Composition and Properties

3.1 The pigment shall conform to the following requirements:

Fe <sub>2</sub> O <sub>3</sub> , min, %	96.0
Moisture and other volatile matter, max, %	1.0
Organic coloring matter	none
Coarse particles (total residue retained on a 45- $\mu$ m (No. 325) sieve) max, %	1.0
Matter soluble in water, max, %	0.2
pH value, min	5.0

<sup>1</sup> 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.

Current edition approved June 1, 2011. Published June 2011. Originally approved in 1978. Last previous edition approved in 2005 as D3721 – 05. DOI: 10.1520/D3721-05R11.

<sup>2</sup> 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 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 formed by mixture with a white pigment shall be within mutually agreed upon limits of a reference sample mutually agreed upon between the seller and the purchaser. This sample should be tested in accordance with Test Method **D387**.

## 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 (5000 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.

5.1.1 *Total Iron Oxide, Sulfur, and Organic Coloring Matter*—Test Methods **D50**.

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

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

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

5.1.5 *pH Minimum*—Test Methods **D1208**.

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

## 6. Keywords

6.1 iron oxide; manganese; pigments

*ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.*

*This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.*

*This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or [service@astm.org](mailto:service@astm.org) (e-mail); or through the ASTM website ([www.astm.org](http://www.astm.org)). Permission rights to photocopy the standard may also be secured from the ASTM website ([www.astm.org/COPYRIGHT/](http://www.astm.org/COPYRIGHT/)).*