Designation: D 478 – 02

Standard Specification for Zinc Yellow (Zinc Chromate) Pigments[1]

This standard is issued under the fixed designation D 478; 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 (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers the pigments commercially known as zinc yellow (zinc chromate).

1.2 Two types are included:

1.2.1 *Type I*—High-purity, low sulfate and chloride content.

1.2.2 *Type II*—Regular grade.

2. Referenced Documents

2.1 *ASTM Standards:*

D 185 Test Methods for Coarse Particles in Pigments, Pastes, and Paints[2]

D 387 Test Method for Color and Strength of Color Pigments with a Mechanical Muller[3]

D 444 Test Methods for Chemical Analysis of Zinc Yellow Pigment (Zinc Chromate Yellow)[2]

3. Significance and Use

3.1 Zinc yellow is used in rust-inhibiting protective coatings and metal primers for ferrous and non-ferrous metals.

4. Composition and Properties

4.1 *Dry Pigment*—The pigment shall be a reaction precipitate of soluble chromates and a suitable zinc compound and shall be free of extenders, carbonates, and organic color in any form. The pigment shall conform to the requirements for composition prescribed in Table 1.

4.2 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.

5. Sampling

5.1 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 (4545 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.

TABLE 1 Composition Requirements

	Type I	Type II
Zinc (calculated as ZnO), %	35 to 40	35 to 40
Chromium (calculated as CrO_3), min, %	41	41
Sulfates (calculated as SO_3), max, %	0.20	3.0[A]
Chlorides (calculated as Cl), max, %	0.10	0.8[A]
Alkaline salts (calculated as K_2O), max, %	13	13
Matter insoluble in acetic acid (1+9) at 80°C, max, %	0.3	0.3
Moisture and other volatile matter, max, %	1.0	1.0
Coarse particles (total residue retained on No. 325 (45-μm) sieve), max, %	1.0	1.0

[A] The maximum percent of sulfates or chlorides given in the table for Type II pigment apply if only one or the other is present (for this purpose amounts of less than 0.05 % shall be disregarded). If both sulfates and chlorides are present, the sum of the percentages of each divided by its respective maximum permissible percentage (3.0 for SO_3 and 0.8 for Cl) shall not exceed 1.0. For example, if a sample contains 1.8 % SO_3 (0.6 of the maximum for sulfates) and 0.3 % chlorides (0.4 of the maximum for chlorides), the sample just conforms to the maximum requirements of the specification in this respect.

6. Test Methods

6.1 Tests shall be conducted in accordance with the following ASTM test methods:

6.2 *Chemical Analysis*—Test Methods D 444.

6.3 *Coarse Particles*—Test Methods D 185.

6.4 *Mass Color and Tinting Strength*—Test Method D 387.

7. Keywords

7.1 chromatic; inhibitor metal primer; pigment; zinc chromate; zinc yellow

[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.

Current edition approved July 10, 2002. Published September 2002. Originally published as D 478 – 38 T. Last previous edition D 478 – 86 (1997).

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

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