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AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Test Method for Water-Soluble Salts in Pigments by Measuring the Specific Resistance of the Leachate of the Pigment¹

This standard is issued under the fixed designation D 2448; 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.

^{ε1} NOTE—Keywords were added editorially in May 1996.

1. Scope

1.1 This test method covers the determination of the specific resistance of the aqueous leachate from a pigment as an index of water-soluble salt content. This test method is applicable to white pigments and colored pigments (organic and inorganic). The water-soluble salts content is a function of the specific resistance of the solution formed by extracting the pigment with water.

1.2 This test method is based on a water to pigment ratio of 9+1. The leachate yield (minimum 160 mL) sufficient for rinsing the cylinder dip cell and thermometer plus the minimum 80 mL required for the measurement to determine the quantity of pigment to be used.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 1193 Specification for Reagent Water²

3. Summary of Test Method

3.1 A weighed quantity of pigment is added to water and boiled. For hydrophobic pigments methyl alcohol is used to facilitate wetting. After filtration, the specific resistance of the filtrate is determined using a conductivity bridge.

4. Significance and Use

4.1 This test method provides a reliable means for the determination of the relative amounts of these salts when comparing different lots of the same pigment grade. Water-soluble salts also affect the water resistance and blister resistance of coatings, especially primers for steel. Conductivity measurements, however, cannot be used as the *only* method to

determine and compare the amount of water soluble salts of pigments with the same chemical composition but produced by different manufacturing processes.

5. Apparatus

5.1 *Centrifuge* (optional), having a 500-mL capacity per cup.

5.2 *Filter Paper* (Note 1)—For high reliability avoid use of filter paper containing soluble material. Each filter should be washed with reagent water in the funnel until resistance of the filtrate is greater than 200 000 $\Omega \cdot \text{cm}$.

NOTE 1—The size of the filter paper will be determined by how voluminous the pigment is. Some organic pigments require at least a 185-mm paper for proper filtering.

5.3 *Filter Aid* (optional)—The use of a filter aid may be desirable with some pigments to improve filtration. However, the filter aid must be treated to meet the same specifications for filter paper as given in 5.2.

5.4 *Ungraduated Cylinders*, approximately 35 mm wide by 125 mm deep.

5.5 *Thermometer*, graduated in 0.2°C intervals.

5.6 *Conductivity Bridge*.³

5.7 *Conductivity Cell*,³ having a cell constant, K , of 1. The cell constant recommended for various ranges of electrolytes is as follows:

5.7.1 For specific resistances of less than 250 $\Omega \cdot \text{cm}$, use a cell with a constant of 10 or more.

5.7.2 For specific resistances from 250 to 200 000 $\Omega \cdot \text{cm}$, use a cell with a constant of 1. This covers the range for most pigments.

5.7.3 For specific resistances of reagent water or of over 200 000 $\Omega \cdot \text{cm}$, use a cell with a constant of 0.1.

6. Reagents

6.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society,

¹ This test method 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 Pigment Specifications.

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² *Annual Book of ASTM Standards*, Vol 11.01.

³ Any commercially produced conductivity bridge and conductivity cell is satisfactory.