



Designation: D 848 – 97

## Standard Test Method for Acid Wash Color of Industrial Aromatic Hydrocarbons<sup>1</sup>

This standard is issued under the fixed designation D 848; 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.

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

### 1. Scope

1.1 This test method covers the determination of the acid wash color of benzene, toluene, xylenes, refined solvent naphthas, and similar industrial aromatic hydrocarbons.

1.2 *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.* For specific hazard statements, see Section 8 and Note 1.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

D 1193 Specification for Reagent Water<sup>2</sup>

D 3437 Practice for Sampling and Handling Liquid Cyclic Products<sup>3</sup>

D 4790 Terminology of Aromatic Hydrocarbons and Related Chemicals<sup>3</sup>

#### 2.2 Other Document:

OSHA Regulations. 29 CFR, paragraphs 1910.1000 and 1910.1200<sup>4</sup>

### 3. Terminology

3.1 See Terminology D 4790 for definitions of terms used in this test method.

### 4. Summary of Test Method

4.1 A mixture of the aromatic hydrocarbon and sulfuric acid is vigorously shaken and the color of the acid layer is compared with that of color standards prepared from  $\text{CoCl}_2$  and  $\text{FeCl}_3$ .

### 5. Significance and Use

5.1 This test method is suitable for setting specifications on the materials referenced in 1.1. It may also be used as an

internal quality control tool and in development or research work.

5.2 The color developed in the acid layer gives an indication of impurities which if sulfonated would cause the material to be discolored.

### 6. Apparatus

6.1 *Containers for Color Standards*—Clear and unblemished, clean, French square, flint-glass, flat-bottom, glass-stoppered, 1-oz capacity bottles holding 31 to 33 mL when filled to the neck. The bottles shall be numbered consecutively from 0 to 14.

6.2 *Test Containers*—Containers exactly like those described in 6.1 except that each French square bottle shall be marked by etching to show when the bottle contains the volume of 7 and 28 mL, respectively. Colored crayons and similar markers shall not be used for marking the bottles.

### 7. Reagents

7.1 *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, where such specifications are available.<sup>5</sup> Other grades may be used provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

7.2 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean distilled water, Type I or II as described in Specification D 1193.

7.3 *Cobalt Chloride* ( $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$ ).

7.4 *Ferric Chloride* ( $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ ).

7.5 *Hydrochloric Acid* (1 + 39)—Mix 25 mL of hydrochloric acid (31 weight % HCl) with 975 mL of water.

7.6 *Potassium Chromate* ( $\text{K}_2\text{CrO}_4$ ).

7.7 *Potassium Dichromate* ( $\text{K}_2\text{Cr}_2\text{O}_7$ ).

7.8 *Sulfuric Acid* ( $96 \pm 0.5$  weight %  $\text{H}_2\text{SO}_4$ ).

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D16 on Aromatic Hydrocarbons and Related Chemicals and is the direct responsibility of Subcommittee D16.01 on Benzene, Toluene, Xylenes, Cyclohexane, and Their Derivatives.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 11.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 06.04.

<sup>4</sup> Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

<sup>5</sup> *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopeia and National Formulary*, U.S. Pharmacopeial Convention, Inc. (USPC), Rockville, MD.