



**Designation: D 853 – 97 (Reapproved 2001)**

## **Standard Test Method for Hydrogen Sulfide and Sulfur Dioxide Content (Qualitative) of Industrial Aromatic Hydrocarbons<sup>1</sup>**

This standard is issued under the fixed designation D 853; 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 hydrogen sulfide and sulfur dioxide content (qualitative) of 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 6.

### **2. Referenced Documents**

#### *2.1 ASTM Standards:*

D 850 Test Method for Distillation of Industrial Aromatic Hydrocarbons and Related Materials<sup>2</sup>

D 3437 Practice for Sampling and Handling Liquid Cyclic Products<sup>2</sup>

D 4790 Terminology of Aromatic Hydrocarbons and Related Chemicals<sup>2</sup>

#### *2.2 Other Documents:*

OSHA Regulations, 29 CFR, Paragraphs 1910.1000 and 1910.1200<sup>3</sup>

### **3. Terminology**

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

### **4. Summary of Test Method**

4.1 This test method involves a qualitative color test for H<sub>2</sub>S and SO<sub>2</sub> that utilizes filter paper containing lead acetate and starch paper containing potassium iodate. The test is performed when carrying out the Test Method D 850 distillation test.

### **5. Significance and Use**

5.1 This test method is suitable for setting specifications on industrial aromatic hydrocarbons and related materials and for use as an internal quality control tool.

5.2 This test method is a qualitative one for hydrogen sulfide (H<sub>2</sub>S) and sulfur dioxide (SO<sub>2</sub>). It should not be considered quantitative. It gives an indication of the presence of H<sub>2</sub>S or SO<sub>2</sub>, or both, which may cause objectionable odors or be corrosive to certain materials of construction.

### **6. Reagents**

6.1 *Lead Acetate Solution (saturated).*

6.2 *Potassium Iodate Solution (100 g/L)*—Dissolve 10 g of potassium iodate (KIO<sub>3</sub>) in water and dilute to 100 mL.

6.3 *Starch Paper*—Dip strips of filter paper in starch solution and dry.

### **7. Hazards**

7.1 Consult current OSHA regulations, supplier's Material Safety Data Sheets, and local regulations for all materials used in this test method.

### **8. Sampling**

8.1 Sampling should follow safe rules in order to adhere to all safety precautions as outlined in the latest OSHA regulations. Refer to Practice D 3437 for sampling and handling of aromatic hydrocarbons analyzed by this test method.

### **9. Procedure**

9.1 Make a qualitative test for H<sub>2</sub>S and SO<sub>2</sub>, at the time of performing the distillation test, see Test Method D 850. This is done by hanging a strip of filter paper moistened with the lead acetate solution and a strip of starch paper moistened with the potassium iodate solution on the end of the condenser tube. The strips are placed so that they are suspended in the upper part of the receiving cylinder so that drops of condensate pass between the strips without touching them. If, at the end of the test, the lead acetate paper shows discoloration, H<sub>2</sub>S is present but not SO<sub>2</sub>. If the lead acetate paper shows no discoloration but the starch iodate paper develops a blue color, SO<sub>2</sub> is present

<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 06.04.

<sup>3</sup> Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.



but not H<sub>2</sub>S. If neither paper shows discoloration, neither H<sub>2</sub>S nor SO<sub>2</sub> is present.

## 10. Precision and Bias

10.1 In the case of pass/fail data, no generally accepted method for determining precision and bias is currently available.

## 11. Keywords

11.1 hydrogen sulfide; sulfur dioxide

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