



Designation: **D 853 – 034**

Standard Test Method for Hydrogen Sulfide and Sulfur Dioxide Content (Qualitative) of Industrial Aromatic Hydrocarbons¹

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 (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 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.

¹ 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.

Current edition approved ~~June 10, 2003~~ Jan. 1, 2004. Published ~~January 2003~~ January 2004. Originally approved in 1945. Last previous edition approved in ~~1997~~ 2003 as ~~D 853 – 97 (2001)~~ D 853 – 03.

*A Summary of Changes section appears at the end of this standard.

2. Referenced Documents

2.1 ASTM Standards:²

- D 850 Test Method for Distillation of Industrial Aromatic Hydrocarbons and Related Materials
- D 3437 Practice for Sampling and Handling Liquid Cyclic Products
- D 4790 Terminology of Aromatic Hydrocarbons and Related Chemicals

2.2 Other Documents:³

OSHA Regulations, 29 CFR, Paragraphs 1910.1000 and 1910.1200

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 H₂S and SO₂ 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 (H₂S) and sulfur dioxide (SO₂). It should not be considered quantitative. It gives an indication of the presence of H₂S or SO₂, or both, which may cause objectionable odors or be corrosive to certain materials of construction.

6. Reagents

6.1 *Lead Acetate Paper* Filter paper moistened or impregnated with a saturated solution of lead acetate, for use in determining the presence or absence of H₂S as described in the procedure.

NOTE 1—Commercially available lead acetate paper, moistened with a few drops of water, can be used.

6.2 *Potassium Iodate Solution* (100 g/L)—Dissolve 10 g of potassium iodate (KIO₃) 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 H₂S and SO₂, at the time of performing the distillation test, see Test Method D 850. This is done by hanging a strip of moistened lead acetate paper (see 6.1 and Note 1) 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, H₂S is present but not SO₂. If the lead acetate paper shows no discoloration but the starch iodate paper develops a blue color, SO₂ is present but not H₂S. If neither paper shows discoloration, neither H₂S nor SO₂ is present.

10. Report

10.1 *Presence/Absence of H₂S*—Report the test as positive if the lead acetate paper shows discoloration at the end of the distillation test. If no discoloration is observed, report as negative.

10.2 *Presence/Absence of SO₂*—Report the test as positive; if the lead acetate paper shows no discoloration but the starch paper develops a blue color. If the starch paper does not develop a blue color, report as negative.

11. Precision and Bias

11.1 In the case of negative/positive report data, no generally accepted method for determining precision and bias is currently available.

² 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*; Vol 06.04, volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from Superintendent of Documents, U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20402.

12. Keywords

12.1 hydrogen sulfide; sulfur dioxide

SUMMARY OF CHANGES

Committee ~~D16.01~~ D16 has identified the location of selected changes to this standard since the last issue (~~D 853 - 97 (01)~~) (D 853 - 03) that may impact the use of this standard.

~~(1) Updated sections 6.1 and 9.1, in addition~~

~~(1) Section 9 was modified to adding a new Note 1 regarding~~ delete extra words indicating that SO₂ or H₂S were not present when the requirements associated with the lead acetate paper.

~~(2) Added a new Report section.~~

~~(3) Updated text in Precision and Bias section.~~ appropriate paper did not change color.

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 (e-mail); or through the ASTM website (www.astm.org).