



Standard Test Method for Bromine Index of Aromatic Hydrocarbons by Electrometric Titration¹

This standard is issued under the fixed designation D 5776; 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.

1. Scope*

1.1 This test method determines the amount of bromine-reactive material in aromatic hydrocarbons and is thus a measure of trace amounts of unsaturates in these materials. It is applicable to materials having bromine indexes below 500.

1.2 This test method is applicable to aromatic hydrocarbons containing no more than trace amounts of olefins and that are substantially free from material lighter than isobutane and have a distillation end point under 288°C (550°F).

1.3 The following applies to all specified limits in this standard: For purposes of determining conformance with this standard, an observed value shall be rounded off “to the nearest unit” in the last right hand digit used in expressing the specification limit, in accordance with the rounding off method of Practice E 29.

1.4 *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 a specific hazard statement see Section 8.

2. Referenced Documents

2.1 ASTM Standards:

D 1159 Test Method for Bromine Number of Petroleum Distillates and Commercial Aliphatic Olefins by Electrometric Titration²

D 1193 Specification for Reagent Water³

D 3437 Practice for Sampling and Handling Liquid Cyclic Products⁴

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁵

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method⁵

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 D16.04 on Instrumental Analysis.

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² Annual Book of ASTM Standards, Vol 05.01.

³ Annual Book of ASTM Standards, Vol 11.01.

⁴ Annual Book of ASTM Standards, Vol 06.04.

⁵ Annual Book of ASTM Standards, Vol 14.02.

2.2 Other Document:

OSHA Regulations, 29 CFR paragraphs 1910.1000 and 1910.1200⁶

3. Terminology

3.1 Definition:

3.1.1 *bromine index*—the number of milligrams of bromine consumed by 100 g of sample under given conditions.

4. Summary of Test Method

4.1 The specimen dissolved in a specified solvent is titrated with standard bromide-bromate solution. The end point is indicated by a fixed end-point electrometric titration apparatus, when the presence of free bromine causes a sudden change in the polarization voltage of the system.

5. Significance and Use

5.1 This test method is suitable for setting specification, for use as an internal quality control tool, and for use in development or research work on industrial aromatic hydrocarbons and related material. This test method gives a broad indication of olefinic content. It does not differentiate between the types of aliphatic unsaturation.

6. Apparatus

6.1 *Fixed End Point Electrometric Titration Apparatus*—Any fixed end-point apparatus may be used incorporating a high resistance polarizing current supply capable of maintaining approximately 10 to 50 μA across two platinum plate electrodes or a combination platinum electrode and with a sensitivity such that a voltage change of approximately 50 mV at these electrodes is sufficient to indicate the end point (see Note 1).

NOTE 1—The reagents and techniques may be checked by determining the bromine index of a 100 mg/kg cyclohexene in heptane. This is expected to give a bromine index of 18 to 20 mg/100 g sample. Refer to Table A2.1 of Test Method D 1159.

6.2 *Titration Vessel*—A tall form glass beaker of approximately 250-mL capacity or a water jacketed titration vessel of

⁶ Available from Superintendent of Documents U.S. Government Printing Office, Washington, DC 20402.

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