



Standard Test Method for Determining Impurities in High-Purity Ethylbenzene by Gas Chromatography¹

This standard is issued under the fixed designation D5060; 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 describes the analysis of normally occurring impurities in, and the purity of, ethylbenzene by gas chromatography. Impurities determined include nonaromatic hydrocarbons, benzene, toluene, xylenes, cumene, and diethylbenzene isomers.

1.2 This test method is applicable for impurities at concentrations from 0.001 to 1.000 % and for ethylbenzene purities of 99 % or higher. At this level, *p*-xylene may not be detected.

1.3 In determining the performance of the test results using this method to applicable specifications, results shall be rounded off in accordance with the rounding-off method of Practice E29.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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:²

D3437 Practice for Sampling and Handling Liquid Cyclic Products

D4307 Practice for Preparation of Liquid Blends for Use as Analytical Standards

D6809 Guide for Quality Control and Quality Assurance

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 D16.07 on Styrene, Ethylbenzene and C9 and C10 Aromatic Hydrocarbons.

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

Procedures for Aromatic Hydrocarbons and Related Materials

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E355 Practice for Gas Chromatography Terms and Relationships

E1510 Practice for Installing Fused Silica Open Tubular Capillary Columns in Gas Chromatographs

2.2 Other Documents:

OSHA Regulations, 29 CFR paragraphs 1910.1000 and 1910.1200³

3. Summary of Test Method

3.1 A known amount of internal standard is added to the sample. A gas chromatograph equipped with a flame ionization detector and a polar fused silica capillary column is used for the analysis. The impurities are measured relative to the internal standard. Ethylbenzene purity is calculated by subtracting the impurities found from 100.00 %.

4. Significance and Use

4.1 The test is suitable for setting specifications on ethylbenzene and for use as an internal quality control tool where ethylbenzene is used in manufacturing processes. It may be used in development or research work involving ethylbenzene.

4.2 Purity is commonly reported by subtracting the determined expected impurities from 100 %%. Absolute purity cannot be determined if unknown impurities are present.

5. Interferences

5.1 A key operational parameter for this method is the separation of *p*-xylene from ethylbenzene. Care should be taken during calibration to ensure the separation of these two components. If *p*-xylene is not separated from ethylbenzene during the calibration of the instrument, modify the column flow rate slightly until separation is achieved.

³ Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, <http://www.access.gpo.gov>.

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