



Designation: D 6526 – 00

Standard Test Method for Analysis of Toluene by Capillary Column Gas Chromatography¹

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1. Scope

1.1 This test method covers the determination of hydrocarbon impurities typically found in, and the purity of, samples containing 98 wt % and greater toluene. This test method is applicable to impurity concentrations in the range of 0.0010 to 0.500 wt %.

1.2 Monocyclic aromatic hydrocarbons containing 6 through 8 carbon atoms, cumene, 1,4-dioxane, and nonaromatic aliphatic hydrocarbons containing up to 12 carbon atoms can be detected by this test method. The nonaromatic compounds are determined as a composite.

1.3 The following applies to all specified limits in this test method: for purposes of determining conformance with this test method, an observed value or a calculated 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 specific hazard statements, see Section 9.

2. Referenced Documents

2.1 ASTM Standards:

D 3437 Practice for Sampling and Handling Liquid Cyclic Products²

D 4790 Terminology of Aromatic Hydrocarbons and Related Chemicals²

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications³

E 355 Practice for Gas Chromatography Terms and Relationships³

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method³

E 1510 Practice for Installing Fused Silica Open Tubular Capillary Columns in Gas Chromatographs³

2.2 Other Document:

OSHA Regulations, 29 CFR, paragraphs 1910.1000 and 1910.1200⁴

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 portion of the sample is injected into a gas chromatograph using a microlitre syringe at the specified conditions of the test method. The toluene and other components are separated as they are transported through the column by an inert carrier gas. The components in the effluent are measured by a flame ionization detector (FID). The area of the impurity peaks and toluene are electronically integrated. The peak areas are corrected with effective carbon number (ECN)⁵ response factors and normalized to 100.0000 %.

5. Significance and Use

5.1 This test method is suitable for determining the concentrations of known impurities in refined toluene and for use as an integral quality control tool where toluene is produced or used in manufacturing.

5.2 Toluene purity is reported, but a chromatographic analysis cannot determine absolute purity if unknown or undetected components are present in the sample.

6. Interferences

6.1 If present, nonaromatic hydrocarbons of 13 carbons or greater, alcohols, ethers, and other similar organic compounds can interfere with this test method by co-eluting with the aromatic hydrocarbons.

6.2 Compounds not detected by a FID are not determined by this test method.

6.3 Nonvolatile material is not determined.

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.

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² Annual Book of ASTM Standards, Vol 06.04.

³ Annual Book of ASTM Standards, Vol 014.02.

⁴ Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

⁵ Scanlon, J. T., and Willis, D. E., "Calculation of Ionization Detector Relative Response Factors Using the Effective Carbon Number Concept", *Journal of Chromatographic Science*, Vol 35, August, 1985, pp. 333-339.