



Designation: D5932 – 20

Standard Test Method for Determination of 2,4-Toluene Diisocyanate (2,4-TDI) and 2,6-Toluene Diisocyanate (2,6-TDI) in Air (with 9-(N-Methylaminomethyl) Anthracene Method) (MAMA) in the Workplace¹

This standard is issued under the fixed designation D5932; 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 covers the determination of gaseous 2,4-toluene diisocyanate (2,4-TDI) and 2,6-toluene diisocyanate (2,6-TDI) in air samples collected from workplace and ambient atmospheres.

1.2 Differential air sampling is performed with a segregating device.² The gaseous fraction is collected on a glass fiber filter (GFF) impregnated with 9-(N-methylaminomethyl) anthracene (MAMA).

1.3 The analysis of the gaseous fraction is performed with a high performance liquid chromatograph (HPLC) equipped with ultraviolet (UV) and fluorescence detectors. An ultra high performance liquid chromatograph (UPLC) can also be used, provided that its performance is equivalent to what is stated in this standard.

1.4 The analysis of the aerosol fraction is performed separately as described in Ref (1).³

1.5 The range of application of this test method, utilizing UV and a fluorescence detector, is validated for 0.014 to 1.16 μg of monomer 2,4- and 2,6-TDI/2.0 mL of desorption solution, which corresponds to concentrations of 0.001 to 0.077 mg/m^3 of TDI based on a 15-L air sample. This corresponds to 0.014 to 11 ppb(V) and brackets the established TLV value of 1 ppb(v).

1.6 A field blank sampling system is used to check the possibility of contamination during the entire sampling and analysis.

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

1.8 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use. See Section 9 for additional hazards.*

1.9 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:⁴

D1193 Specification for Reagent Water

D1356 Terminology Relating to Sampling and Analysis of Atmospheres

D1357 Practice for Planning the Sampling of the Ambient Atmosphere

D4840 Guide for Sample Chain-of-Custody Procedures

D5337 Practice for Flow Rate Adjustment of Personal Sampling Pumps

2.2 Other Documents:

Sampling Guide for Air Contaminants in the Workplace⁵

3. Terminology

3.1 For definitions of terms used in this test method, refer to Terminology D1356.

¹ This test method is under the jurisdiction of ASTM Committee D22 on Air Quality and is the direct responsibility of Subcommittee D22.04 on Workplace Air Quality.

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³ The boldface numbers in parentheses refer to a list of references at the end of this standard.

⁴ 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.

⁵ Available from Institut de Recherche en Santé et en Sécurité du Travail (IRSST), Laboratory Division, Montreal, QC, 2012, <http://www.irsst.qc.ca/media/documents/Pubirsst/T-15.pdf>.