



Designation: D8025 – 23

Standard Test Method for Determination of Select Pesticides in Water by Multiple Reaction Monitoring Liquid Chromatography Tandem Mass Spectrometry¹

This standard is issued under the fixed designation D8025; 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 a method for analysis of selected pesticides in a water matrix by filtration followed with liquid chromatography/electrospray ionization tandem mass spectrometry analysis. The samples are prepared in 20 % methanol, filtered, and analyzed by liquid chromatography/tandem mass spectrometry. This method was developed for an agricultural run-off study, not for low level analysis of pesticides in drinking water. This method may be modified for lower level analysis. The analytes are qualitatively and quantitatively determined by this method. This method adheres to multiple reaction monitoring (MRM) mass spectrometry.

1.2 A full collaborative study to meet the requirements of Practice D2777 has not been completed. This standard contains single-operator precision and bias based on single-operator data. Publication of standards that have not been fully validated is done to make the current technology accessible to users of standards, and to solicit additional input from the user community.

1.3 A reporting limit check sample (RLCS) is analyzed during every batch to ensure that if an analyte was present in a sample at or near the reporting limit it would be positively identified and accurately quantitated within set quality control limits. A method detection limit (MDL) study was not done for this method, the method detection limits would be much lower than the reporting limits in this method and would be irrelevant. A RLCS was determined to be more applicable for this standard. If this method is adapted to report much lower or near the MDL then a MDL study would be warranted.

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

¹ This test method is under the jurisdiction of ASTM Committee D19 on Water and is the direct responsibility of Subcommittee D19.06 on Methods for Analysis for Organic Substances in Water.

Current edition approved April 15, 2023. Published June 2023. Originally approved in 2016. Last previous edition approved in 2016 as D8025 – 16. DOI: 10.1520/D8025-23.

1.5 The Reporting Range for the target analytes are listed in Table 1.

1.5.1 The reporting limit in this test method is the minimum value below which data are documented as non-detects. The reporting limit is calculated from the concentration of the Level 1 calibration standard as shown in Table 6 after taking into account an 8 mL water sample volume and a final diluted sample volume of 10 mL (80 % water/20 % methanol).

1.6 *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.*

1.7 *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:²

- D1129 Terminology Relating to Water
- D1193 Specification for Reagent Water
- D2777 Practice for Determination of Precision and Bias of Applicable Test Methods of Committee D19 on Water
- D3856 Guide for Management Systems in Laboratories Engaged in Analysis of Water
- D4841 Practice for Estimation of Holding Time for Water Samples Containing Organic and Inorganic Constituents
- D5847 Practice for Writing Quality Control Specifications for Standard Test Methods for Water Analysis
- E2554 Practice for Estimating and Monitoring the Uncertainty of Test Results of a Test Method Using Control Chart Techniques

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.