Designation: D 5790 – 95 (Reapproved 2001)

An American National Standard

Standard Test Method for Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry[1]

This standard is issued under the fixed designation D 5790; 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 identification and simultaneous measurement of purgeable volatile organic compounds. It has been validated for treated drinking water, wastewater, and ground water. This test method is not limited to these particular aqueous matrices; however, the applicability of this test method to other aqueous matrices must be demonstrated.

1.2 This test method is applicable to a wide range of organic compounds that have sufficiently high volatility and low water solubility to be efficiently removed from water samples using purge and trap procedures. Table 1 lists the compounds that have been validated for this test method. This test method is not limited to the compounds listed in Table 1; however, the applicability of the test method to other compounds must be demonstrated.

1.3 Analyte concentrations up to approximately 200 µg/L may be determined without dilution of the sample. Analytes that are inefficiently purged from water will not be detected when present at low concentrations, but they can be measured with acceptable accuracy and precision when present in sufficient amounts.

1.4 Analytes that are not separated chromatographically, but that have different mass spectra and noninterfering quantitation ions, can be identified and measured in the same calibration mixture or water sample. Analytes that have very similar mass spectra cannot be individually identified and measured in the same calibration mixture or water sample unless they have different retention times. Coeluting compounds with very similar mass spectra, such as structural isomers, must be reported as an isomeric group or pair. Two of the three isomeric xylenes are examples of structural isomers that may not be resolved on the capillary column, and if not, must be reported as an isomeric pair.

1.5 It is the responsibility of the user to ensure the validity of this test method for untested matrices.

1.6 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.7 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 1129 Terminology Relating to Water[2]

D 2777 Practice for Determination of Precision and Bias of Applicable Methods of Committee D-19 on Water[2]

D 3871 Test Method for Purgeable Organic Compounds in Water Using Headspace Sampling[3]

D 3973 Test Method for Low-Molecular Weight Halogenated Hydrocarbons in Water[3]

D 4210 Practice for Intralaboratory Quality Control Procedures and a Discussion on Reporting Low-Level Data[2]

E 355 Practice for Gas Chromatography Terms and Relationships[4]

2.2 *Other Document:*

Code of Federal Regulations, 40 CFR Part 261[5]

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of terms used in this test method, refer to Definitions D 1129 and Practice E 355.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *calibration standard*—a solution prepared from the primary dilution standard solution and stock standard solutions of the internal standards and surrogate analytes. The calibration standards are used to calibrate the instrument response with respect to analyte concentration.

3.2.2 *field duplicates* —two separate samples collected at the same time and place under identical circumstances and treated exactly the same throughout field and laboratory procedures. Analysis of field duplicates gives an indication of the precision associated with sample collection, preservation, and storage, as well as with laboratory procedures.

[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.

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[2] *Annual Book of ASTM Standards*, Vol 11.01.

[3] *Annual Book of ASTM Standards*, Vol 11.02.

[4] *Annual Book of ASTM Standards*, Vol 14.01.

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

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