



Designation: D2908 – 91 (Reapproved 2024)

Standard Practice for Measuring Volatile Organic Matter in Water by Aqueous- Injection Gas Chromatography¹

This standard is issued under the fixed designation D2908; 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 practice covers general guidance applicable to certain test methods for the qualitative and quantitative determination of specific organic compounds, or classes of compounds, in water by direct aqueous injection gas chromatography (**1, 2, 3, 4**).²

1.2 Volatile organic compounds at aqueous concentrations greater than about 1 mg/L can generally be determined by direct aqueous injection gas chromatography.

1.3 *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.*

1.4 *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:³

D1129 Terminology Relating to Water

D1192 Guide for Equipment for Sampling Water and Steam in Closed Conduits (Withdrawn 2003)⁴

D1193 Specification for Reagent Water

D3370 Practices for Sampling Water from Flowing Process Streams

¹ This practice 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 The boldface numbers in parentheses refer to the list of references at the end of this standard.

³ 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.

⁴ The last approved version of this historical standard is referenced on www.astm.org.

E260 Practice for Packed Column Gas Chromatography

E355 Practice for Gas Chromatography Terms and Relationships

3. Terminology

3.1 *Definitions*—The following terms in this standard are defined in accordance with Terminology D1129. For definitions of other chromatographic terms used in this standard, refer to Practice E355.

3.1.1 “ghosting” or *memory peaks*, *n*—an interference, showing as a peak, which appears at the same elution time as the organic component of previous analysis.

3.1.2 *internal standard*, *n*—a material present in or added to samples in known amount to serve as a reference measurement.

3.1.3 *noise*, *n*—an extraneous electronic signal which affects baseline stability.

3.1.4 *relative retention ratio*, *n*—the retention time of the unknown component divided by the retention time of the internal standard.

3.1.5 *retention time*, *n*—the time that elapses from the introduction of the sample until the peak maximum is reached.

4. Summary of Practice

4.1 This practice defines the applicability of various columns and conditions for the separation of naturally occurring or synthetic organics or both, in an aqueous medium for subsequent detection with a flame ionization detector. After vaporization, the aqueous sample is carried through the column by an inert carrier gas. The sample components are partitioned between the carrier gas and a stationary liquid phase on an inert solid support. The column effluent is burned in an air-hydrogen flame. The ions released from combustion of the organic components induce an increase in standing current which is measured. Although this method is written for hydrogen flame detection, the basic technology is applicable to other detectors if water does not interfere.

4.2 The elution times are characteristic of the various organic components present in the sample, while the peak areas are proportional to the quantities of the components. A discussion of gas chromatography is presented in Practice E260.