



Designation: D3328 – 06 (Reapproved 2020)

Standard Test Methods for Comparison of Waterborne Petroleum Oils by Gas Chromatography¹

This standard is issued under the fixed designation D3328; 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 comparison of petroleum oils recovered from water or beaches with oils from suspect sources by means of gas chromatography (**1-3**).² Such oils include distillate fuel, lubricating oil, and crude oil. The test method described is for capillary column analyses using either single detection (flame ionization) or dual detection (flame ionization and flame photometric) for sulfur containing species.

1.2 This test method provides high resolution for critical examination of fine structure that is resistant to weathering. The flame-photometric detection for sulfur components is an adjunct, not a substitute, for flame-ionization detection in the identification of waterborne petroleum oils (**4-12**). For this reason, flame photometric detection is optional.

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

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *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.*

¹ These test methods are under the jurisdiction of ASTM Committee D19 on Water and are 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 a list of references at the end of this standard.

2. Referenced Documents

2.1 ASTM Standards:³

- D1129 Terminology Relating to Water
- D1193 Specification for Reagent Water
- D2549 Test Method for Separation of Representative Aromatics and Nonaromatics Fractions of High-Boiling Oils by Elution Chromatography
- D3325 Practice for Preservation of Waterborne Oil Samples
- D3326 Practice for Preparation of Samples for Identification of Waterborne Oils
- D3415 Practice for Identification of Waterborne Oils
- D4489 Practices for Sampling of Waterborne Oils
- D5739 Practice for Oil Spill Source Identification by Gas Chromatography and Positive Ion Electron Impact Low Resolution Mass Spectrometry
- E355 Practice for Gas Chromatography Terms and Relationships

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this standard, refer to Practice D3415, Terminology D1129, and Practice E355.

4. Significance and Use

4.1 Identification of a recovered oil is determined by comparison with known oils, selected because of their possible relationship to the particular recovered oil. The known oils are collected from suspected sources. Samples of such known oils *must* be collected and submitted along with the unknown for analysis. At present, identification of the source of an unknown oil by itself cannot be made (for example, from a library of known oils).

4.2 The use of a flame-photometric detector in addition to the flame-ionization detector provides a second, independent

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.