



Designation: D8478 – 23

## Standard Test Method for N-Hexane Recoverable Total Oil and Grease and Total Petroleum Hydrocarbons in Water by ATR-Infrared Determination<sup>1</sup>

This standard is issued under the fixed designation D8478; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This test method covers the determination of total oil and grease, and total petroleum hydrocarbons in produced water and wastewater by an infrared (IR) determination of n-hexane extractable substances from the sample. Included in this estimation of total oil and grease are any other compounds soluble in the n-hexane.

1.2 This test method defines total oil and grease in produced water and wastewater as that which is extractable in the test method and measured by IR absorption from  $3.34\text{ }\mu\text{m}$  to  $3.54\text{ }\mu\text{m}$  ( $2825\text{ cm}^{-1}$  to  $2994\text{ cm}^{-1}$ ). Similarly, this test method defines total petroleum hydrocarbons in produced water and wastewater as that oil and grease which is not adsorbed by silica gel in the test method, and is measured by IR absorption from  $3.34\text{ }\mu\text{m}$  to  $3.54\text{ }\mu\text{m}$  ( $2825\text{ cm}^{-1}$  to  $2994\text{ cm}^{-1}$ ). Alternative methods for total oil and grease or total petroleum hydrocarbons, or both, can produce differing results.

1.3 This method covers the range of 5 mg/L to 175 mg/L for total oil and grease and the range of 5 mg/L to 50 mg/L for total petroleum hydrocarbons. The range may be extended to a lower or higher level by extraction of a larger or smaller sample volume collected separately.

1.4 This test method uses horizontal attenuated total reflectance (HATR) with a cubic zirconia crystal.

1.5 This test method is intended as a field test only and should be treated as such. This method is not intended to replace laboratory-based regulatory methods currently in use.

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

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use. See Guide D3856 for more information.*

1.8 *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:<sup>2</sup>

- 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
- D3370 Practices for Sampling Water from Flowing Process Streams
- D3856 Guide for Management Systems in Laboratories Engaged in Analysis of Water
- D5847 Practice for Writing Quality Control Specifications for Standard Test Methods for Water Analysis
- E168 Practices for General Techniques of Infrared Quantitative Analysis

#### 2.2 CFR Publications:<sup>3</sup>

- 40 CFR Part 136 Guidelines Establishing Test Procedures for the Analysis of Pollutants
- 49 CFR Part 172 Hazardous Materials Table, Special

<sup>1</sup> 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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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from U.S. Government Publishing Office (GPO), 732 N. Capitol St., NW, Washington, DC 20401, <http://www.gpo.gov>.