



Standard Test Method for Oil and Grease (Fluorocarbon Extractable Substances) by Gravimetric Determination¹

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INTRODUCTION

In the determination of oil and grease, an absolute quantity of a specific substance is not measured. Rather, groups of substances with similar physical characteristics are determined quantitatively on the basis of their common solubility in a specified fluorocarbon solvent. Oil and grease may therefore, be said to include hydrocarbons, fatty acids, soaps, fats, waxes, oil, and any other material that is extracted by the solvent from an acidified sample of the test. It is important that this limitation be clearly understood. Unlike some constituents—which represent distinct chemical elements, ions, compounds, or groups of compounds, oils and greases are defined by the method used for their determination.

1. Scope

1.1 These test methods cover the estimation of oil and grease in water and wastewater by a gravimetric determination of fluorocarbon extractable substances from an acidified sample. Also included in this estimation of oil and grease are any other compounds soluble in chlorofluorocarbon-113 and non-volatile under the conditions of test.

1.2 The following two test methods are included:

Test Method A—Liquid-Liquid Extraction
Test Method B—Soxhlet Extraction

Sections
8-15
16-23

1.3 These test methods are applicable to natural waters and domestic wastewaters. They are also suitable for most industrial wastewaters, although certain wastes may yield low results because of the presence of either excessive concentrations of natural greases or synthetic or modified compounds that are not well recovered by these test methods.

1.4 These test methods measure those groups of substance called oil and grease, whether soluble or insoluble, polar or non-polar, or biological or mineral in origin, to the extent these substances partition from the matrix into chlorofluorocarbon-113 and are not volatilized under conditions of the test. (See the Introduction and Section 3 of these test methods.)

1.5 Because these test methods include an acidification step prior to extraction, soluble metallic soaps are hydrolyzed and recovered as fatty acids in the extraction step.

1.6 These test methods were fully validated by collaborative testing in reagent Type IV water. The information on precision may not apply to other waters.

NOTE 1—Refer to companion procedures (Test Method D 3921).

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

1.8 *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.* For specific hazard statements, see 12.1, 13.2, 20.1, and 20.5.

2. Referenced Documents

2.1 ASTM Standards:

D 1129 Terminology Relating to Water²

D 1192 Specification for Equipment for Sampling Water and Steam in Closed Conduits²

D 1193 Specification for Reagent Water²

D 3370 Practices for Sampling Water from Closed Conduits²

D 3856 Guide for Good Laboratory Practices in Laboratories Engaged in Sampling and Analysis of Water and Waste Water²

D 3921 Test Method for Oil and Grease and Petroleum Hydrocarbons in Water³

D 4210 Practice for Interlaboratory Quality Control Procedures and a Discussion on Reporting Low-Level Data²

D 5789 Practice for Writing Quality Control Specifications

¹ This test method is under the jurisdiction of ASTM Committee D-19 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.