



Designation: D4337 – 89 (Reapproved 2017)

Standard Test Methods for Analysis of Linear Detergent Alkylates¹

This standard is issued under the fixed designation D4337; 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 These test methods cover chemical and physical tests applicable to linear detergent alkylates, evaluating those properties which characterize linear detergent alkylates with respect to its suitability for desired uses.

NOTE 1—Linear detergent alkylates comprises linear alkylbenzenes prepared by varying processes of varying linear alkyl chain length. The alkylate is sulfonated for surfactant use, the largest application being in detergent products. Careful control of linear detergent alkylate characteristics is desired; during sulfonation, variations of the sulfonate can occur that may result in either desirable or undesirable end-use properties.

1.2 The test methods appear as follows:

	Section
Composition by Gas Chromatography	7 – 15
Chlorides	16 – 27
Color	28 – 30
Refractive Index	31 – 33
Specific Gravity	34 – 36
Water	37 – 39

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 and health practices and determine the applicability of regulatory limitations prior to use.* Material Safety Data Sheets are available for reagents and materials. Review them for hazards prior to usage. See also [Note 1](#) and [Section 21](#).

2. Referenced Documents

2.1 *ASTM Standards:*²

[D270 Methods of Sampling Petroleum and Petroleum Products](#) (Withdrawn 1984)³

[D1122 Test Method for Density or Relative Density of](#)

[Engine Coolant Concentrates and Engine Coolants By The Hydrometer](#)

[D1193 Specification for Reagent Water](#)

[D1209 Test Method for Color of Clear Liquids \(Platinum-Cobalt Scale\)](#)

[D1218 Test Method for Refractive Index and Refractive Dispersion of Hydrocarbon Liquids](#)

[D1364 Test Method for Water in Volatile Solvents \(Karl Fischer Reagent Titration Method\)](#)

[E180 Practice for Determining the Precision of ASTM Methods for Analysis and Testing of Industrial and Specialty Chemicals](#) (Withdrawn 2009)³

3. Significance and Use

3.1 These test methods are suitable for setting specifications on linear detergent alkylates and for quality control where these alkylates are manufactured or are used in a manufacturing process.

3.2 The gas chromatography test is useful in identifying linear detergent alkylates produced by the various manufacturing processes and for determining the applicability of a linear detergent alkylate to a particular end use. Test conditions have been optimized for resolution of the C-9 to C-15 linear detergent alkylates and the presence of higher or lower chain lengths will be readily apparent but may produce erroneous results. The tetralin structures have not been sufficiently identified to allow determination of tetralins, and small unidentified components are reported as tetralins and unidentified.

3.3 Some linear detergent alkylates use a manufacturing process with an organic chloride as a precursor. This test may be used to ensure that the chloride content of the alkylate is not excessive for a particular end use.

3.4 The platinum-cobalt color test is useful in determining that the color of the linear detergent alkylate will not contribute to the color of the end use product.

3.5 The refractive index and specific gravity tests are possible aids in the identification of linear detergent alkylates and in evaluating alkylates for gross contaminants.

3.6 The water test is suitable for determining that linear detergent alkylates do not contain amounts of water deleterious to further processing.

¹ These test methods are under the jurisdiction of ASTM Committee D12 on Soaps and Other Detergents and are the direct responsibility of Subcommittee D12.12 on Analysis and Specifications of Soaps, Synthetics, Detergents and their Components.

Current edition approved Jan. 1, 2017. Published February 2017. Originally approved in 1984. Last previous edition approved in 2009 as D4337 – 89(2009). DOI: 10.1520/D4337-89R17.

² 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.

³ The last approved version of this historical standard is referenced on www.astm.org.