



Designation: D8534 – 24

Standard Test Method for Determination of Trace Peroxides in Liquid, Liquefied, and Reagents Soluble Hydrocarbon Streams using Flow Injection System with Ultraviolet/Visible Detector¹

This standard is issued under the fixed designation D8534; 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 determination of trace peroxides in various hydrocarbon streams. A list of typical hydrocarbon streams can be found in [Appendix X2](#).

1.2 This test method is applicable to the determination of peroxides in petroleum liquids including, but not limited to, 1,3-butadiene, styrene, methylcyclohexane, and alpha olefins in the range of 0.1 mg/kg to 100 mg/kg active oxygen. The limit of detection (LOD) is 0.03 mg/kg for active oxygen and the limit of quantitation (LOQ) is 0.11 mg/kg active oxygen. The upper limit has been determined by the calibration range.

NOTE 1—LOD and LOQ were calculated using data obtained during development of this test method.

1.3 In determining the conformance of the test results using this test method to applicable specifications, results shall be rounded off in accordance with the rounding-off method of Practice [E29](#).

1.4 *Units*—The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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.* For specific hazard statements, see Section [9](#).

1.6 *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*:²

- [D1193](#) Specification for Reagent Water
- [D1265](#) Practice for Sampling Liquefied Petroleum (LP) Gases, Manual Method
- [D3437](#) Practice for Sampling and Handling Liquid Cyclic Products
- [D3700](#) Practice for Obtaining LPG Samples Using a Floating Piston Cylinder
- [D4790](#) Terminology of Aromatic Hydrocarbons and Related Chemicals
- [D6809](#) Guide for Quality Control and Quality Assurance Procedures for Aromatic Hydrocarbons and Related Materials
- [E29](#) Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
- [E691](#) Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

2.2 *Other Documents*:

- [29 CFR 1910.1000](#) OSHA Regulations, Toxic and Hazardous Substances—Air Contaminants³
- [29 CFR 1910.1200](#) OSHA Regulations, Toxic and Hazardous Substances—Hazard Communication³

3. Terminology

3.1 *Acronyms*:

- 3.1.1 *DBP*—dibenzoyl peroxide
- 3.1.2 *DLP*—dilauroyl peroxide

4. Summary of Test Method

4.1 This test method uses a Flow Injection System (FIS) based on High Performance Liquid Chromatography (HPLC) hardware. A sample suspected of containing peroxides is injected in a reagent stream of acidified iodide. Peroxides

¹ This test method is under the jurisdiction of ASTM Committee [D16](#) on Aromatic, Industrial, Specialty and Related Chemicals and is the direct responsibility of Subcommittee [D16.04](#) on Instrumental Analysis.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from DLA Document Services, Building 4/D, 700 Robbins Ave., Philadelphia, PA 19111-5094, <http://quicksearch.dla.mil>.