



Designation: D8149 – 17

Standard Practice for Optimization, Calibration, and Validation of Ion Chromatographic Determination of Heteroatoms and Anions in Petroleum Products and Lubricants¹

This standard is issued under the fixed designation D8149; 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 practice covers the information on calibration, quality control, and operational guidance for anionic measurements using ion chromatography (IC).

1.2 *IC Related Standards*—Chemically or electrolytically regenerated suppressed ion chromatography standards for aqueous matrices include Test Methods [D2988](#), [D4327](#), [D5085](#), [D5542](#), [D5827](#), [D5987](#), [D5996](#), [D6581](#), [D7319](#), [D7328](#), [D7359](#), [D7773](#), [D7994](#), and [D8150](#); IC instrumentation requirements are described in Practices [E1151](#), and [E1511](#).

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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

- [D86](#) Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure
- [D975](#) Specification for Diesel Fuel Oils
- [D1193](#) Specification for Reagent Water

¹ This test method is under the jurisdiction of ASTM Committee [D02](#) on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee [D02.03](#) on Elemental Analysis.

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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.

- [D2988](#) Test Methods for Water-Soluble Halide Ion in Halogenated Organic Solvents and Their Admixtures
- [D4057](#) Practice for Manual Sampling of Petroleum and Petroleum Products
- [D4177](#) Practice for Automatic Sampling of Petroleum and Petroleum Products
- [D4327](#) Test Method for Anions in Water by Suppressed Ion Chromatography
- [D5085](#) Test Method for Determination of Chloride, Nitrate, and Sulfate in Atmospheric Wet Deposition by Chemically Suppressed Ion Chromatography
- [D5542](#) Test Methods for Trace Anions in High Purity Water by Ion Chromatography
- [D5827](#) Test Method for Analysis of Engine Coolant for Chloride and Other Anions by Ion Chromatography
- [D5987](#) Test Method for Total Fluorine in Coal and Coke by Pyrohydrolytic Extraction and Ion Selective Electrode or Ion Chromatograph Methods
- [D5996](#) Test Method for Measuring Anionic Contaminants in High-Purity Water by On-Line Ion Chromatography
- [D6299](#) Practice for Applying Statistical Quality Assurance and Control Charting Techniques to Evaluate Analytical Measurement System Performance
- [D6581](#) Test Methods for Bromate, Bromide, Chlorate, and Chlorite in Drinking Water by Suppressed Ion Chromatography
- [D6751](#) Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels
- [D6792](#) Practice for Quality Management Systems in Petroleum Products, Liquid Fuels, and Lubricants Testing Laboratories
- [D7318](#) Test Method for Existent Inorganic Sulfate in Ethanol by Potentiometric Titration
- [D7319](#) Test Method for Determination of Existent and Potential Sulfate and Inorganic Chloride in Fuel Ethanol and Butanol by Direct Injection Suppressed Ion Chromatography
- [D7328](#) Test Method for Determination of Existent and Potential Inorganic Sulfate and Total Inorganic Chloride in Fuel Ethanol by Ion Chromatography Using Aqueous Sample Injection