



Standard Guide for Calibration Requirements for Elemental Analysis of Petroleum Products and Lubricants¹

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1. Scope*

1.1 This guide covers different ways by which the test methods used for elemental analysis of petroleum product and lubricant samples are calibrated before the sample analysis.

1.2 Uniform practice for test method calibration is beneficial in standardizing the procedures, and obtaining consistent results across different laboratories.

1.3 This guide includes only the basic steps for generally encountered instrument types. Anything out of the ordinary may require special procedures. See individual test methods for instructions to handle such situations.

1.4 This guide is not a substitute for a thorough understanding of the actual test method to be used, caveats it contains, and additional instrument preparation that may be required.

1.5 The user should not expand the scope of the test methods to materials or concentrations outside the scope of the test methods being used.

1.6 This guide should also be applicable to sample preparation of non-petroleum based bio-fuels for elemental analysis. Work is underway on these aspects in Subcommittee D02.03. As more information becomes available, it will be added to this standard.

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

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.*

2. Referenced Documents

2.1 ASTM Standards:²

- D129 Test Method for Sulfur in Petroleum Products (General High Pressure Decomposition Device Method)
- D445 Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)
- D482 Test Method for Ash from Petroleum Products
- D808 Test Method for Chlorine in New and Used Petroleum Products (High Pressure Decomposition Device Method)
- D874 Test Method for Sulfated Ash from Lubricating Oils and Additives
- D892 Test Method for Foaming Characteristics of Lubricating Oils
- D1018 Test Method for Hydrogen In Petroleum Fractions
- D1091 Test Methods for Phosphorus in Lubricating Oils and Additives
- D1266 Test Method for Sulfur in Petroleum Products (Lamp Method)
- D1318 Test Method for Sodium in Residual Fuel Oil (Flame Photometric Method)
- D1548 Test Method for Vanadium in Heavy Fuel Oil¹ (Withdrawn 1997)³
- D1552 Test Method for Sulfur in Petroleum Products by High Temperature Combustion and IR Detection
- D1839 Test Method for Amyl Nitrate in Diesel Fuels
- D2622 Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry
- D2784 Test Method for Sulfur in Liquefied Petroleum Gases (Oxy-Hydrogen Burner or Lamp)
- D3120 Test Method for Trace Quantities of Sulfur in Light Liquid Petroleum Hydrocarbons by Oxidative Microcoulometry

¹ This guide 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.

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