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.

Designation: D7578 – 20

Standard Guide for Calibration Requirements for Elemental Analysis of Petroleum Products and Lubricants[1]

This standard is issued under the fixed designation D7578; 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 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.9 *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]

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 Oil[1] (Withdrawn 1997)[3]

D1552 Test Method for Sulfur in Petroleum Products by High Temperature Combustion and Infrared (IR) Detection or Thermal Conductivity Detection (TCD)

D1839 Test Method for Amyl Nitrate in Diesel Fuels (Withdrawn 2019)[3]

D2622 Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry

D2784 Standard Test Method for Sulfur in Liquefied Petroleum Gases (Oxy-Hydrogen Burner or Lamp) (Withdrawn 2016)[3]

[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.

Current edition approved May 1, 2020. Published June 2020. Originally approved in 2010. Last previous edition approved in 2018 as D7578 – 18. DOI: 10.1520/D7578-20.

[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.

*A Summary of Changes section appears at the end of this standard

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. United States