



Designation: D7166 – 23

Standard Practice for Total Sulfur Analyzer Based On-line/At-line for Sulfur Content of Gaseous Fuels¹

This standard is issued under the fixed designation D7166; 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 is for the determination of total sulfur from gas phase sulfur-containing compounds in high methane or hydrogen content gaseous fuels using on-line/at-line instrumentation.

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

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *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

- D1070 Test Methods for Relative Density of Gaseous Fuels
- D1072 Test Method for Total Sulfur in Fuel Gases by Combustion and Barium Chloride Titration
- D3246 Test Method for Sulfur in Petroleum Gas by Oxidative Microcoulometry
- D3609 Practice for Calibration Techniques Using Permeation Tubes
- D3764 Practice for Validation of the Performance of Process Stream Analyzer Systems
- D4150 Terminology Relating to Gaseous Fuels

¹ This practice is under the jurisdiction of ASTM Committee D03 on Gaseous Fuels and is the direct responsibility of Subcommittee D03.12 on On-Line/At-Line Analysis of Gaseous Fuels.

Current edition approved May 1, 2023. Published May 2023. Originally approved in 2005. Last previous edition approved in 2015 as D7166 – 10 (2015). DOI: 10.1520/D7166-23.

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.

D4298 Guide for Intercomparing Permeation Tubes to Establish Traceability

D4468 Test Method for Total Sulfur in Gaseous Fuels by Hydrogenolysis and Rateometric Colorimetry

D5287 Practice for Automatic Sampling of Gaseous Fuels

D5453 Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence

D5503 Practice for Natural Gas Sample-Handling and Conditioning Systems for Pipeline Instrumentation (Withdrawn 2017)³

D5504 Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence

D6122 Practice for Validation of the Performance of Multi-variate Online, At-Line, Field and Laboratory Infrared Spectrophotometer, and Raman Spectrometer Based Analyzer Systems

D6299 Practice for Applying Statistical Quality Assurance and Control Charting Techniques to Evaluate Analytical Measurement System Performance

D6621 Practice for Performance Testing of Process Analyzers for Aromatic Hydrocarbon Materials

D6667 Test Method for Determination of Total Volatile Sulfur in Gaseous Hydrocarbons and Liquefied Petroleum Gases by Ultraviolet Fluorescence

2.2 ISO Standards⁴

ISO 7504 Gas Analysis-Vocabulary

3. Terminology

3.1 Definitions:

3.1.1 For definitions of general terms used in D03 Gaseous Fuels standards, refer to Terminology D4150.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *total sulfur*; *n*—summation of all gas phase sulfur species present in a sample.

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

⁴ Available from International Organization for Standardization (ISO), 1, ch. de la Voie-Creuse, Case postale 56, CH-1211, Geneva 20, Switzerland, <http://www.iso.ch>.