



# National Institute of Standards & Technology

## Certificate of Analysis

### Standard Reference Material 1619a

#### Sulfur in Residual Fuel Oil

Sulfur Concentration.....0.725 ± 0.007 wt. percent

This Standard Reference Material (SRM) is intended for use in the calibration of instruments and the evaluation of methods used in the determination of total sulfur in fuel oils or materials of similar matrix. SRM 1619a is a commercial "No. 6" residual fuel oil as defined by the American Society for Testing and Materials, (ASTM). It consists of 100 mL of a stable residual fuel oil.

The sulfur content in SRM 1619a was certified using isotope dilution thermal ionization mass spectrometry (ID-TIMS). The certified value was also confirmed using ASTM methods D-4294 and D-1552. Homogeneity testing was performed using x-ray fluorescence spectrometry.

The stated uncertainty of the certified value is the approximate 95% prediction interval for any bottle of the SRM and includes all known sources of random and systematic error.

Notice to Users: The certification of this SRM is considered valid for three years from the date of purchase. The supplemental information reported on the next page was obtained from physical tests and measurements using ASTM methods.

Analyses for certification were performed by K.E. Hehn, W.R. Kelly, A.F. Marlow and P.A. Pella, of the Inorganic Analytical Research Division.

Measurements for certification were coordinated by W.F. Koch through the Inorganic Analytical Research Division.

The overall direction and coordination of the technical measurements leading to the certification of this SRM were coordinated through the Standard Reference Materials Program by T.E. Gills.

Gaithersburg, MD 20899  
April 30, 1991

William P. Reed, Chief  
Standard Reference Materials Program

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### SUPPLEMENTAL INFORMATION

Physical properties of SRM 1619a are listed in the table below. The values are not certified but are provided as additional information on the matrix.

<u>Test</u>	<u>ASTM Method</u>	<u>Result</u>
Density @ 15.6 °C (60 °F)	D-1298	0.9189 kg/m <sup>3</sup>
Flash Point, PMCC	D-93	56.7 °C (134 °F)
Pour Point, °C	D-97	+ 18 °C (64.4 °F)
Heat of Combustion, Gross	D-2382	44.27 MJ · kg <sup>-1</sup> (19,034 Btu/lb)
Viscosity, Kinematic @ 100 °C (212 °F)	D-445	5.78 cSt
Viscosity, Kinematic @ 38 °C (100 °F)	D-445	36.16 cSt

D-1298 Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method.

D-93 Flash Point by Pensky-Martens Closed Tester.

D-97 Pour Point of Petroleum Oils.

D-2382 Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High-Precision Method).

D-445 Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity).