



# National Institute of Standards & Technology

## Certificate of Analysis

### Standard Reference Material 2717

#### Sulfur in Residual Fuel Oil

Sulfur Concentration..... 3.022 ± 0.024 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 2717 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 2717 was certified using isotope dilution thermal ionization mass spectrometry (ID-TIMS) and ion chromatography (IC). 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 is meant to approximate two standard deviations of the certified value. The uncertainty includes all observed material and measurement variabilities.

Notice to Users: The certification of this SRM is considered valid three years from the date of purchase.

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

The supplemental information reported on the next page was obtained from physical tests and measurements using ASTM methods. The measurements were performed by analysts of the E.W. Saybolt & Company, Inc. of Corpus Christi, Texas on contract to the National Institute of Standards and Technology (NIST).

The statistical analysis of the certification data was performed by R. C. Paule of the NIST National Measurement Laboratory.

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  
October 25, 1990

William P. Reed, Acting Chief  
Standard Reference Materials Program

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### SUPPLEMENTAL INFORMATION

Physical properties of SRM 2717 are listed in the table below. The values are not certified but are provided as additional information on the matrix.

<b>Test</b>	<b>ASTM Method</b>	<b>Result</b>
Density @ 15.6 °C (60 °F)	D-1298	0.9541 g/cm <sup>3</sup>
Flash Point	D-93	47.22 °C (117 °F)
Pour Point	D-97	Below -30 °C (Below -22 °F)
Calorific Value, Gross	D-2382	43.30 MJ · Kg <sup>-1</sup> (18614 Btu/lb)
Viscosity Kinematic @ 38 °C (100 °F)	D-445	30.05 cSt

#### ASTM Methods Used for Physical Tests

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).