



# National Institute of Standards & Technology

## Certificate of Analysis

### Standard Reference Material 1620b

#### Sulfur in Residual Fuel Oil

Sulfur Concentration..... 4.220 ± 0.013 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 1620b 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, homogeneous residual fuel oil.

The sulfur content in SRM 1620b 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 is based on extensive ID-TIMS laboratory experience and is meant to approximate two standard deviations of the certified value. The actual, observed variability of the ID-TIMS results was somewhat smaller than that listed above.

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

Analyses for certification were performed by W.R. Kelly, 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 technical and support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by T.E. Gills.

Gaithersburg, MD 20899  
July 26, 1990

William P. Reed, Acting Chief  
Standard Reference Materials Program

(over)

### SUPPLEMENTAL INFORMATION

Physical properties of SRM 1620b are listed in the table below. The values are not certified but are provided as additional information on the matrix.

Test	ASTM Method	Result
Density @ 15.6 °C (60 °F)	D-1298	0.9909 g/cm <sup>3</sup>
Flash Point	D-93	50.6 °C (123 °F)
Pour Point	D-97	-18 °C (-0.4 °F)
Calorific Value, Gross	.....	41.90 MJ · Kg <sup>-1</sup> (18010 Btu)
Viscosity Kinematic @ 100 °C (212 °F)	D-445	49.18 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-445 Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity).