



National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 1622d

Sulfur in Residual Fuel Oil

Sulfur Concentration 2.031 ± 0.020 wt. %

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 1622d consists of 100 mL of commercial "No. 6" residual fuel oil as defined by the American Society for Testing and Materials (ASTM).

The sulfur content in SRM 1622d 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 errors.

Notice to Users: The certification of this SRM is considered valid three years from the date of purchase. The supplemental information reported on page 2 was obtained from physical tests and measurements using ASTM methods.

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

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
March 14, 1994
(Revision of certificate dated 2-8-94)

Thomas E. Gills, Chief
Standard Reference Materials Program

(over)

SUPPLEMENTAL INFORMATION

Physical properties of SRM 1622d 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 @ 15.56 °C (60 °F) | D 1298 | 979.3 kg/m ³ |
| Flash Point, PMCC | D 93 | Over 110 °C (230 °F) |
| Pour Point | D 97 | -6.0 °C (+21.2 °F) |
| Heat of Combustion, Gross | D 2382 | 42.68 MJ·kg ⁻¹ (18,350 Btu/lb) |
| Viscosity, Kinematic @ 100 °C (212 °F) | D 445 | 4.75 x 10 ⁻⁵ M ² /s (47.50 cSt) |
| Viscosity, Kinematic @ 38 °C (100 °F) | D 445 | 1.45 x 10 ⁻³ M ² /s (1454.63 cSt) |

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

D 93 Standard Test Method for Flash Point by Pensky-Martens Closed Tester.

D 97 Standard Test Method for Pour Point of Petroleum Oils.

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

D 445 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity).