



National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material[®] 1617a

Sulfur in Kerosine (High Level)

This Standard Reference Material (SRM) is intended for use in the determination of total sulfur in fuel oils or materials of similar matrix. SRM 1617a consists of 100 mL of a regular grade kerosine suitable for use in flue-connected burner appliances and for use in wick-fed illuminating lamps, as described in ASTM D 3699-92 Specification for Kerosine. A unit of SRM 1617a consists of 100 mL of high sulfur kerosine in an amber glass bottle.

Certified Value and Uncertainty: A NIST certified value is a value for which NIST has the highest confidence in its accuracy in that all known or suspected sources of bias have been investigated or taken into account. The certified value, reported as a mass fraction [1], for the sulfur content in SRM 1617a is as follows:

Sulfur Mass Fraction: $0.173\ 07\ \% \pm 0.000\ 34\ \%$

The sulfur content in SRM 1617a was certified using isotope dilution thermal ionization mass spectrometry. Homogeneity testing was performed using X-ray fluorescence spectrometry.

The stated uncertainty is a 95 % confidence interval for the certified value and includes all known sources of random and systematic errors as evaluated according to the ISO and NIST Guides [2].

Expiration of Certification: The certification of **SRM 1617a** is valid, within the measurement uncertainty specified, for three years from the date of shipment from NIST. This certification is nullified if the SRM is damaged, contaminated, or otherwise modified.

Maintenance of SRM Value Assignment: NIST will monitor this SRM over the period of its value assignment. If substantive technical changes occur that affect the value assignment before the expiration of this certificate, NIST will notify the purchaser. Registration (see attached sheet) will facilitate notification.

Analyses for certification were performed by W.R. Kelly, R.D. Vocke, A.F. Marlow, and P.A. Pella of the NIST Analytical Chemistry Division.

The supplemental information reported on page two was obtained from physical tests and measurements using ASTM methods and was performed by a commercial firm under contract to the National Institute of Standards and Technology.

The statistical analysis was performed by S.B. Schiller of the NIST Statistical Engineering Division.

Support aspects involved in the issuance of this SRM were coordinated through the NIST Measurement Services Division.

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Certificate Issue Date: 10 July 2009
See Certificate Revision History on Last Page

SUPPLEMENTAL INFORMATION

The physical property values given below are NOT certified but are provided as additional information on the kerosine matrix.

Table 1. SRM 1617a Physical Properties

Test	ASTM Method	Value
Specific Gravity @ 15 °C	D 1298	0.7625 g/cm ³
Flash Point	D 56	55 °C
Pour Point	D 97	< -21 °C
Refractive Index	D 1218	1.4263
Viscosity Kinematic @ 38 °C	D 445	1.47 × 10 ⁻⁶ m ² /s (1.47 cSt)
Viscosity Kinematic @ -20 °C	D 445	5.68 × 10 ⁻⁶ m ² /s (5.68 cSt)
Carbon	D 5291	83.0 mass %
Hydrogen	D 5291	15.1 mass %

ASTM METHODS USED FOR PHYSICAL TESTS

D 1298-85 (1990) ^{ε1}	Practice for Density, Relative Density (Specific Gravity) or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method
D 56-93	Test Method for Flash Point by Tag Closed Tester
D 97-93	Test Method for Pour Point of Petroleum Products
D 445-88	Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)
D 1218-92	Test Method for Refractive Index and Refractive Dispersion of Hydrocarbon Liquids
D 5291	ASTM D5291-96, Test Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Petroleum Products and Lubricants

ε¹: A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal. The superscript number refers to the specific change.

REFERENCES

- [1] Taylor, B.N.; *Guide for the Use of the International System of Units (SI)*; NIST Special Publication 811, 1995 ed. (1995).
- [2] ISO; *Guide to the Expression of Uncertainty in Measurement*; ISBN 92-67-10188-9, 1st ed., International Organization for Standardization: Geneva, Switzerland (1993); see also Taylor, B.N.; Kuyatt, C.E.; *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results*; NIST Technical Note 1297, U.S. Government Printing Office: Washington, DC (1994); available at <http://physics.nist.gov/Pubs/>.

Certificate Revision History: 10 July 2009 (Addition of mass percent information values for carbon and hydrogen); 12 September 2006 (Editorial changes); 17 July 1995 (Original certificate date).

Users of this SRM should ensure that the certificate in their possession is current. This can be accomplished by contacting the SRM Program at: telephone (301) 975-2200; fax (301) 926-4751; e-mail srminfo@nist.gov; or via the Internet at <http://www.nist.gov/srm>.