

National Bureau of Standards

Certificate of Analysis

Standard Reference Material 1638b

Lead in Reference Fuel

This Standard Reference Material (SRM) is intended for use in the calibration of instruments and the evaluation of techniques used for the analysis of lead in gasoline or similar materials. SRM 1638b consists of 12 amber ampoules, each containing 20 mL of a reference fuel with a nominal lead concentration level of 2 g/gal.

Certified Value: The certified value for the lead concentration, expressed in units of $\mu\text{g/g}$, is given below. The certified value is based on results by isotope dilution mass spectrometry with the certified value being substantiated by the use of inductively coupled plasma spectrometry.

<u>Ampoule Identification</u>	<u>Certified Lead Concentration $\mu\text{g/g}$</u>
IV	767 ± 5^a

^aThe uncertainty is expressed as ± 2 standard deviations of the certified value.

Caution: This SRM contains chemical components that are highly flammable, poisonous, and moderately toxic by inhalation and ingestion. Avoid inhalation of vapors and skin contact with liquid. Read carefully the Material Safety Data Sheet that accompanies the SRM.

Use: The SRM should be stored at temperatures between 10-30 °C. It should not be exposed to intense sources of radiation, including ultraviolet light or sunlight. The ampoules in the SRM unit should be opened only at time of use. No attempt should be made to keep the material in opened ampoules for future use.

Preparation of Material: This SRM is a mixture of 90 percent by volume of 2,2,4,-Trimethylpentane (isooctane) and 10 percent by volume n-heptane. The material was spiked with lead in the form of tetraethyl-lead motor mix.

Gaithersburg, MD
August 15, 1986

Stanley D. Rasberry, Chief
Office of Standard Reference Materials

(Over)

Analyses leading to certification were performed in the Analytical Research Division by I.L. Barnes, J.R. Moody, T.J. Murphy, R.L. Watters, Jr., and L.J. Wood.

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

The overall direction and coordination of the technical measurements leading to certification were performed by J.R. DeVoe, Chief of the Inorganic Analytical Research Division.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by T.E. Gills.

Supplemental Information

Since the volume of this SRM varies with temperature, the concentration of lead is certified on a weight basis, i.e., micrograms of lead per gram of reference fuel. For convenience to the user, information is given for the concentration in the customary units, grams per gallon and grams per liter at 21 °C. The density of this SRM is 0.6908 g/mL at 21°C and the temperature coefficient is 0.0008 mL/°C. The density was determined using a modification of ASTM Method D1217.

Table 1

<u>Ampoule Identification</u>	<u>Lead Concentration @ 21 °C</u>	
	<u>g/gal</u>	<u>g/L</u>
IV	2.005	0.530