

National Bureau of Standards

Certificate

Standard Reference Material 217c

2,2,4-Trimethylpentane

This Standard Reference Material (SRM) consists of commercially obtained 2,2,4-trimethylpentane and is intended for use as a liquid density standard, as a refractive index standard, and as a calorimetric heat of combustion standard.

DENSITY

The density of a sample of this material was measured in a U-shaped resonant comparator. The temperature of the bath was maintained constant to ± 0.015 °C. The uncertainties of the density values given below are ± 0.037 kg/m³.

Temperature	20 °C	25 °C	30 °C
Density, kg/m ³ (for air-saturated material)	691.929	687.680	683.432

The values of density are on the basis of weights in vacuum, with the sample at a pressure of 1 atmosphere and saturated with air.

The density measurements were made under the supervision of J.R. Whetstone in the Chemical Process Metrology Division, NBS Center for Chemical Engineering.

REFRACTIVE INDEX

The refractive index of four samples of this material was determined at seven wavelengths and at temperatures near 20, 25, and 30 °C. The measurements were made on a precision spectrometer by means of the minimum-deviation method. Emission lamps of Hg, He, H₂, and Na were used as wavelength sources. Each sample was contained in a prismatic cell with plane-parallel windows during the measurement process. Water from a temperature-controlled bath was circulated through the cell housing to maintain a constant temperature during the test. The temperature coefficient of refractive index was determined for each sample at each wavelength. An average temperature coefficient for the four samples at each wavelength was used to determine the refractive index value for the wavelength at 20, 25, and 30 °C.