



National Institute of Standards & Technology

Certificate

Standard Reference Material 1825

Fused Silica Density Standard

This Standard Reference Material (SRM) is intended for use as a density reference in the determination of the density of solids and liquids. This SRM consists of a rod of fused silica glass having nominal dimensions of 16 mm diameter by 50 mm long. The certified density was determined by means of hydrostatic weighing.

Certified Density Value at 25 °C
 $2.201855 \pm 0.000060 \text{ g/cm}^3$

The certified value is directly traceable to the units of mass and length as defined in the International System (SI). The uncertainty value is the half-width of a 99% prediction interval for the certified value and includes every known source of error. The uncertainty limits will cover the density of approximately 99% of samples of this SRM. The certified value applies to the specimen as a whole; the microhomogeneity of the specimen has not been evaluated.

Density at room temperature is related to the certified density as follows:

$$\rho(t') = \rho_{cv} / (1 + 3\alpha(t' - 25))$$

where $\rho(t')$ is the density at temperature t'
 ρ_{cv} is the certified value for density at 25 °C
 α is the coefficient of linear expansion
 $\alpha = 0.55 \times 10^{-6} / \text{°C}$

The samples for this SRM were donated by the Schott Glass Company through ASTM Committee C-14.

The technical direction and physical measurements leading to certification were provided by R.S. Davis of the Automated Production Technology Division. Statistical consultation and analysis were provided by S.B. Schiller of the Statistical Engineering Division.

The technical support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Standard Reference Materials Program by R.L. McKenzie. Revision of the certificate was coordinated through the Standard Reference Materials Program by J.S. Kane.

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Standard Reference Materials Program