

National Bureau of Standards

Certificate

Standard Reference Material 1822

Refractive Index Glass

This Standard Reference Material (SRM) was prepared from a selected portion of a commercial soda-lime glass that is homogeneous, stable, and has a high optical quality. The chemical composition of this glass is the same as SRM 1830. SRM 1822 is designed for both the calibration of refractometers and the determination of refractive index as a function of wavelength of microscope immersion liquids. It consists of two rectangular slabs: a slab which is polished on two faces, intended for checking the performance of refractometers; and an unpolished slab, which can be broken into fragments, intended for microscopic determination of the refractive indexes of immersion liquids.

The homogeneity was evaluated by measuring the refractive index of each polished rectangular slab and five prisms cut from the glass. The prisms were used to determine refractive index at 15 wavelengths. These indexes were measured, using the classical minimum deviation method, on a calibrated precision spectrometer. Statistical evaluation of the data yielded uncertainties in refractive index that are within $\pm 9 \times 10^{-6}$. Each rectangular slab was measured at 2 wavelengths (0.58926 μm and 0.64385 μm) on a calibrated refractometer and agreed within 3×10^{-5} of the corresponding spectrometer values. Based on the homogeneity of this glass, it is believed that the index variance at the other wavelengths is within the stated uncertainty. All refractive index measurements were carried out in a laboratory controlled at 20 ± 0.3 °C.

Wavelength in Micrometers, μm λ	Refractive Index n	Wavelength in Micrometers, μm λ	Refractive Index n
1.08297	1.507143	0.50858	1.522337
1.01398	1.508030	0.48613	1.524006
0.70652	1.513723	0.47999	1.524503
0.66781	1.514868	0.46781	1.525551
0.65628	1.515244	0.43583	1.528761
0.64385	1.515669	0.40466	1.532710
0.58926 ^a	1.517835		
0.58756	1.517914		
0.54607	1.520001		

^aIntensity-weighted mean of doublet, Sodium, D₁, D₂.

The refractive index measurements were made by M.J. Dodge in the NBS Inorganic Materials Division.

The preparation and certification of this SRM was coordinated through the Office of Standard Reference Materials by R.K. Kirby.

Gaithersburg, MD 20899
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