

National Bureau of Standards

Certificate

Standard Reference Material 2015

White Opal Glass Diffuse Spectral Reflectance

Standard for the Visible Spectrum

V. R. Weidner

This Standard Reference Material (SRM) is intended for use in calibrating the photometric scale of integrating sphere reflectometer-spectrophotometers used in the measurement of spectral 6° /hemispherical reflectance. SRM 2015 is a 5.1-cm x 3.8-cm, fire-polished, white opal glass (vitolite).

This SRM was measured at 10-nm intervals from 400 to 750 nm. The certified values were determined in the following way. The 6° /hemispherical diffuse reflectance factor of a master plate was measured on the NBS High Accuracy Reference Spectrophotometer for diffuse reflectance, using techniques for determining absolute reflectance values (reflectance relative to a perfect diffuser). This master plate was then used to transfer the absolute reflectance scale to the reflectance SRM through the use of a working plate and a high-precision recording spectrophotometer. The uncertainty in the values of absolute diffuse reflectance assigned to the master plate is 0.15 percent. The total uncertainty of the certified values of absolute diffuse reflectance is ± 1.0 percent at the 95 percent confidence level, the certified values for the "included specular component" are given in Table 1. Uncertified values for the "excluded specular component" are given for information only in Table 2.

The white opal glass can be cleaned with a mild liquid soap and warm water, followed by a rinse in distilled water. The fire-polished surface and the reflectance of the standard are very stable. However, care should be exercised in cleaning and handling to avoid scratching the polished surface. The standard should be stored in a covered glass enclosure when not in use.

This SRM is issued with a black felt covered aluminum plate. This black felt is to be placed against the back of the SRM when measuring its reflectance. The same black backing was used in calibrating the SRM at NBS. This white glass is translucent and may not be suitable as a reflectance standard for some reflectometers.

The calibration of this diffuse spectral reflectance standard was done in the Radiometric Physics Division of the Center for Radiation Research at NBS.

The technical and support aspects involved in the certification and issuance of SRM 2015 was coordinated through the Office of Standard Reference Materials by R.K. Kirby.

Washington, D.C. 20234
May 5, 1982

George A. Uriano, Chief
Office of Standard Reference Materials

Each SRM 2015 is issued with individual Tables 1 and 2. THIS IS AN EXAMPLE.

SRM 2015

Table 1 Included Specular Component - Certified Value

Serial Number:

V6-G2001

λ	R								
400.0	.9053063	410.0	.8959287	420.0	.8923000	430.0	.8915571	440.0	.8902991
450.0	.8980450	460.0	.9084799	470.0	.9106682	480.0	.9112941	490.0	.9146762
500.0	.9155519	510.0	.9193726	520.0	.9214386	530.0	.9218763	540.0	.9220629
550.0	.9216869	560.0	.9216869	570.0	.9203111	580.0	.9183103	590.0	.9156826
600.0	.9140560	610.0	.9128034	620.0	.9101726	630.0	.9079146	640.0	.9060975
650.0	.9056592	660.0	.9046578	670.0	.9025352	680.0	.9036564	690.0	.9019109
700.0	.9012835	710.0	.8985341	720.0	.8965321	730.0	.8942301	740.0	.8922290
750.0	.8900427								

UNIT OF WAVELENGTH=NANOMETER

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Table 2 Excluded Specular Component for Information Only (Not Certified)

Serial Number:

V6-G2001

λ	R								
400.0	.8635103	410.0	.8573515	420.0	.8521573	430.0	.8521534	440.0	.8516999
450.0	.8596128	460.0	.8693681	470.0	.8718158	480.0	.8722637	490.0	.8749999
500.0	.8782613	510.0	.8804128	520.0	.8821519	530.0	.8820428	540.0	.8840386
550.0	.8829335	560.0	.8819387	570.0	.8820440	580.0	.8814131	590.0	.8790463
600.0	.8774159	610.0	.8745262	620.0	.8728158	630.0	.8700000	640.0	.8688959
650.0	.8678962	660.0	.8668964	670.0	.8654489	680.0	.8650000	690.0	.8640000
700.0	.8634486	710.0	.8602470	720.0	.8582480	730.0	.8566148	740.0	.8541659

UNIT OF WAVELENGTH=NANOMETER