



8°/Hemispherical Reflectance Calibration CERTIFICATE

SERIAL NUMBER: DC13C-0276
DATE OF REPORT: November 1, 2010
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CALIBRATION LABORATORY: Labsphere, Inc., Reflectance Calibration Laboratory
231 Shaker Street
North Sutton, NH 03260
Tel 603-927-4266 Fax 603-927-4694

CALIBRATED REFLECTANCE COMPONENT
SRS-05-010 Reflectance Standard

CALIBRATION REQUESTED
8°/Hemispherical Spectral Reflectance Calibration over the range 250 – 2500 nm, reported at 50 nm intervals

APPLICABLE DOCUMENTS
DM-13001-000 Product Appearance and Mechanical-fit Requirements
DM-01100-000 General Reflectance Calibration Requirements
DM-01400-000 8°/Hemispherical Reflectance Calibration of Targets and Reflectance Standards

TEST AND TEST METHOD
The 8°/Hemispherical Spectral Reflectance was measured for the sample listed above. The calibration was performed with standards traceable to the U.S. National Institute of Standards and Technology (NIST). The reflectance was determined by using a Perkin-Elmer double beam ratio recording spectrophotometer equipped with a Labsphere integrating sphere reflectance accessory. Incident flux at 8° from normal was reflected from the above sample then radiated onto the internal surface of the integrating sphere. The sphere's internal surface radiance was proportional to that of a laboratory working standard used to determine the spectral reflectance.

NATIONAL LABORATORY TRACEABLE STANDARD(S):

	Lambda 900A	Lambda 900B	Lambda 950C
			X
Instrument	Serial No. 101N 3060902	Serial No. 70038	Serial No. 950N9031801
Accessory	PELA-1000 Serial No. 05220314341	PELA-1000 Serial No. 08220625262	PELA-1000 Serial No. 1203088776
Primary Standard	REFL-37 NIST Report No. 844/275580-07 Calibrated November 29, 2007	REFL-37 NIST Report No. 844/275580-07 Calibrated November 29, 2007	REFL-37 NIST Report No. 844/275580-07 Calibrated November 29, 2007

CALIBRATION RESULTS MEETS SPECIFICATIONS
See Table I "8°/Hemispherical Spectral Reflectance Factor"
See Graph I "8°/Hemispherical Spectral Reflectance Factor"

LABORATORY ENVIRONMENT
Temperature: 23 ± 3°C.

ESTIMATE CALIBRATION UNCERTAINTY
The random uncertainty, expressed by standard deviation, of reflectance measurements performed by Labsphere, Inc. is less than 0.005 for the spectral range 300-2200 nm, and is less than or equal to 0.020 over the spectral range 250-2500 nm.

CALIBRATION INTERVAL
If the product is handled with care, recalibration is recommended after one year of use at the discretion of the user.

This certificate shall not be reproduced except in full, without the written approval of Labsphere, Inc

Calibrated by:
Title: Optical Calibration Technician
Date: November 1, 2010



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Table I
8°/Hemispherical Spectral Reflectance Factor for SRS-05-010 Reflectance Standard

<u>Wavelength</u> <u>(nm)</u>	<u>Reflectance</u> <u>Factor</u>	<u>Wavelength</u> <u>(nm)</u>	<u>Reflectance</u> <u>Factor</u>
250	0.056	1400	0.081
300	0.052	1450	0.083
350	0.051	1500	0.085
400	0.051	1550	0.086
450	0.051	1600	0.089
500	0.052	1650	0.090
550	0.053	1700	0.091
600	0.054	1750	0.094
650	0.056	1800	0.095
700	0.057	1850	0.097
750	0.058	1900	0.098
800	0.060	1950	0.103
850	0.062	2000	0.102
900	0.066	2050	0.103
950	0.067	2100	0.107
1000	0.067	2150	0.108
1050	0.069	2200	0.110
1100	0.071	2250	0.111
1150	0.073	2300	0.111
1200	0.074	2350	0.117
1250	0.076	2400	0.115
1300	0.078	2450	0.117
1350	0.079	2500	0.122

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