



BELZONA, INC. P.O.# 02 2643 of 27 JUNE 2001

DIVISION OF ELECTRONIC MEASUREMENTS AND DEVICES

TEST REPORT

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NO. 610470801

DATE 10 JULY 2001

SOLAR REFLECTANCE AND ABSORPTANCE TEST AND EMISSIVITY TEST

Sample: 0.6-mm layer of fiber-fortified plastic deposited on 3.17-mm metal substrate.

1. Solar Reflectance and Absorptance Test

<i>Wavelength nm</i>	<i>Reflectance</i>	<i>Absorptance</i>	<i>Wavelength nm</i>	<i>Reflectance</i>	<i>Absorptance</i>
300	0.762	0.238	1300	0.767	0.233
350	0.766	0.234	1350	0.766	0.234
400	0.768	0.232	1400	0.765	0.235
450	0.769	0.231	1450	0.765	0.235
500	0.768	0.232	1500	0.765	0.235
550	0.769	0.231	1550	0.765	0.235
600	0.797	0.203	1600	0.765	0.235
650	0.789	0.211	1650	0.764	0.236
700	0.777	0.223	1700	0.764	0.236
750	0.769	0.231	1750	0.762	0.238
800	0.768	0.232	1800	0.760	0.240
850	0.768	0.232	1850	0.757	0.243
900	0.768	0.232	1900	0.756	0.244
950	0.768	0.232	1950	0.754	0.246
1000	0.767	0.233	2000	0.751	0.249
1050	0.767	0.233	2050	0.740	0.260
1100	0.767	0.233	2100	0.733	0.267
1150	0.767	0.233	2150	0.727	0.273
1200	0.767	0.233	2200	0.743	0.257
1250	0.766	0.234	2250	0.742	0.258

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2. Emissivity Test

Test Run	Temperature, K		Specimen	Calculated Emissivity	Test Comments
	Cavity #1	Cavity #2			
1	295	315	295	0.9463	Average emissivity from three test runs at maximum emissivity wavelength of 9.5 μm : 0.951
2	295	315	295	0.9572	
3	295	315	295	0.9495	

COMMENTS

1. The test per ASTM E903-82/92 (solar reflectance/absorptance) and ASTM E408-71/96. Test conditions: T=22°C, RH=37%, P=101.6±0.1 kPa.
2. The values in the table 1 are the average from three test runs at the same frequency. The reflectance (reflectivity) magnitudes are for 6-degree hemispherical geometry. The maximum uncertainty of the reflectivity measurements is equal or smaller than 0.007.
3. The emissivity was measured per Method A of ASTM E408.
4. Standard reference material NIST SRM 2044 was used for the test setup calibration. The working standards used: BaSO₄ tablets, AlfaAesar Cat. No.10651 (2001-2002), and the polished chromium foil (e=0.08) for test No. 1 and No. 2, respectively.
5. INSTRUMENTS AND DEVICES USED
 - Spectrophotometer Model Lambda-900 PE (175-3300 nm)
 - Integrating Sphere Model PELA-1000 PE
 - Integrated Photometer Model 3000 SAI Techn.
 - Infrared Reflectometer Model DB100 GDI, Emissometer Model Temp2000A AZ Techn.
 - Light Meter Model 840006 SPER Sci.
 - Starrett Dial Indicator Model 25-109 (1270 nm/div)
 - Digital Hygrothermometer Model 63-844 MI, Barometer Model 602650 SB.
6. The equipment used in the test meets the applicable NIST, ASTM, ASME, OSHA, and State requirements and was calibrated with the standards traceable to the NIST. The calibration was performed per ISO 9001 §4.11, ISO 9002 §4.10, ISO 9003 §4.6, ISO 9004 §13, MIL-STD-45662, MIL-I-45208, NAVAIR-17-35-MTL-1, CSP-1/03-93, and the instrument manufacturers' specifications.
7. The equipment passed a periodic accuracy test in June 2001. Next test - June 2002.

TEST ENGINEER: 29

DIVISION MANAGER: *Cynthia Smythe*