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TOTAL EMITTANCE TEST REPORT

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TOTAL EMITTANCE TEST REPORT

1.0 INTRODUCTION

This report presents results of total emittance measurements on nine roofing coating draw downs coded:

Polaroof NW
Polaroof RAC
Silver Film
Wearcoat 66
Wearcoat 44
Andek Firegard
Polaroof SP
Flashband Aluminum
Polaroof AC

2.0 TEST METHODS AND PROCEDURES

Near-Normal Infrared reflectance measurements were performed in accordance with ASTM E408-71 (reapproved 2002), Method A. A Gier Dunkle Instruments Infrared Reflectometer Model DB 100 was utilized for the measurements.

Inside the detector portion are two semi-cylindrical cavities. One of the cavities is heated by an electrical heater and the other stabilizes at approximately room temperature. Thus, the two cavities are maintained at different temperatures. As the cavities rotate, the sample is alternately irradiated at 13 Hz. A vacuum thermocouple views the sample through an optical system that focuses through slits in the ends of the cavities. The detector receives energy emitted by the sample and energy reflected by the sample. Only the reflected energy contains an alternating component as the sample is alternately irradiated by the hot and cold cavities. An amplifier is synchronized with the cavity rotation to pass only the desired alternating signal, which is then rectified and filtered. The zero and gain are set with standards of known emittance. The calibration is rechecked at several intervals during the measurement. The Gier Dunkle Infrared Reflectometer is calibrated using high and low emittance standards. The standards were calibrated at and obtained from the National Physical Laboratory in England. The emittance value for the glass standard equals 0.89. The emittance value for the mirror standard equals 0.01.

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2.0 TEST METHODS AND PROCEDURES (cont'd)

Near-Normal Emittance for the client's specimens was calculated from Kirchhoff's Relationship where:

$$\rho + \alpha + \tau = 1, \alpha = \varepsilon$$

Since the specimens have no transmittance in the far infrared, the preceding equation reduces to

$$\rho + \varepsilon = 1 \text{ and } 1 - \rho = \varepsilon$$

3.0 OBSERVATIONS, DEVIATIONS, AND WAIVERS

The measurements were performed on the coated side of the specimens. The values reported represent the average of at least four measurements.

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4.0 RESULTS

Specimen Code	Far IR Reflectance (ρ) Measured	Near Normal Emittance (ε) Calculated
Polaroof NW	.07	.93
Polaroof RAC	.41	.59
Silver Film	.57	.43
Wearcoat 66	.08	.92
Wearcoat 44	.07	.93
Andek Firegard	.06	.94
Polaroof SP	.06	.94
Flashband Aluminum	.99	.01
Polaroof AC	.06	.94