



## Measurement Report

Conducted by the

### National and Kapodistrian University of Athens Physics Department

According to the contract, signed between the **National and Kapodistrian University of Athens** and **Abolin Co**, measurements for the assessment of the:

- **solar reflectance (SR)** at the UV-VIS-NIR spectrum (300 to 2500nm),
- **infrared emittance** at the wide IR spectrum and
- **solar reflectance index (SRI)**

have been carried out by the laboratory of the Group Building Environmental Studies, of the Physics Department, of the National and Kapodistrian University of Athens (NKUA).

The following specimens have been submitted for testing:

Specimen 1: PVDF based Coating sample of dimensions: 8cm (w) x 8cm (l) and of 1mm thickness applied on aluminum substrate.

**Product Code: COOL BARRIER ROOF OPTIMUM.**

Specimen 2: Solvent based coating sample of dimension 8cm (w) x 8cm (l) and of 1mm thickness applied on aluminum substrate

**Product Code: COOL BARRIER 2K**

Specimen 3: Water based roof coating sample of dimensions: 8cm (w) x 8cm (l) and of 1mm thickness applied on aluminum substrate.

**Product Code: EURO ACRYLIC ROOF.**

Specimen 4: Water based roof coating sample of dimensions: 8cm (w) x 8cm (l) and of 1mm thickness applied on aluminum substrate.

**Product Code: COOL BARRIER ROOF CEM**

The laboratory of the Group Building Environmental Studies, of the Physics Department, of NKUA hereby reports that on the 8<sup>th</sup> April 2009 the above mentioned tested samples have been successfully measured to have the values of solar reflectance, infrared emittance and solar reflectance index that are shown in Table 1.

Product code	SR	E	SRI
COOL BARRIER ROOF OPTIMUM	0.89	0.88	113
COOL BARRIER 2K WHITE	0.91	0.88	116
EURO ACRYLIC ROOF	0.88	0.88	111
COOL BARRIER ROOF CEM	0.76	0.89	94

*Table 1. The values of solar reflectance, infrared emittance and solar reflectance index of the 4 samples submitted by ABOLIN Co.*



The measurements for the solar reflectance were conducted according to the ASTM Standard E903-96 (ASTM E 903 -Standard Test Method for Solar Absorptance, Reflectance, and Transmission of Materials Using Integrating Spheres) by using a UV/VIS/NIR (Varian, Carry 5000) fitted with a 150mm diameter, integrating sphere (Labsphere, DRA 2500). The reference standard reflectance material used for the measurement was a PTFE plate (Labsphere).

The measurements for the infrared emittance were conducted according to the ASTM Standard E408-71 (ASTM E408-71(1996) - Standard Test Method for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques) by using the Emissometer Model AE (Devices & Services).

For the calculation of the solar reflectance and the solar reflectance index the ASTM Standard G159-91. Standard Tables for References Solar Spectral Irradiance at Air Mass 1.5: Direct Normal and Hemispherical for a 37° Tilted Surface and ASTM E1980 - 01 Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

Scientific supervisor:

Prof. Mat Santamouris

Signed on: 