
Sede UJI

Campus Universitario Riu Sec
Av. Vicent Sos Baynat s/n
12006 Castelló (Spain)

Sede Almassora

Pol. Ind SUPOI 8
C/Cedrillas, 20
12550 Almassora-Castelló (Spain)

www.itc.uji.es

info@itc.uji.es
T. +34 964 34 24 24
F. +34 964 34 24 25

Determination of Solar Reflectance Index (SRI) according to ASTM E1980-11

Sample: ROSA GRES ICONIC WHITE

Report no. C220864

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ROSA GRES, S.L.U.

Castellón, 4 March 2021

1. Background

On 28th February 2022 the Instituto de Tecnología Cerámica (ITC) received one sample of ceramic tile, supplied by ROSA GRES, S.L.U.

The reference (and information) provided by the company, for which ITC is not responsible, is as follows:

- Sample 1: **ROSA GRES ICONIC WHITE**

The determination of the solar reflectance index (SRI); according to *ASTM E1980-11* standard, was requested on the sample. An image of the sample is shown in Figure 1.



Figure 1 Image of sample 1: **ROSA GRES ICONIC WHITE**

2. Tests conducted

2.1. Determination of the solar reflectance index (SRI)

The solar reflectance index (SRI) was determined according to *ASTM E1980-11* standard titled “*Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces*”.

In order to measure the thermal emissivity, an emissometer model *AE1* from *Devices & Services Company* was used. Before carrying out the test, the equipment was calibrated by means of standards of known emissivity according to *ASTM C1371-15* standard titled “*Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers*”.

In order to measure the solar reflectance and absorptance, a solar spectrum reflectometer model *SSR-ER-V6* from *Devices & Services Company* was used. In this test, the parameters were calculated as specified in the *ASTM C1549* standard titled “*Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer*” and using the solar irradiation tables of *ASTM G-173-03* standard titled “*Hemispherical Solar Spectral Irradiance at Air Mass 1.5 for a 37° Tilted Surfaces*”.

3. Results

3.1. Determination of solar reflectance index (SRI)

Results obtained during the determination of the solar reflectance index (SRI), at different wind conditions, as detailed in the standard, are shown in Table 1. In Table 2, it can be observed the data obtained in the determination of the solar reflectance (α), the solar absorptance (α) and the thermal emissivity (ϵ).

Sample 1: **ROSA GRES ICONIC WHITE**

Table 1 Solar reflectance index (SRI) for sample: **ROSA GRES ICONIC WHITE**

Convective coefficient (W/(m ² K))	Solar Reflectance Index
5 (low-wind condition)	80
12 (médium-wind condition)	82
30 (high-wind condition)	83

Table 2 Solar absorptance (α), solar reflectance (α) and thermal emissivity (ϵ) for sample **ROSA GRES ICONIC WHITE**

Solar absorptance (α)	Solar reflectance (α)	Thermal emissivity (ϵ)
0.32	0.68	0.85

Report no. C220864, issued at the request of ROSA GRES, S.L.U., consists of a title page and 3 pages.

Castellón, 4 March 2021



Eulalia Zumaquero Silvero, Ph.D.

Physical and Structural Characterisation Laboratory

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