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Determination of solar reflectance index (SRI) according to ASTM E1980-11

Sample: GLAZED BLANCO BRILLO- GLOSSY WHITE

Report no. C230470

No. of pages: 3

GRES DE ARAGÓN, S.A.

Castellón, 7 February 2023

1. Background

On 31st January 2023, the Instituto de Tecnología Cerámica (ITC) received a sample of facade extruded glazed ceramic tile (Group A1a ISO 13006) supplied by GRES DE ARAGÓN, S.A.

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

- Sample 1: **GLAZED BLANCO BRILLO - GLOSSY 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 Sample 1: **GLAZED BLANCO BRILLO - GLOSSY WHITE**

2. Tests conducted

2.1. Determination of 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 Surface*”.

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 the first table. In the next table, it can be observed the data obtained in the determination of the solar reflectance (ρ), the solar absorptance (α) and the thermal emissivity (ϵ) of the sample.

Sample 1: **GLAZED BLANCO BRILLO - GLOSSY WHITE**

Table 1. Solar reflectance index (SRI) for sample **GLAZED BLANCO BRILLO - GLOSSY WHITE**

Convective coefficient (W/(m ² K))	Solar Reflectance Index
5 (low-wind condition)	72
12 (medium-wind condition)	74
30 (high-wind condition)	76

Table 2. Solar absorptance (α), solar reflectance (ρ) and thermal emissivity (ϵ) for sample **GLAZED BLANCO BRILLO - GLOSSY WHITE**

Solar absorptance (α)	Solar reflectance (ρ)	Thermal emissivity (ϵ)
0.37	0.63	0.83

Report no. C230470, issued at the request of GRES DE ARAGÓN, S.A., consists of a title page and 3 pages.

Castellón, 7 February 2023



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