

Measurement of the spectral near-normal / hemispherical reflectance in the wavelength-range 0,32 μm - 17 μm and determination of the solar absorptance and the thermal emittance

Description of the measurements:

The measurements are carried out with a Fourier-transform spectrometer Bruker Vertex 70 equipped with two integrating spheres (A PTFE coated sphere for the shorter wavelength-range ($\lambda < 2,0 \mu\text{m}$) and a diffuse-gold coated sphere for the IR ($\lambda > 1,7 \mu\text{m}$)) in order to measure the directly reflected or transmitted and the scattered radiation, both. Diffusely reflecting references, distributed and calibrated NIST (USA) and NPL (UK) are used as standards. The accuracy of the reflectance data is 1 % in the solar range and 3 % in the IR.

Evaluation:

The solar absorptance is calculated by weighted integration of the spectral reflectance with the solar spectrum AM 1.5 according to ISO 9845-1.

The thermal emittance is calculated by weighted integration of the spectral reflectance with the Planck Black Body radiation distribution at a temperature of 373 K).

Description of samples

Customer:	ALMECO GmbH Claude Breda Straße 3 D-06406 Bernburg, Germany
Sample name:	"TiNOX robust Al"
Decription	Selective Solar Absorber PVD Coating with protection and antireflection layer on the basis of an oxide ceramic / Cermet absorber multilayer / adhesion layer / aluminium substrate
receipt of the samples:	05.07.2017
Date of measurements:	19.07.2017

Results

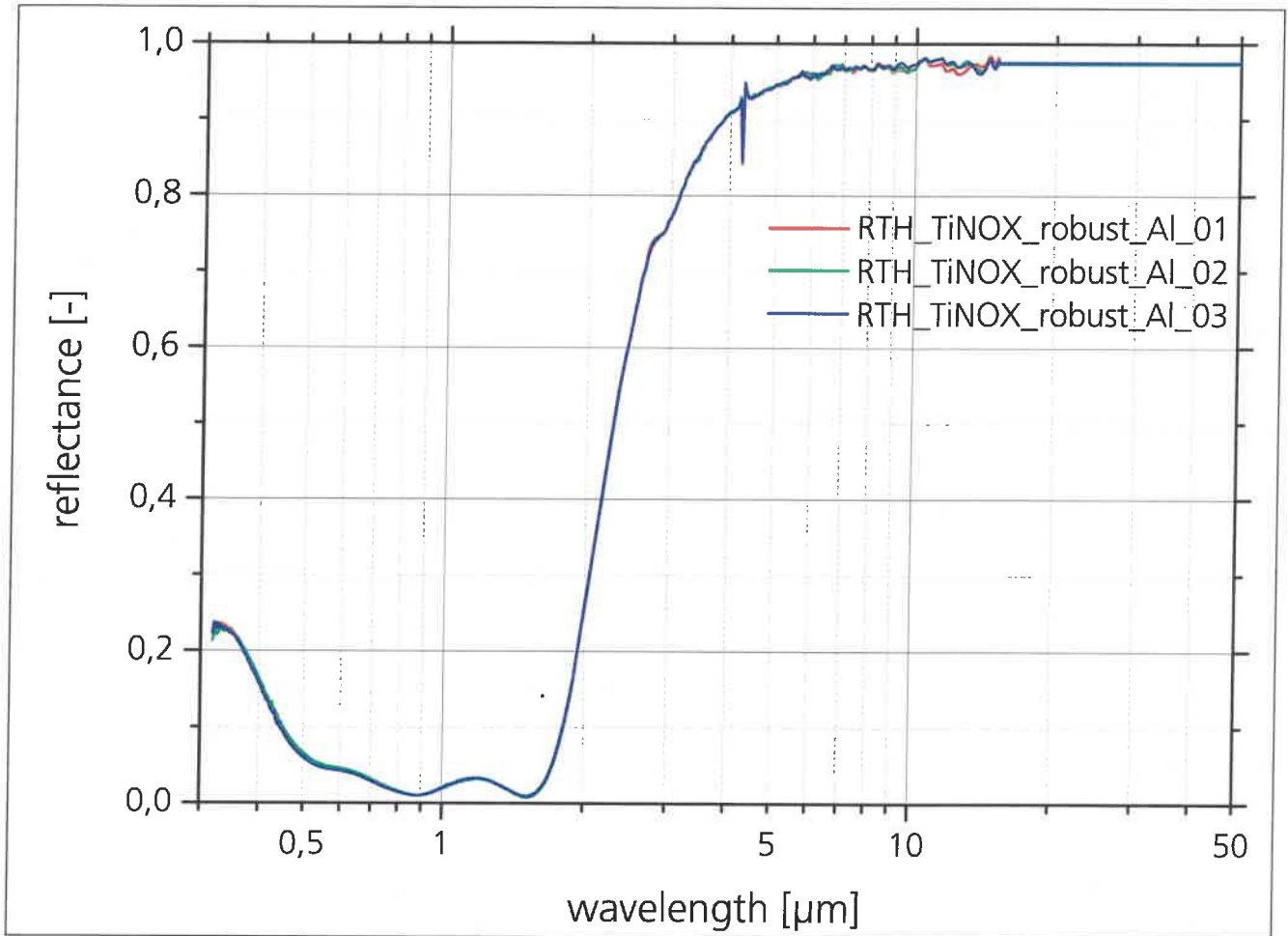


Table 1: Optical properties of the sample

Filename	Solar Absorptance [AM1.5]	Thermal Emittance [373 K]
RTH_TiNOX_robust_Al_01	0,939	0,031
RTH_TiNOX_robust_Al_02	0,938	0,037
RTH_TiNOX_robust_Al_03	0,940	0,036
Average	0,939	0,035
Standard deviation	0,001	0,002

08.08.2017

Florian Kallhauer

Datum

Operator

08.08.2017

M. L. ...

Datum

geprüft