

# Material Solar Reflectance Index (SRI) Test Report

Report number: OTM2101022



**Client:**

**Jonite**

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#01-01 Quartz Industrial Building  
Singapore 367903

Attention: Lexter Chen

**Laboratory:**

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The results reported herein have been performed in accordance with the terms of accreditation under the Singapore Accreditation Council.

**Report number:**

OTM2101022

**Job description:**

Testing of solar reflectance index (SRI) of a sample.

The sample was delivered by the client and received by OTM on 27/01/2021 and was tested on 30/01/2021.

**Approved signatory:**

Dr. Chen Fangzhi

Laboratory Manager (Tel: +65 9187 7666; Email: [chen.fz@otm.sg](mailto:chen.fz@otm.sg))

**Date of test:**

30/01/2021

**Date of report:**

01/02/2021

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## Test method description

<b><u>Methods:</u></b>	<ul style="list-style-type: none"> <li>• ASTM E903-20 Standard test method for solar absorptance, reflectance, and transmittance of materials using integrating spheres</li> <li>• ASTM C1371-15 Standard test method for determination of emittance of materials near room temperature using portable emissometers <ul style="list-style-type: none"> <li>○ With D&amp;S Technical Note 11-2: Model AE1 emittance measurement using a port adaptor, Model AE-ADP</li> </ul> </li> <li>• ASTM E1980-11 Standard practice for calculating solar reflectance index of horizontal and low-sloped opaque surfaces</li> </ul>
<b><u>Instruments</u></b>	<ul style="list-style-type: none"> <li>• PerkinElmer Lambda 950 UV/VIS/NIR spectrophotometer, with 150 mm integrating sphere</li> <li>• Reflectance reference material: Spectralon diffuse reference standard (serial number: 99AA03-0320-4022, calibrated on 07/04/2020)</li> <li>• Devices and Services emissometer with scaling digital voltmeter, model AE1 RD1</li> </ul>
<b><u>Environmental conditions</u></b>	<ul style="list-style-type: none"> <li>• Temperature: <math>24 \pm 2</math> °C</li> <li>• Relative humidity: <math>45 \pm 15</math> %</li> </ul>
<b><u>Calculation software and method</u></b>	<ul style="list-style-type: none"> <li>• In-house software (SRI@OTM, V1.2.0) based on ASTM E1980 and E903 <ul style="list-style-type: none"> <li>○ Solar properties were calculated with the weighted ordinate method (Section 8.3 of ASTM E903)</li> <li>○ The AM1.5 direct normal solar spectral irradiance distribution defined in ASTM E891 was used as the weighting spectrum</li> <li>○ Surface temperatures were calculated by solving Eq. 1 of ASTM E1980 iteratively</li> </ul> </li> </ul>
<b><u>Estimated uncertainties</u></b>	<ul style="list-style-type: none"> <li>• <math>\pm 0.008</math> (<math>\pm 0.8</math> %) for solar reflectance and absorptance</li> <li>• <math>\pm 0.02</math> for emittance</li> <li>• <math>\pm 2.3</math> for solar reflectance index (SRI)</li> <li>• The estimated uncertainties do not include uncertainties caused by sample-to-sample variations and sample non-uniformities</li> </ul>

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<u>Notes</u>	N/A
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## Disclaimer

- The test report shall not be reproduced except in full, without written approval of the laboratory.
- The sampling was not performed by the laboratory. The test results relate only to the sample received and tested.
- The client's reference information was declared by the client and it may affect the validity of the results.
- The test report is issued subject to the "Testing Service Terms and Conditions" annexed to OTM official quotation and on request from OTM.

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<b><u>Sample ID</u></b>	2101042																				
<b><u>Client's reference</u></b>	<ul style="list-style-type: none"><li>• IVORY WHITE</li><li>• POOL GRATE</li></ul>																				
<b><u>Dimension</u></b>	1 cm × 10 cm × 10 cm																				
<b><u>Test results</u></b>	<div>Emittance = 0.92</div> <div>Solar reflectance = 0.470 (47.0%)</div> <div>Solar absorptance = 0.530 (53.0%)</div> <table><tr><th>Condition</th><th>Low-wind (0 – 2 m/s)</th><th>Medium-wind (2 – 6 m/s)</th><th>High-wind (6 – 10 m/s)</th></tr><tr><td>Black surface temperature, <math>T_b</math>, [K]</td><td>376.8</td><td>355.6</td><td>334.2</td></tr><tr><td>White surface temperature, <math>T_w</math>, [K]</td><td>322.4</td><td>317.8</td><td>313.9</td></tr><tr><td>Specimen surface temperature, <math>T_s</math>, [K]</td><td>347.8</td><td>334.8</td><td>322.9</td></tr><tr><td>Solar reflectance index, <math>SRI</math>, [-]</td><td>53.3</td><td>55.0</td><td>56.0</td></tr></table>	Condition	Low-wind (0 – 2 m/s)	Medium-wind (2 – 6 m/s)	High-wind (6 – 10 m/s)	Black surface temperature, $T_b$ , [K]	376.8	355.6	334.2	White surface temperature, $T_w$ , [K]	322.4	317.8	313.9	Specimen surface temperature, $T_s$ , [K]	347.8	334.8	322.9	Solar reflectance index, $SRI$ , [-]	53.3	55.0	56.0
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<b><u>Spectral curve</u></b>	<p>Reflectance [-]</p> <p>Wavelength [nm]</p> <p>— Reflectance</p>																				

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## Photos



Front side (the side tested)



Back side