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### GENERAL INFORMATION

<b>Subject:</b>	Test report on testing activities to determine solar reflectance, infrared emittance and solar reflectance index (SRI).		
<b>Client</b>	Saint-Gobain PPC Italia S.p.A. via Ettore Romagnoli, 6 20146 Milano VAT code 08312170155 PEC sg .ppc@legalmail.it	<b>Client reference person</b>	Marco Lazzero Tel. : +39 0871 588044 Mob.: +39 335 5652126 marco.lazzero@saint-gobain.com
<b>Commitment document</b>	MO_PG-07_05 dated 8/01/2019 sent by Marco Lazzero	<b>Report release date</b>	10/03/2019

### SAMPLE DATA

<b>Receipt date</b>	09/01/2019			 Sample picture
<b>Sample id. sub.</b>	B			
<b>ECRC id</b>	-			
<b>Manufacturer</b>	Saint-Gobain PPC Italia S.p.A.			
<b>Product name</b>	Megaver California			
<b>Sampling</b>	Carried out by the Client			
<b>Short physical description*</b>	Product type: Reinforced bitumen sheets for roof waterproofing Surface aspect and/or coating: bituminous membrane with coated aluminum foil Substrate: bituminous membrane			
<b>Sample thickness</b>	3.3 mm	<b>Total sample size</b>	100 x 100 mm	
<b>Surface coated</b>	YES	<b>Coating thickness</b>	23 µm	
<b>Surface state</b>	<b>Variegated</b> NO	<b>Aged</b> YES	<b>Cleaned</b> NO	
<b>Information on history and ageing*</b>	EELab ASTM D7897 procedure			
<b>Optical properties</b>	Diffusive reflecting	NO		
	Specular reflecting	NO		
	Intermediate reflecting	YES		
	Clear transmitting	NO		
	Translucent transmitting	NO		
	Opaque	YES		
<b>Notes</b>	* Information on surface coating, aging and cleaning provided by the Client where known.			

The test results are based on the material supplied by the client. This report shall not be reproduced except in full without the written approval of this laboratory. This laboratory assumes no responsibility nor makes a performance or warranty statement for this material or products and processes containing this material in connection with this report.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , which for a normal distribution provides a level of confidence of approximately 95%.

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**TEST RESULTS**

Test Date		Solar Reflectance (SR)	Standard Deviation	Measured Values				
22/01/2019	<b>Value</b>	<b>0.673</b>	0.005	0.670	0.673	0.673	0.681	0.670
	U(k=2, P=95%)	( ± 0.009 )						
<b>Test method</b>		ASTM C1549-09						
<b>Reference Solar Spectrum</b>		ASTM E 891– 87 Direct normal						
Notes This test was performed according to ASTM C1549-09: Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Reflectometer with air mass 1.5. A solar spectrum reflectometer Devices and Services SSR-ER was used. Calibration standards with low (0.000) and high (0.864) solar reflectance were provided by the instrument manufacturer. Measurements were conducted at ambient temperature of 21 ± 1°C and relative humidity of 35% ± 3%.								

Test Date		Infrared Emittance (IE)	Standard Deviation	Measured Values				
22/01/2019	<b>Normal value</b>	<b>0.804</b>	0.004	0.808	0.799	0.806	0.799	0.806
	U(k=2, P=95%)	( ± 0.027 )						
<b>Hemispherical corrected value</b>		<b>0.767</b>	Corrected according to: "A correlation between normal and hemispherical emissivity of low-emissivity coatings on glass" M. Rubin et Al. 1987					
<b>Test method</b>		UNI EN 15976: 2011(Accredited except point 10)						
Notes This test was performed according to UNI EN 15976: 2011: Flexible sheets for waterproofing. Determination of emissivity (except point 10). Calibration standards with low (0.010) and high (0.964) emittance were provided by the instrument manufacturer. Samples have been conditioned at room temperature for 2 h before the test. Measurements were conducted at ambient temperature of 20.5 ± 1°C and relative humidity of 20 ± 3% in a time period of about 1 h.								

Test Date		Solar Reflectance (SR)	Infrared Emittance (IE)	Solar Reflectance Index (SRI)[%]		
				Low wind	Medium wind	High Wind
22/01/2019	<b>Value</b>	0.673	0.767	75.8	78.8	80.7
				Surface temperature (ST) [°C]		
				62.4	52.6	44.7
<b>Test method</b>		ASTM E1980-11				
Notes This calculation was performed according to ASTM E1980-11: Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces. This utilizes the following values for the convection coefficient: h <sub>c</sub> = 5 W/m <sup>2</sup> ·K for low-wind (0 to 2 m/s), h <sub>c</sub> = 12 W/m <sup>2</sup> ·K for medium-wind (2 to 6 m/s), and h <sub>c</sub> = 30 W/m <sup>2</sup> ·K for high-wind (6 to 10 m/s).						

The Responsible of EELab Laboratory (Prof. Alberto Muscio)

