



CLIENT:

Company:	ForeverLawn Inc
Address:	8007 Beeson Rd
	Louisville, OH 44641

TEST MATERIAL:

Date Material Received:	May 30, 2024
Material Type:	Synthetic Turf
Material Condition:	Excellent, New
Material ID:	K9 Grass Endura
Date Material Tested:	July 26, 2024

TEST METHODS REQUESTED:

Testing Services Inc. was instructed by the client to test for the following...			
Standard:	ASTM C1549	Test Method:	Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solor Reflectometer
Standard:	ASTM E408	Test Method:	Standard Test Method for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques

SAMPLING PLAN:

Sampling Date:	5/30/2024
<ul style="list-style-type: none"> Specimen sampling is performed in the sampling department at TSI. The sampling size of specimens is determined by the test method requirements. In the event a specific sampling size is not called for, a determination will be made based on previous testing experience and approved for use by an authorized manager. All samples are subjected to the outside environmental conditions of temperature and relative humidity. Sample requiring pre-determined exposure to specified environmental conditions based on a specific test method, take place in the departments in which they are tested 	

DEVIATION FROM TEST METHOD:

State reason for any Deviation from, Additions to, or Exclusions from Test Method.
None

TEST SCOPE:

Measurement was made in standard ambient temperature and humidity lab conditions. The sample was measured in an as received condition. The sample was not cleaned prior to measurement. For the description of the sample, please refer to measurement matrix. The air mass used to calculate values is 1.5. The solar reflectance index was calculated in compliance with ASTM E 1980: Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces. Measurement approach II outlined in ASTM E1980-11 valid for SRI values greater than 0.1 and excluding collector surfaces (surface with high solar absorptance and low thermal emittance, that is, a greater than 0.8 and less than 0.2), Eq 4 estimates SRI with an average error of 0.9 and maximum error of 2. This test method is used to measure the solar reflectance of a flat opaque surface with a slope smaller than 9.5 degrees from horizontal under standard solar and ambient conditions. The SRI of a test surface depends on two material properties and four environmental conditions. The variables are Solar reflectance, thermal emissivity, solar flux, convection coefficient, air temperature, and sky temperature. SRI accuracy is +/- 1% for solar reflectance for non-metal materials with high emissivity yielding a maximum error of +/- 1.4 in SRI. For non-metal surfaces, SRI is insensitive to changes in convection coefficient. Metallic surfaces characterized with low thermal emissivity vary significantly with convection coefficient.

TEST DATA:

Calculated Solar Absorbance = 0.872 Calculated Thermal Emissivity: 0.968
 Calculated Solar Reflectance = 0.128

Convection Coefficient*	SRI value***
5	20.94
12	20.43
30	19.95

¹Analysis performed by Surface Optics Corporation 11555 Rancho Bernardo Rd San Diego, CA 92127. Their accreditations are on file and can be submitted upon request.

* The convection coefficient is the rate of heat transfer from the surface to air induced by the air movement, expressed in watts per square meter per degree kelvin. 5, 12, 30 W/(Km²) correspond to low, medium, and high wind conditions, respectively.

** Disclaimer: Samples that are non-isotropic and/or non-homogenous in color, flatness, or composition may be subject to increased measurement error over standard instrument error margins. Every effort is made to reduce error by finding the most ideal locations on a sample and taking multiple data points to increase confidence in report values. The effect of beam scatter/oblique measurement due to sample flatness and spot size in measuring samples that have varying composition in relation to measurement error is not well defined nor quantified. SRI will be reported in these instances on a best effort basis.

*** ASTM E-1980 defines SRI using a standard "black" surface (SR=0.5, TE=0.9) and a standard "white" surface (SR=0.8, TE=0.9). These properties are very different from a perfect black body (SR=0, TE=1) and perfect white body (SR=1, TE=0). These standards are used to define a scale from 0 to 100 SRI. This means that it is possible for surfaces to have properties which put the SRI above or below the boundaries of the scale.

Notes:

We undertake all assignments for our clients on a best effort basis. Our findings and judgments are based on the information given to us using the latest test methods available. TSI can only ensure the test results for the specific items tested.

Unless otherwise noted in the deviation sections of this report, all tests are performed in compliance with the stated test method.

Test Report Approval:

Erle Miles, III, Lab Director Testing Services (TSI) LLC

TSI is an Organizational Member of ASTM (American Society for Testing and Materials).



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