

IMP Cool Colors

Product Specifications

Solar Reflectance, Thermal Emittance & Solar Reflectance Index (SRI)

SOLAR REFLECTANCE

To be considered “cool,” products must have a Solar Reflectance of at least .25. Solar Reflectance is the fraction of the total solar energy that is reflected away from a surface.

THERMAL EMITTANCE

Thermal Emittance is the measure of a panel's ability to release heat that it has absorbed.

SOLAR REFLECTANCE INDEX (SRI)

Put Solar Reflectance and Thermal Emittance together and you get the Solar Reflectance Index (SRI). SRI is calculated by using the values of solar reflectance, thermal emittance and a medium wind coefficient. The higher the SRI value, the lower its surface temperature and consequently, the heat gain into the building. Metal roofs coated with NBG Cool Colors achieve an SRI of 25-81 (SP) or 24-88 (PVDF), depending on the color.

Conventional roof surfaces have low reflectance (0.05 to 0.25) and high thermal emittance (typically over .85). Roof panels with both high reflectance and high emittance can reduce the surface temperature by as much as 30-50% based on color and geographic location, which will result in a reduced heat gain to the building, therefore reducing the energy demand.

NBG Color Designations

SP COOL COLORS

Silicone-modified polyester (SMP), also known as silicone-protected or siliconized polyester, is recognized for its superior hardness and durability. It offers enhanced resistance to scratching and marring, making it a tougher finish compared to PVDF.

SP COOL PANEL COLORS & RATINGS



SP Cool Color	Initial Solar Reflectance (IR)	Initial Thermal Emittance	Solar Reflectance Index (SRI)
Bright White (BW)	.670	0.87	81
Driftwood (DW)	.600	0.87	71
Galvalume® (GM)	.690	0.19	62

SP COOL TECHNICAL INFORMATION

SP Performance Testing		
Industry Specifications Compliance	AAMA 2604-17A Requirements	Voluntary Specification, Performance Requirements and Test Procedures for High-Performing Organic Coatings on Architectural Aluminum Extrusions and Panels
Substrates	Pretreated substrates: Galvalume®, Hot-Dipped Galvanized (HDG) steel & Aluminum.	
Dry Film Thickness	ASTM D1005	0.15 - 0.30 mil primer; 0.70 - 0.90 mil topcoat
Gloss	ASTM D523 @ 60°	10 - 80+

Physical Testing	Test Methods	Test Result
Solar Reflectance	ASTM E903, ASTM E1918 Using portable reflectometer	0.25 (25%) min.
Emissivity	ASTM C1371, ASTM E408	0.80 (80%) minutes
Pencil Hardness	ASTM D3363	F min.
Flexibility	T-Bend, ASTM D4145	2 T-Bend; No pick off
Adhesion	ASTM D3359	1.5 x metal thickness, No adhesion loss
Reverse Impact	ASTM D2794	2 x gauge or 80 lbs.
Abrasion, Falling Sand	ASTM D968	25 - 40 1/mil
Mortar Resistance	ASTM C267	No effect
Detergent Resistance	ASTM D2248 3% detergent @ 100°F (72 hrs.)	No effect
Acid Resistance	ASTM D1308 10% muriatic acid - 15 min. 20% sulfuric acid - 24 hrs.	No effect
Acid Rain Test	Kesternich SO2, DIN 50018	10 cycles min.; No objectionable color change
Alkali Resistance	ASTM D1308 10%, 20% NaOH, 1 hr.	No effect
Salt Spray Resistance	ASTM B117 5% salt fog @ 95°F	Passes 1000 hrs.
Humidity Resistance	ASTM D714, ASTM D2247 (100% relative humidity @ 95°F)	Passes 1000 hrs.; No blisters, cracks or peeling
Exterior Exposure	ASTM D2244 (Color) ASTM D4214 (Caulking) 10 yrs. @ 45°F, South Florida	Max. Δ5 fade Max. 8 chalk
Surface Burning Characteristics	ASTM E84	Flame Spread Index: Class A Smoke Developed Index: Class A

TUFF COAT COOL PANEL COLORS & RATINGS

SP Cool Color	Initial Solar Reflectance (IR)	Initial Thermal Emittance	Solar Reflectance Index (SRI)
Textured White (TW)	.640	0.86	77
Light Stone (LS)	.500	0.84	56
Light Gray (LG)	.340	0.87	36

NBG Color Designations

PVDF COOL COLORS

PVDF (Polyvinylidene Fluoride) is a fluoropolymer-based resin used for coating in many industries and applications for their brilliant weather and UV resistance and unique flexibility.

PVDF COOL PANEL COLORS & RATINGS

PVDF Color	Initial Solar Reflectance (IR)	Initial Thermal Emittance	Solar Reflectance Index (SRI)
Arctic White (AR)	.700	0.86	85
Regal Gray (RG)	.550	0.86	64
Dune (DU)	.600	0.86	71
Harvest Beige (HB)	.510	0.88	59
Carbon Gray (CG)	.390	0.88	43
Royal Blue (RO)	.300	0.88	31
Colonial Red (CR)	.340	0.86	35
Cypress Green (CY)	.310	0.88	32
Dark Bronze (DB)	.320	0.87	33
Galvalume® (GM)	.690	0.19	62

GALVALUME® is a registered trademark of BIEC International Inc., and some of its licensed producers. Galvalume is the substrate to which paint is factory-applied. This coating is what determines the roofing product's reflective properties.

All information contained within is subject to change without notice. Please contact your sales representative to ensure most current information.

*NOTE: CRRC values are based on a color group (family) not a NBG specific color. This spec sheet has specific values provided by paint manufacturer.

PVDF COOL TECHNICAL INFORMATION



PVDF Performance Testing		
Industry Specifications Compliance	AAMA' 621-02 Requirements	Voluntary Specification, for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) and Zinc-Aluminum Coated Steel
	AAMA 2605-17A Requirements	Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (Coil Coating appendix)
Substrates	Pretreated substrates: Galvalume®, Hot-Dipped Galvanized (HDG) steel & Aluminum.	
Dry Film Thickness	ASTM D1400	0.2 - 0.3 mil primer; 0.7 - 0.8 mil topcoat
Gloss	ASTM D523 @ 60°	25 - 35
Physical Testing	Test Methods	Test Result
Solar Reflectance	ASTM E903	>25% Initial; > 15% after 3 years >65% Initial; >50% after 3 years
Emissivity	ASTM C1371, ASTM E408	0.80 (80%) minutes
Pencil Hardness	ASTM D3363	F-2H
Flexibility	T-Bend, ASTM D4145	0 - 2 T-Bend; No pick off
Adhesion	ASTM D3359	No adhesion loss
Reverse Impact	ASTM D2794	No cracking or adhesion loss
Abrasion, Falling Sand	ASTM D968	65 - 85 /mil
Mortar Resistance	ASTM C267	No effect
Detergent Resistance	ASTM D2248 3% detergent @ 100°F (72 hrs.)	No effect
Acid Resistance	ASTM D1308 10% muriatic acid - 24 hrs. 20% sulfuric acid - 18 hrs.	No effect
Acid Rain Test	Kesternich SO2, DIN 50018	15 cycles; No objectionable color change
Alkali Resistance	ASTM D1308 10%, 25% NaOH, 1 hr.	No effect
Salt Spray Resistance	ASTM B117 5% salt fog @ 95°F	None or few #8 blisters; Max. average 1/16" Scribe creep; Passes 1000 hrs.
Humidity Resistance	ASTM D714, ASTM D2247 (100% relative humidity @ 95°F)	Passes 1500 hrs. No #8 blisters
Exterior Exposure	ASTM D2244 (Color) ASTM D4214 (Caulking) 10 yrs. @ 45°F, South Florida	Max. Δ5 fade Max. 8 chalk
Surface Burning Characteristics	ASTM E84	Flame Spread Index: Class A Smoke Developed Index: Class A

Cool Roof Rating Council Directory

The Cool Roof Rating Council is a 501(c)(3) nonprofit organization that develops fair, accurate, and credible methods for evaluating and labeling the radiative properties of roofing and exterior wall products. The CRRC also provides education to the public on how cool roofs and cool exterior walls can help improve building performance, increase occupant comfort, mitigate the urban heat island effect, and reduce greenhouse gas emissions.



Scan code for the most current Cool (reflective) Roof ratings.*