REFLECT-TEC™
HEAT-REFLECTIVE ROOF COATING

Infrared (IR) Heat Reflective Water-Based Polyvinylidene Flouride (PVDF) Fluoropolymer Coatings

Kynar®

ONLY FROM

TEX·COTE®
TEXTURED COATINGS OF AMERICA, INC.

Description

REFLECT-TEC™ Infrared (IR) heat-reflective Kynar® based coating systems for the tile and metal roofing surfaces of a structure are an important technological breakthrough. These water-based, field-applied coatings offer new advantages and opportunities in both residential and commercial applications. This program will provide an overview of this innovative coating technology.

What is a "Cool Roof"?

A "cool roof" is a roof that reflects and emits heat from the sun back into the atmosphere instead of absorbing it into the building below. The amount of "cool-ness" is measured by both Total Solar Reflectance (TSR) and thermal emittance.

Arizona State University "Old Main" with IR Heat Reflective Coating and over five years exposure.

What is a "Cool Roof"?

Reflectivity and Emissivity

There are two considera-tions when looking at the energy efficiency of a surface. They include reflectivity and emissivity. Reflectivity is a measure of how well a material rejects solar energy. Emissivity refers to the degree that the material holds that energy.

Lihue International Airport - Hawaii

What is a "Cool Roof"?

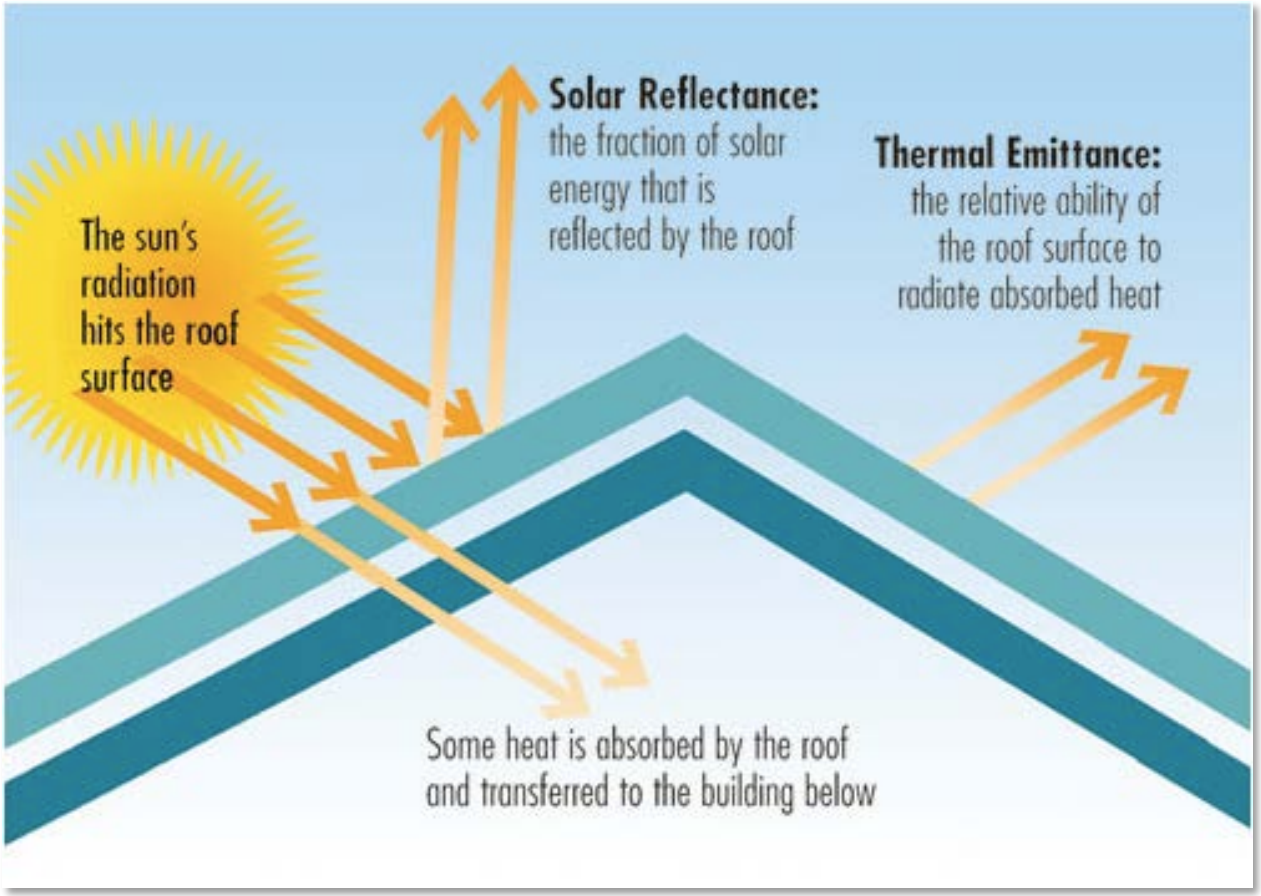


Image courtesy of Cool Roof Rating Council

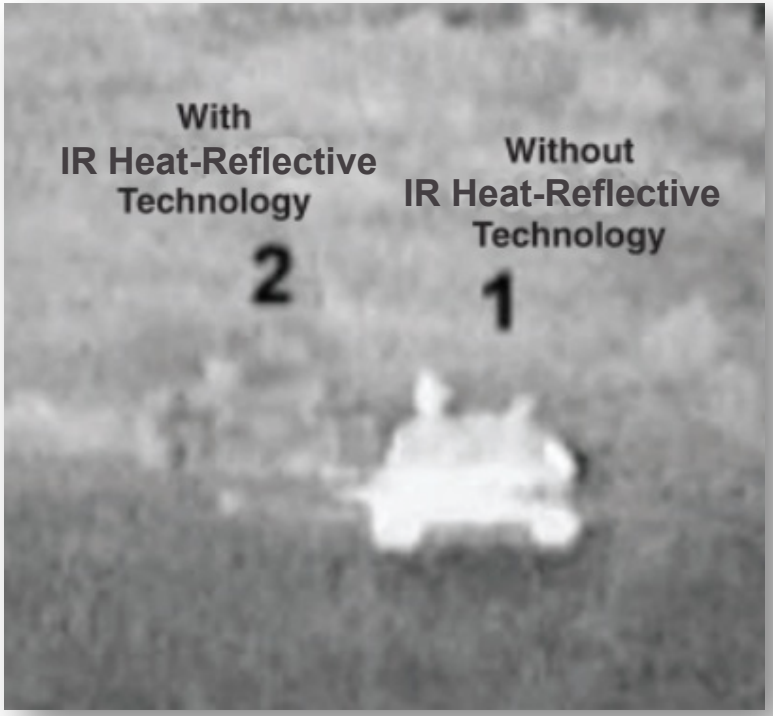
What is an "IR Heat-Reflective Roof Coating"?

Infrared (IR) Heat-Reflective Roof Coatings are revolutionary coatings formulated with a special heat-reflective finish that reflects infrared heat back into the atmosphere and can greatly increase the TSR values of new or existing metal and tile roofing structures in all colors.

IR Heat-Reflective Roof Coating - Hawaii

Origin of IR Heat- Reflective Coatings

IR Heat-Reflective coatings originated within the U.S. Military. And more recently utilized in their STEALTH program where they are used to diffuse heat to eliminate radar detection.



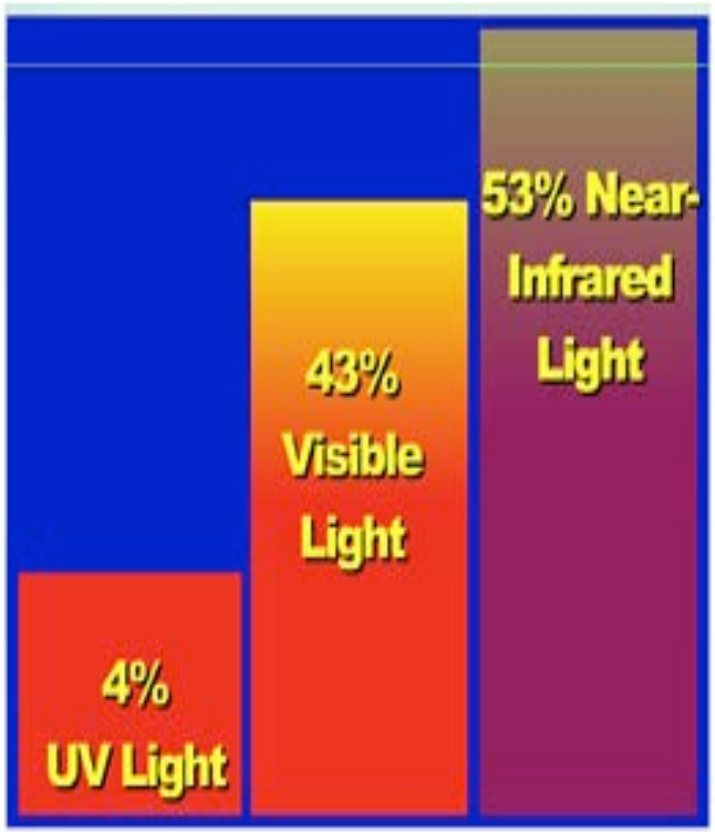
Development of IR Heat-Reflective Coatings

IR Heat-Reflective Coatings are…

- **Designed to change the infrared or invisible portion of the light spectrum, helping to reflect heat. Therefore reducing heat absorption, even in dark colors.**
- **Designed to diffuse heat evenly across the roofing surface.**
- **Works without the use of ceramic "spheres" or other non-proven technologies.**

The Light Spectrum

Much of the light spectrum consists of visible light – the light we can actually see. But a large portion of it is invisible to the eye – the near infrared light. IR heat reflective coatings reduce the effect of this largest portion of the light spectrum. By making this portion of the light spectrum highly reflective, darker colors can perform much like lighter colors.



Dark Colors vs. Light Colors

Anyone who has ever owned a dark colored car in the summertime knows that dark colors absorb more heat from the sun than light colors. That's because a color like black reflects less of the sun's energy than the color white. In fact, black only reflects about 5% of the sun's energy. IR heat reflective coatings allow even dark colors to act like light colors, reflecting much of the sun's radiant energy… an important advantage to homeowners concerned about rising energy costs and global warming.

What is a "PVDF" Fluoropolymer Roof Coating?

REFLECT-TEC™ Roof Coatings incorporate Kynar® Polyvinylidene Flouride (PVDF) Fluoropolymer resin technology which provides several increased benefits as compared to typical acrylic roof coatings. Kynar® based coatings have a much harder finish, providing many benefits as compared to typical acrylic/ elastomeric roof coatings.

IR Heat-Reflective PVDF Coating applied to tile roof surface

What It Can Do

Compared to typical acrylic and/or elastomeric roof coatings and non-coated roofing surfaces, REFLECT-TEC™ Roof Coatings can…

- **Greatly reduce the amount of heat that is absorbed and retained by a building's exterior roof surfaces.**
- **Lower exterior roof temperatures by over 50 degrees when compared to non-reflective coatings, paints, and uncoated surfaces in many colors.**
- **Provide a "passive" cooling technique that yields peak cooling load reductions and carbon reductions. Reduce the urban heat island effect, which contributes to urban smog and causes increased demands on power plants.**

What It Can Do (cont.)

Compared to typical acrylic and/or elastomeric roof coatings and non-coated roofing surfaces, REFLECT-TEC™ Roof Coatings can…

- **Reduce building fatigue by reducing expansion and contraction due to heating and cooling cycles.**
- **Help prevent colors from fading due to UV light exposure.**
- **Prevent reduction in TSR due to dirt pick-up.**
- **Resist mold and mildew growth leading to reduced maintenance costs.**
- **Lead to longer air-conditioning unit life due to reduced use.**

Features & Benefits

- ***Class A Fire Rating***
- ***Aesthetic Appeal:*** **Offers greater design flexibility through use of dark colors.**
- ***Total Solar Reflectance (TSR) and Energy Savings:*** **Increased TSR, even in white color, significantly reduces roof surface temperatures while helping reduce peak cooling load.**
- ***Resistance to Dirt Pick-Up:*** **Keeps coating surface clean and prevents reduced Solar Reflectance due to dirt pick-up, especially in white!**

Features & Benefits (Cont.)

- ***Resistance to Mold/ Mildew Growth*: Prevents visual degradation, reduced TSR, and lowers maintenance costs!**
- ***Durability:* Prevents moisture penetration, reduces the effects of roofing structure fatigue caused by expansion and contraction and effectively extends the life cycle of existing building stock.**
- ***Retention of Color and Gloss:* Provides superior resistance to fading as compared to conventional paints – even in dark colors.**
- ***Reduced Environmental Impact:* Exterior coating is formulated with Low Volatile Organic Compounds (VOC).**

Extreme Fade, Mold and Mildew Resistance

Over five years of exposure in Hawaii with no mold, mildew, or fading.

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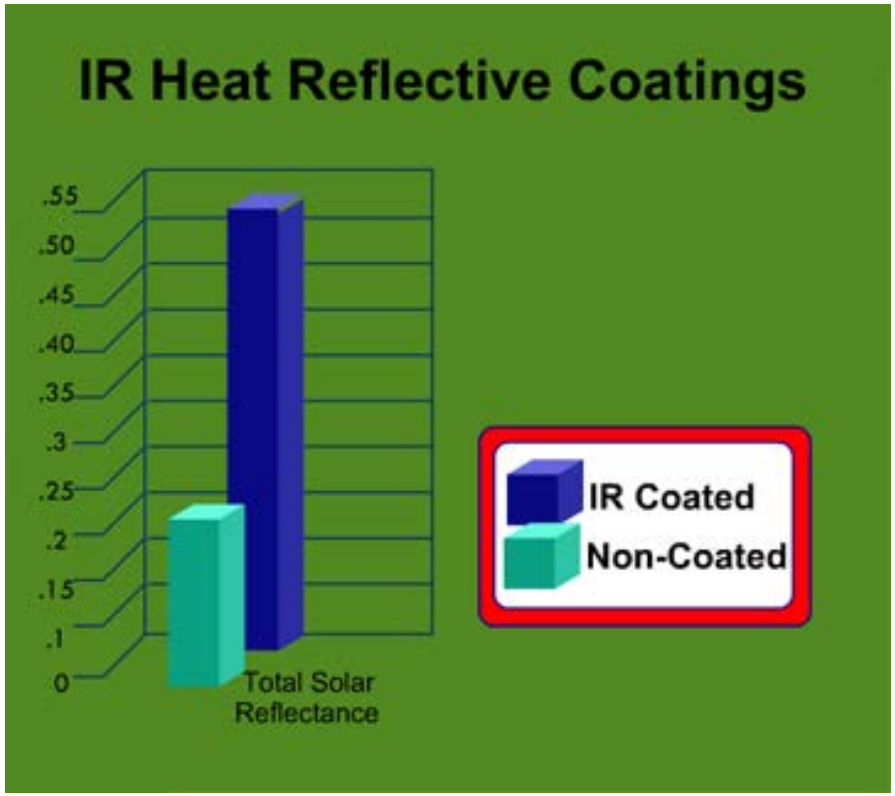
Over five years of exposure in Hawaii with no mold, mildew, or fading.

Total Solar Reflectance (TSR)

Definition:
The ratio of total solar radiation which is reflected outward by the surface to the amount of total solar radiation falling on the surface.

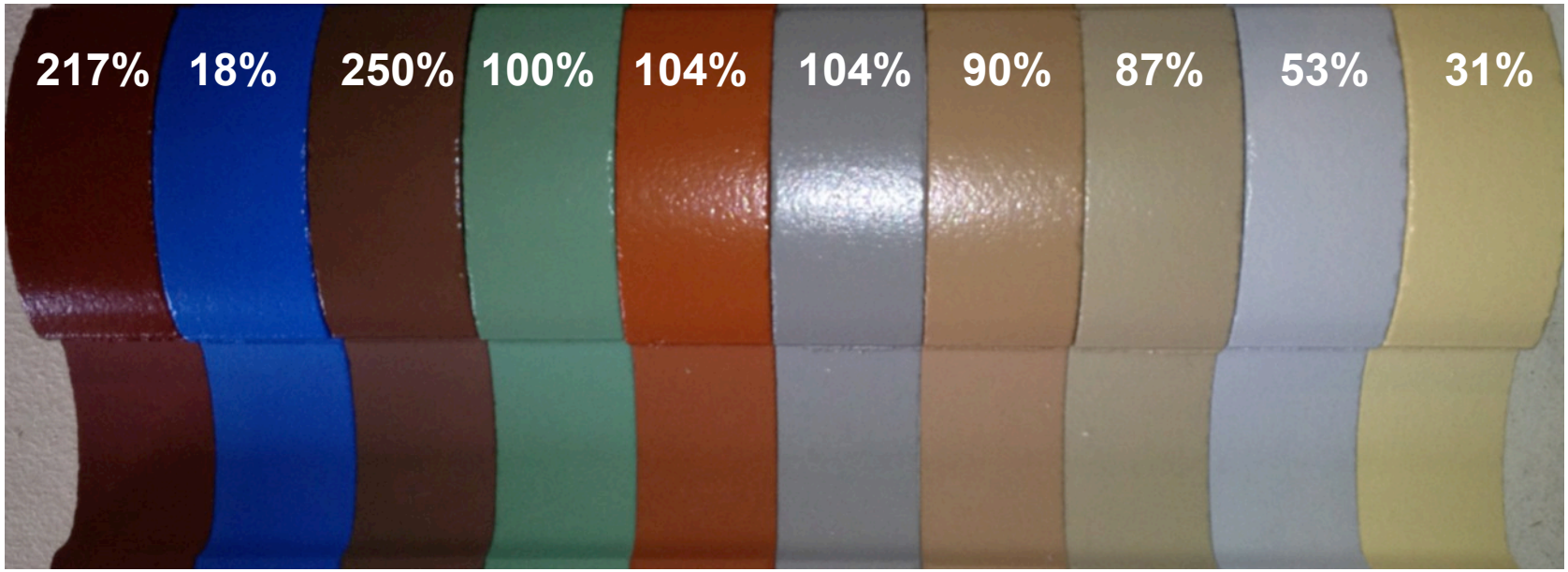
Traditional paint colors provide limited heat reflective properties. REFLECT-TEC™ coatings enable high reflectance, in ALL colors, even white and dark. In fact, they are on average 100% more reflective than traditional paints and coatings in the same color. Additionally, they resist dirt pick-up, which can accumulate and reduce TSR over time.



Increased TSR & SRI, in ALL Colors!

REFLECT-TEC™ Total Solar Reflectance
% Increase TSR vs. Conventional Paint

0.38	0.40	0.42	0.44	0.47	0.49	0.55	0.58	0.61	0.68
217%	18%	250%	100%	104%	104%	90%	87%	53%	31%



0.12	0.34	0.12	0.22	0.23	0.24	0.29	0.31	0.40	0.52

Conventional Paint TSR

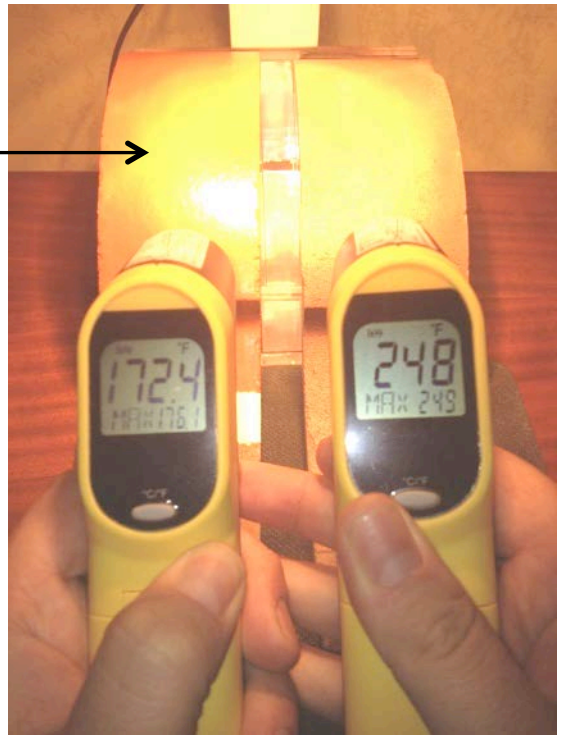
Estimated Increase in TSR Total Solar Reflectance

REFLECT-TEC™ Color Family	Estimated Increase in Reflectivity vs. Traditional Paint
Light	>30%
Medium	>100%
Dark	>200%

Reduced Surface Temperatures

Increased Total Solar Reflectance obtained with REFLECT-TEC™ can lead to surface temperature reductions of over 70° F*.

Tile →



Metal →

Heat lamp demonstrations show surface temperature reductions of over 70° F obtained with REFLECT-TEC™ when compared to uncoated tile (left) and over 50°F when compared to traditional acrylic paint in the identical color on metal surface (right).

Reduced Peak Cooling Load

Depending on the climate zone, substrate & other conditions in which a building is located, REFLECT-TEC™ can make a significant contribution to reduce peak cooling load & lower cooling costs. Heat reflective coatings can:

- **Lower roof surface temperatures by over 50 degrees when compared to traditional paints and uncoated roofing surfaces in many colors.**
- **Reduce energy costs related to peak cooling load*.**
- **Create less heat buildup around the building (heat island effect) that can raise interior temperatures.**

*Percentage of peak cooling load reductions are based on models generated from the "Roof Savings Calculator" Beta Release v 0.92 Oak Ridge and Lawrence Berkeley National Laboratories when compared to a non-cool roof. Cooling costs savings, percentage of peak cooling load and surface temperature reductions will vary based on color chosen, geographical location, climate condition, and substrate type. In some climates, there may be a heating penalty. For more information, see www.texcote.com.

Estimated Reduction in Peak Cooling Load*

REFLECT-TEC™ Color Family	Estimated Reduction in Peak Cooling Load
Light	20-30% (KWh)
Medium	15-25% (KWh)
Dark	10-20% (KWh)

*Percentage of peak cooling load reductions are based on models generated from the "Roof Savings Calculator" Beta Release v 0.92 Oak Ridge and Lawrence Berkeley National Laboratories when compared to a non-cool roof. Cooling costs savings, percentage of peak cooling load and surface temperature reductions will vary based on color chosen, geographical location, climate condition, and substrate type. In some climates, there may be a heating penalty. For more information, see www.texcote.com.

Less Dirt Pick-Up and Less Mold and Mildew Growth Prevents TSR Reductions

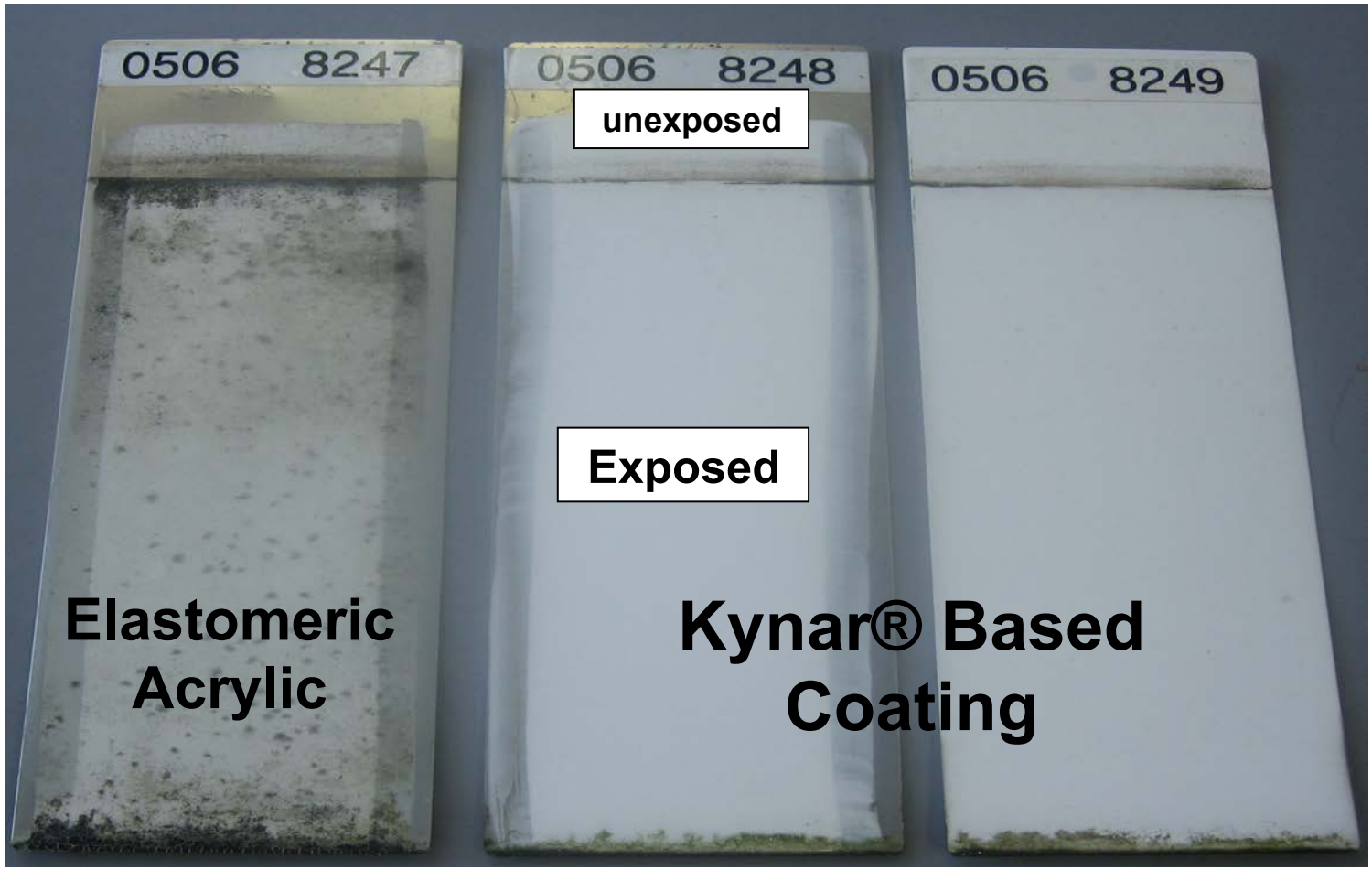
REFLECT-TEC™ coatings with Kynar® resin technology exhibit superior resistance to mold and mildew growth as compared to typical acrylic/ elastomeric paint and uncoated surfaces. Typical acrylic/ elastomeric coatings experience a reduction in TSR over time as dirt and other contaminants build on the surface, even in white! REFLECT-TEC™ Coatings resist these contaminants and maintains a TSR of 0.78 after 10 years exposure. The TSR of typical acrylic/ elastomeric white coatings was reduced to 0.55 after only 3 years in a study done by Lawrence Berkely National Laboratory.

Extreme Resistance to Mold/ Mildew Growth

Before - Uncoated Tile

After – REFLECT-TEC™

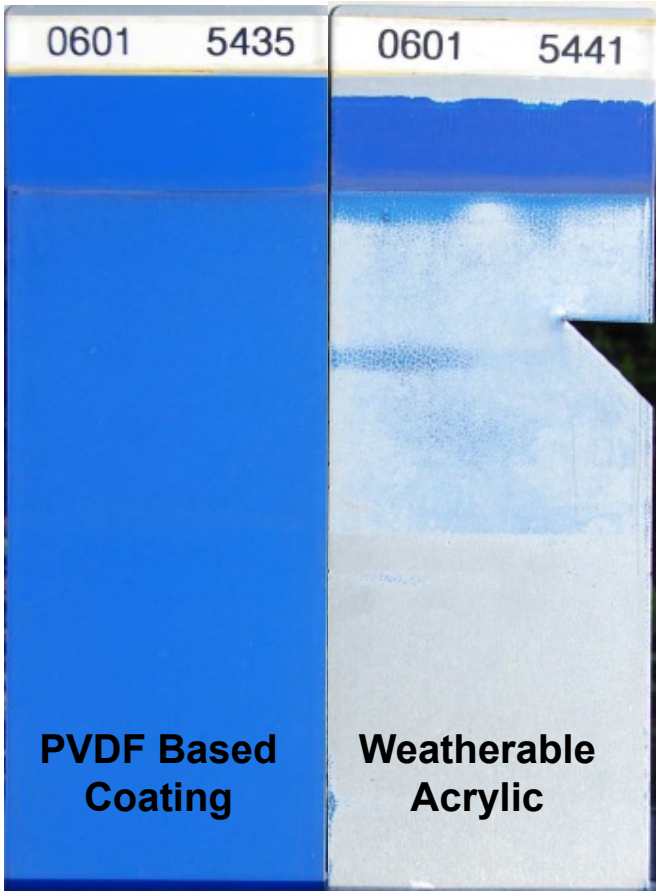
Resistance to Dirt Pick-Up, Mold and Mildew Growth after 10 Years



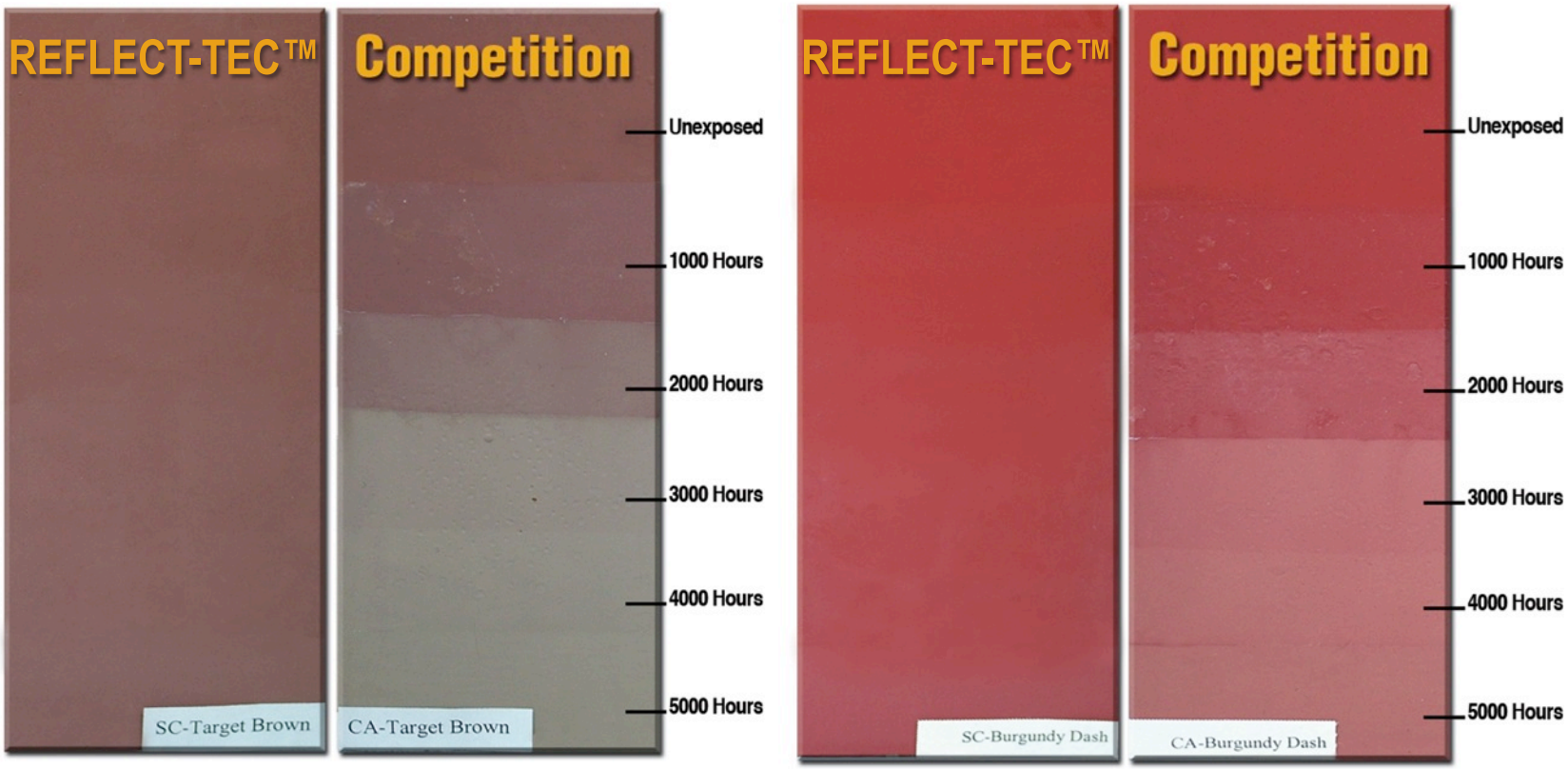
Superior Fade Resistance and Gloss Retention

The reflective qualities of REFLECT-TEC™ leads to lower surface temperatures and reduced fading and loss of gloss, even in darker colors. These fade resistant characteristics provide longer life cycle performance and are ideal for project extended-life strategies.

8 ½ Years



Superior Fade Resistance and Gloss Retention



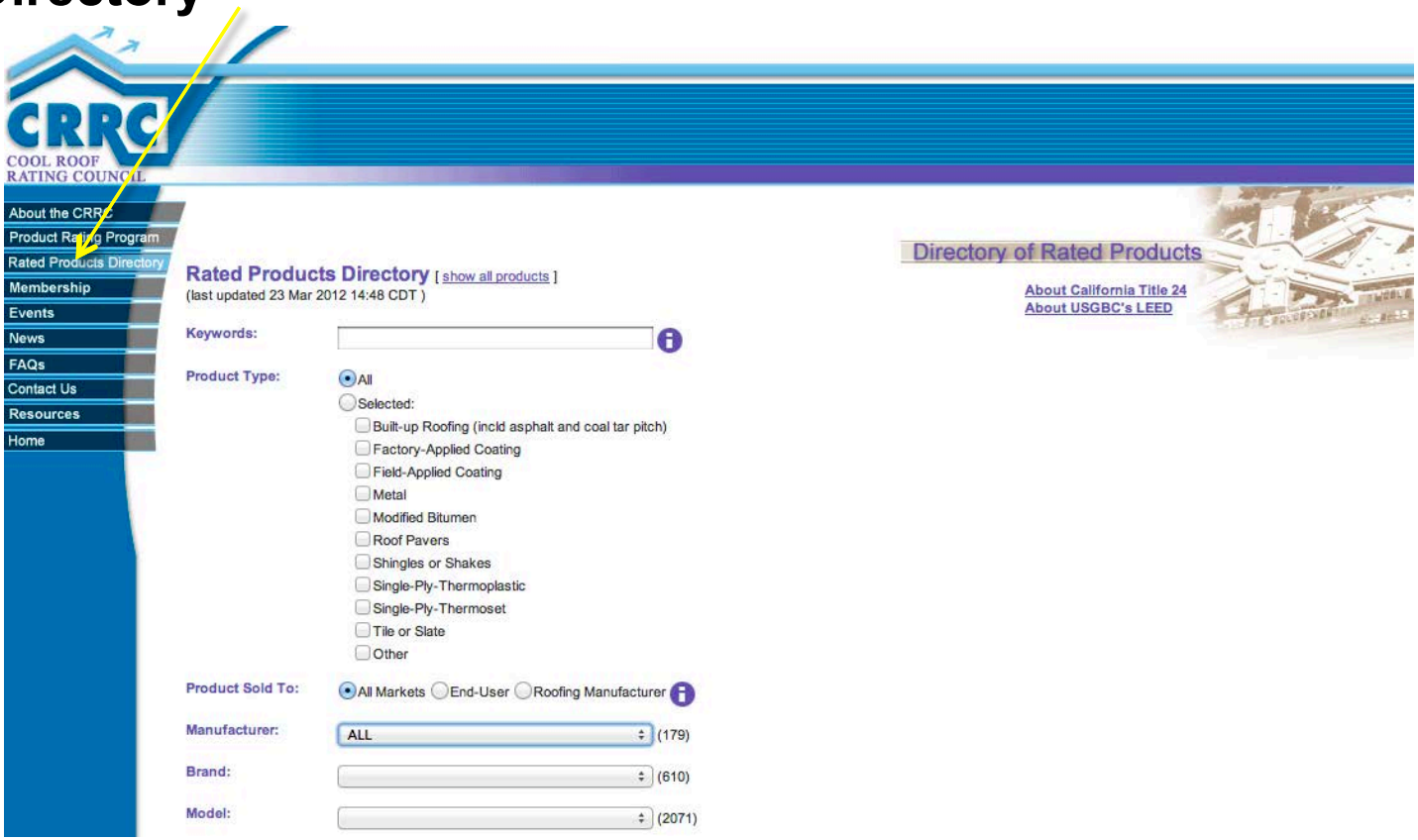
CRRC – Cool Roof Rating Council

The Cool Roof Rating Council was created in 1998 to develop accurate and credible methods for evaluating and labeling the solar reflectance and thermal emittance (radiative properties) of roofing products and to disseminate the information to all interested parties. The CRRC's Rated Products Program provides a directory of various roofing surface products that have been rated under a strict program administered by the CRRC.

CRRC
COOL ROOF RATING COUNCIL ®
RATED PRODUCT

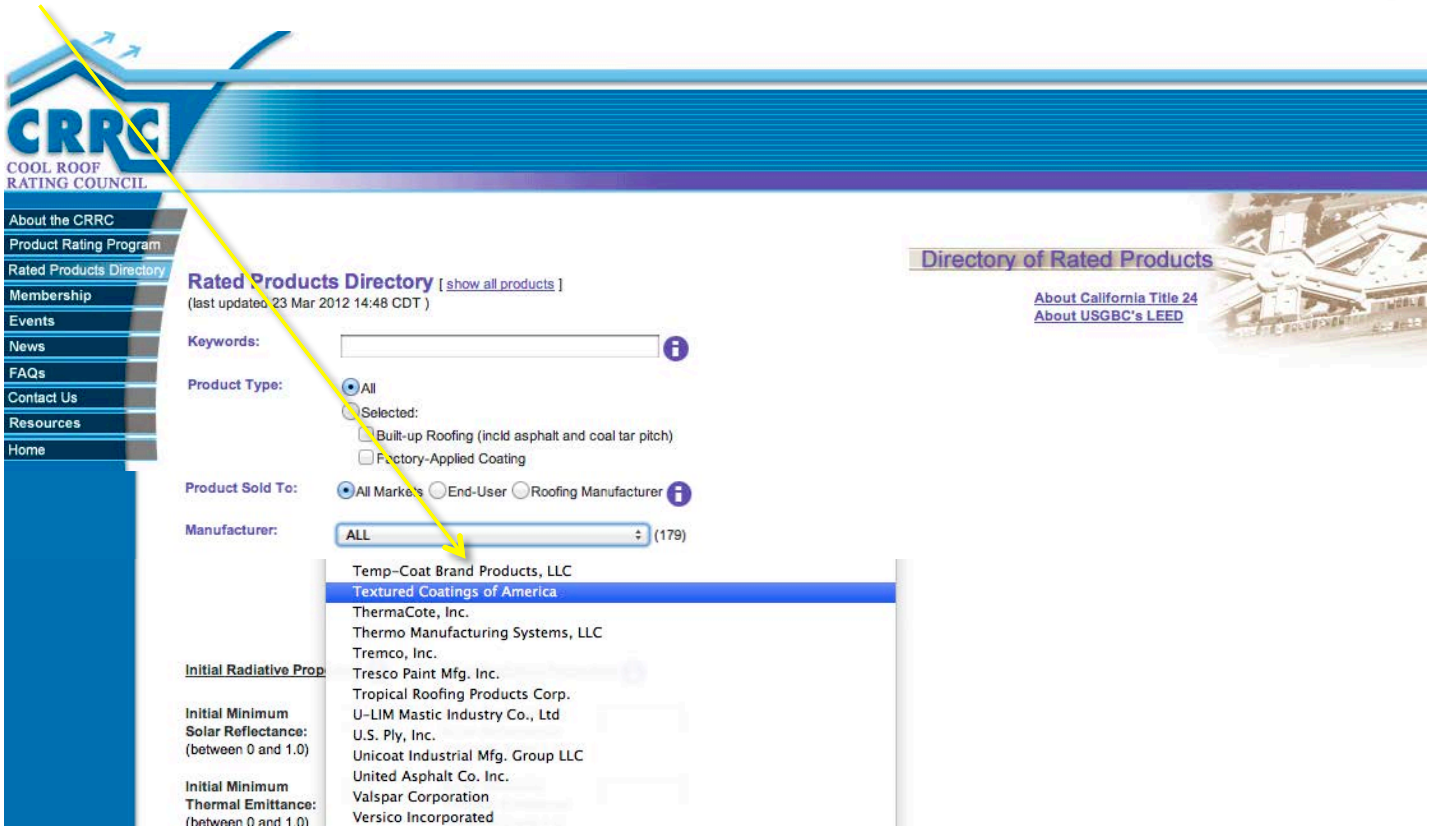
Finding REFLECT-TEC™ in the CRRC Rated Products Directory

1. Go to www.coolroofs.org and select "Rated Products Directory"



Finding REFLECT-TEC™ in the CRRC Rated Products Directory

2. Select "Textured Coatings of America" under the "Manufacturers" section and click "Search" at bottom of page



Finding REFLECT-TEC™ in the CRRC Rated Products Directory

3. View Results

CRRC
COOL ROOF RATING COUNCIL

CRRC Prod. ID	Manufacturer Information (sorted +)	Brand	Model	Color Category	Product Type	Solar Reflect.		Therm Emit.		SRI		Slope Application	Note about Ratings
						init	3 yr	init	3 yr	init	3 yr		
1148-0004	**Textured Coatings of A** Ben York (850-769-0347)												
1148-0008	**Textured Coatings of A** Ben York (850-769-0347)												
1148-0006	**Textured Coatings of A** Ben York (850-769-0347)												
1148-0001	**Textured Coatings of A** Ben York (850-769-0347)												
1148-0011	**Textured Coatings of A** Ben York (850-769-0347)												
1148-0010	**Textured Coatings of America** Ben York (850-769-0347)	REFLECT-TEC Heat Reflective Roof Coating	Wheatfield T-300	Tan	Field-Applied Coating	0.68	pending	0.90	pending	84	pending	Steep	
1148-0005	**Textured Coatings of America** Ben York (850-769-0347)	REFLECT-TEC Heat Reflective Roof Coating	Flint Gray T-301	Grey	Field-Applied Coating	0.61	pending	0.90	pending	73	pending	Steep	
1148-0007	**Textured Coatings of America** Ben York (850-769-0347)	REFLECT-TEC Heat Reflective Roof Coating	Lark Green T-305	Green	Field-Applied Coating	0.44	pending	0.90	pending	50	pending	Steep	

CRRC Prod. ID	Manufacturer Information (sorted +)	Brand	Model
1148-0004	**Textured Coatings of America** Ben York (850-769-0347)	REFLECT-TEC Heat Reflective Roof Coating	Dynamic Blue T-307
1148-0008	**Textured Coatings of America** Ben York (850-769-0347)	REFLECT-TEC Heat Reflective Roof Coating	Rich Red T-308

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