



**EnviroCoatings**

**Ceramic Thermal Barrier  
Performance Coating Systems**

*SINCE 1960*

**COOL ROOFS**

# Outline for this Presentation

1. What are Urban Heat Islands?
2. What are Cool Roofs?
3. Cool Roof Organizations and Programs.
4. Features and Benefits of EnviroCoatings  
Ceramic InsulCoat Roof.

# The Heat Island Phenomenon

The term “Heat Island” describes built up Urban areas that are hotter than nearby Rural areas.



# The Heat Island Phenomenon

It appears that Buildings and Roads  
are the primary causes of  
Urban “Heat Islands.”



# Heat Island Facts #1

The annual mean  
air temperature of a city  
with 1 million people or more  
can be 1.8–5.4°F (1–3°C)  
warmer than its surroundings.



## Heat Island Facts #2

On a clear, calm night, however, the temperature difference can be as much as 22°F (12°C).



# Negative Impacts of the Heat Island Effect

- Increased air pollution levels
- Increased heat related illness and mortality
- Increased peak energy demand
- Increased air conditioning costs

# The Heat Island Effect is a Growing Concern

To address the phenomenon:

Researchers and Private Industry

Continue to study and develop technologies and practices to mitigate The Heat Island Effect.

# The Heat Island Effect is a Growing Concern

To address the phenomenon:

Governments (Federal, State and Local) Have taken the new technologies and practices developed by Researchers and Private Industry and have started adopting and implementing policy strategies, that include building code updates, to mitigate the Urban Heat Island Effect.

A Common Sense Solution has  
been Developed for Buildings  
to Address the Heat Island Effect

Apply a COOL ROOF

# What is a Cool Roof?

Cool roofs are highly reflective and emissive materials that stay 50° F to 60° F cooler in the summer sun

# Two Types of Cool Roofs

1. Roof System

2. Field-Applied Liquid Coating

(Obviously, EnviroCoatings Ceramic InsulCoat Roof is a Field-Applied Liquid Coating)

# Benefits of a Cool Roof

- Reduction of urban heat islands
- Reduction of associated smog
- Improve human health

# Benefits of a Cool Roof

- Improve occupant comfort
- Increase the life-cycle of the roof system
- Cut roof maintenance costs

# Benefits of a Cool Roof

- Downsized cooling equipment
- Reduced energy consumption
- Lower utility bills = Saves money

# Who says Cool Roofs provide Benefits to Society?

- U.S. Environmental Protection Agency (EPA)
- U.S. EPA ENERGY STAR®
- California Energy Commission
- Cool Roof Rating Council (CRRC)
- United States Green Building Council

# Who says Cool Roofs provide Benefits to Society?

*Nobel Prize Winning*  
U.S. Department of Energy  
Secretary Stephen Chu

# “Paint Roofs White to Fight Climate Change, Energy Chief Says”



May 26, 2009 (Bloomberg) -- The world should try to have “white roofs everywhere” to help fight climate change, U.S. Energy Secretary Steven Chu said.

Painting flat roofs of homes and commercial buildings white would reflect more of the sun’s heat back to space and reduce electricity used for air conditioning by as much as 15 percent, Chu told reporters today in London, citing research by Arthur Rosenfeld, a member of the California Energy Commission...

# Cool Roof Performance Parameters

- Guidelines for performance had to be established, measured, and reported.
- So that End-Users could understand and compare the performance of Cool Roof materials and systems.

# Cool Roof Organizations and Programs

A number of organizations have been established in the past two decades.

EnviroCoatings Ceramic InsulCoat Roof has been tested, rated and approved by these entities.

# EnviroCoatings Approvals and Ratings



# California Cool Roof Program

## California Energy Commission Building Energy Efficiency Standards for Cool Roofs

### – Title 24, Part 6, Section 118 (i) 3

TITLE 24 is recognized as the accepted benchmark for Cool Roof standards in the United States.



# Mandated by California State Law Beginning in 2005

To Promote Title 24 Compliance:

- Outside Independent Party to Rate Products for Consumers
- Rebates Programs with Local Utilities?
- Tax Incentives?

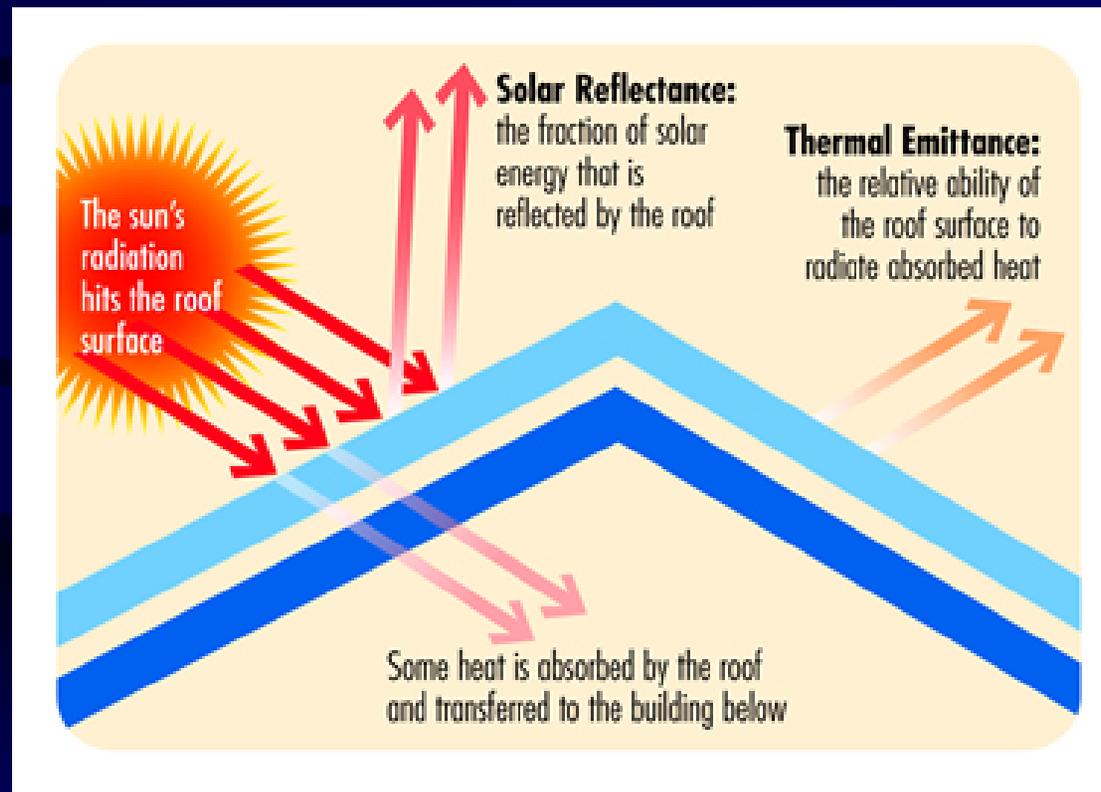
California  
Title 24  
Cool Roof  
Compliant

# Cool Roof Rating Council



- Provides Independent Test Results
  - Supervisory Entity for California Energy Commission Title 24 since 2003
- Measures **Reflectivity** and **Emittance**

# Cool Roof Rating Council: What is a Cool Roof?



# What is Solar Reflectance?

- A measure of a material's ability to reflect sunlight (including the visible, infrared, and ultraviolet wavelengths)

*In other words, the ability of the material to bounce back radiation to space*

- Scale of 0.0 (surface absorbs all solar radiation) to 1.0 (total reflectivity)

# What is Thermal Emittance?

- A measure of how well a surface or material gives off (emits) the energy it absorbs

*In other words, the ability of the material to release absorbed heat and radiate it back out to space*

- Scale of 0.0 to 1.0 (theoretically perfect emitter)

# CRRC Test Results

- **Solar Reflectance** - EnviroCoatings Ceramic InsulCoat Roof rated at:

Initial: 0.88 Aged: 0.68

- **Thermal Emittance** - EnviroCoatings Ceramic InsulCoat Roof rated at:

Initial: 0.87 Aged: 0.89



# Cool Roofs **are Spreading...**

*For a list of current Cool Roof codes  
and programs, visit the CRRC at:*

**[www.coolroofs.org](http://www.coolroofs.org)**



# Federal Cool Roof Program

U.S. Environmental Protection Agency  
ENERGY STAR®



- EPA introduced ENERGY STAR® in 1992
- ENERGY STAR® qualified products use less energy, save money, and help protect the environment

# ENERGY STAR® Qualified Roof Product

## CRITERIA:

- Product energy consumption and performance can be measured and verified with testing.
- Must meet or exceed ENERGY STAR® initial and three-year aged Solar Reflectance guidelines.



# Sustainable Design Programs



## United States Green Building Council Leadership in Energy and Environmental Design (LEED) Green Building Rating System

LEED is the nationally accepted benchmark for the design, construction and operation of high performance green buildings

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# United States Green Building Council

- LEED Rating System  
Green Building Rating System
- Ceramic InsulCoat Roof qualifies  
for points under Credit 7.2



# Other Performance Measurements

- Solar Reflectance Index (SRI)
- U.S. Department of Energy -  
Cool Roof Calculator

# Solar Reflectance Index (SRI) Calculator

- SRI incorporates **reflectivity** and **emissivity** properties into one standardized measure.
- Developed by scientists at Lawrence Berkeley National Laboratory.
- ASTM Designation: E 1980-01

*visit the website at:*

<http://www.ornl.gov/sci/roofs+walls/calculators/sreflect/index.htm> (Revised June 2006)

# DOE Cool Roof Calculator

- Estimates Cooling and Heating Savings for Flat Roofs with Non-Black Surfaces.
- Developed by the U.S. Department of Energy's Oak Ridge National Laboratory.

*visit the website at:*

<http://www.ornl.gov/sci/roofs+walls/facts/CoolCalcEnergy.htm>



**EnviroCoatings**

**Ceramic Thermal Barrier**

**Performance Coating Systems**

*SINCE 1960*

**COOL ROOFS**

**and beyond...**

# Product Composition

**Enviro Smart**



**EnviroCoatings**  
Ceramic Thermal Barrier  
Performance Coating Systems  
SINCE 1960

**Ceramic Insulcoat** 

**exterior roof**

with **Cerylium**

**HIGH-BUILD ROOF COATING**

# The Rohm and Haas *Paint Quality Institute*<sup>TM</sup>

States:

“High quality ingredients  
are the foundation  
to a top quality paint”

# The Performance of a Paint is Determined by all of the Ingredients:

- **Pigments** - Provide Color, Hiding and Bulk
- **Binder** - “Binds” the Pigment, provides adhesion, integrity, and toughness to the dry paint film
- **Liquid** - Provides a way to get the Pigment and Binder from the container onto the surface that is to be painted
- **Additives** - Additional Ingredients that effect and enhance many paint properties

# Ceramic InsulCoat Roof has 23 Active Ingredients

## Cerylium

A proprietary formula of precision blended,  
high performance ingredients in a complex,  
100% acrylic suspension

- Nanotechnology
- The Solids Factor

# A Rainbow of Colors

- Many competitors offer roof coatings in White or in limited colors.
- Ceramic InsulCoat Roof can be tinted to any light color.
- Tinting is completed through our Distribution Partners.

# The Solids Factor



# High-Build Architectural Coating

- Ceramic InsulCoat Roof has a  
60.9% Solids-by-Volume content.
- Our high performance ingredients are suspended together in the solution in the pail.
- When applied, more of Ceramic InsulCoat Roof stays on the roof system and does not evaporate into the atmosphere.

# Ceramic InsulCoat Roof - *A Thixotropic Product*

## What?

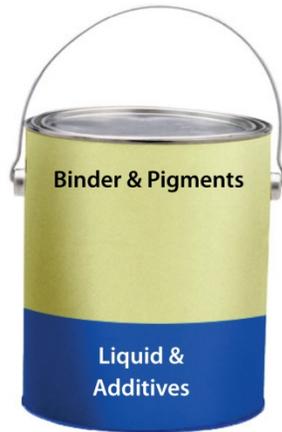
- The product has a natural appearance similar to yogurt (*60.9% Solids-by-Volume*).
- Like yogurt, viscosity will appear to vary by age, temperature and agitation.
- To obtain workable viscosity always shake or stir before use.

# Shake or Stir Container before Application



Drill Paint Mixer used to Stir Product On-Site

**ENVIROCOATINGS  
CERAMIC INSULCOAT**



30%-45% Solids\* →  
← 61% Solids\*

**TOP QUALITY  
LATEX PAINT**



← Less than 30% Solids\* →

**ORDINARY  
LATEX PAINT**



**Wet Paint Film**



**Dry Paint Thickness**



\* Percent Solids by Volume

**Solids by volume is the key issue - This means more of our coating stays on your surface after it dries!**

# High-Build Architectural Coating

- Ceramic InsulCoat Roof requires an application of only two coats to meet our specifications of 11-12 dry mils.
- Other products require 2-4 coats to meet their dry mil specifications. That results in more material needed to complete the job and hence, increased material costs.

# Green and Environmentally Friendly



# Clean Technology

- EnviroCoatings meets or exceeds environmental guidelines – 100% acrylic, water-based and non-toxic:

Contains no formaldehyde, ethylene glycol, petroleum distillates, silica, mica, quartz or other chemicals listed as cancer causing.

- No special ventilation required during application.

# Reduced Volatile Organic Compounds (VOC)

- Lab Tested - SCAQMD at 42 gm/l
- Solids Factor - Because we are 61% solids by volume, we leave more product on the roof system when applied.
- Life Cycle - Fewer coats over 20 years means fewer total VOC's released into the atmosphere.

# Environmentally Friendly

- A **GREEN** product.
- Helps save the environment by using less electric power and natural gas to heat and cool buildings.
- Selecting Ceramic InsulCoat Roof to use on your real estate investments is a wise social commitment.

Enviro  
Smart



# Weatherproof Enhancement

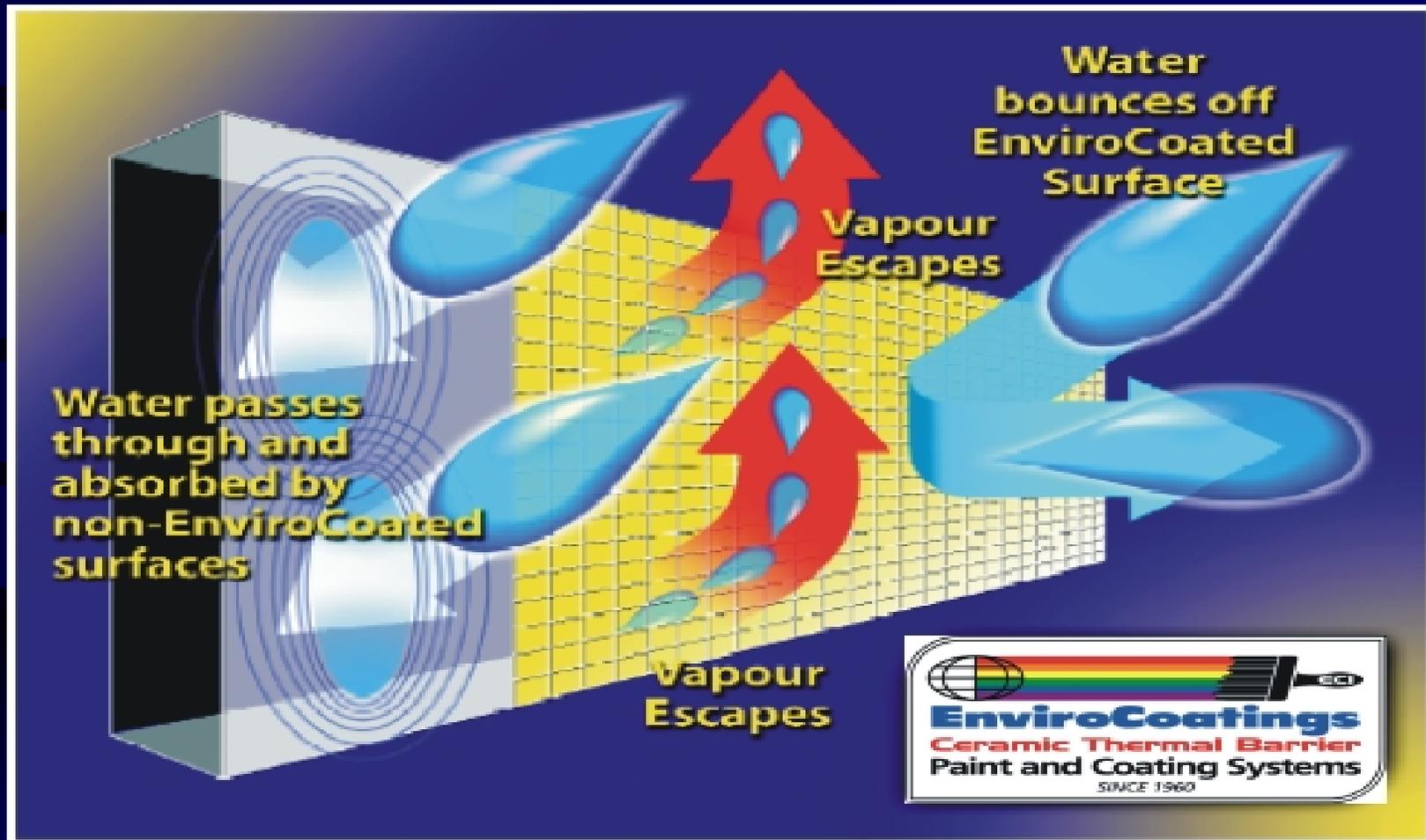
Ceramic InsulCoat Roof creates a weatherproof membrane that significantly reduces potential damage and deterioration of the roof substrate.



# Breathability and Moisture Management

- Keeps water and dirt out.
- Allows the natural moisture buildup to escape to the atmosphere.
- Breathes at 24.9 Perms.
- Your roof system remains drier, reducing rot and mildew formation.

# Weatherproof and High Breathability



$$\frac{\text{ng}}{\text{pq} \times \text{s} \times \text{m}^2 \times 57.2} = \text{PERM RATE} = \text{BREATHABILITY}$$

# Year-Round Thermal Barrier



# EnviroCoatings Thermal Resistance

- **Heat** and Cold:

The Ceramic component of the 23 high-performance ingredients of *Cerylium* (Microspheres, strands, irregular particulate, and an over abundance of titanium dioxide) helps resist the movement of heat through roof (*and wall*) systems.

# “Cool Zones”

- Promotes “COOL ZONES” so entire buildings can contribute towards lowering environmental temperatures.
- By the way, EnviroCoatings Ceramic InsulCoat Roof and Ceramic InsulCoat Wall, each perform in the same manner.

# Does a Cool Roof provide Year-Round Benefits?

According to the Cool Roof Rating Council (CRRC):

## Climate

In most climate zones worldwide, cool roofs can significantly reduce a building's cooling load.

However, cool roofs can also increase heating costs in winter months...

# Year-Round Thermal Benefits

- **3-WAY ACTION:**  
Reflects, Emits (gives off the energy it absorbs), and Resists conductivity of heat.
- **ENVIROCOATINGS**  
Keeps you:  
**WARMER** in winter  
and **COOLER** in summer.



**REALIZED ENERGY SAVINGS = LOWER UTILITY BILLS**<sup>60</sup>

# A Superior Value Proposition



# Cost of Product in the Can versus Cost Applied on the Roof

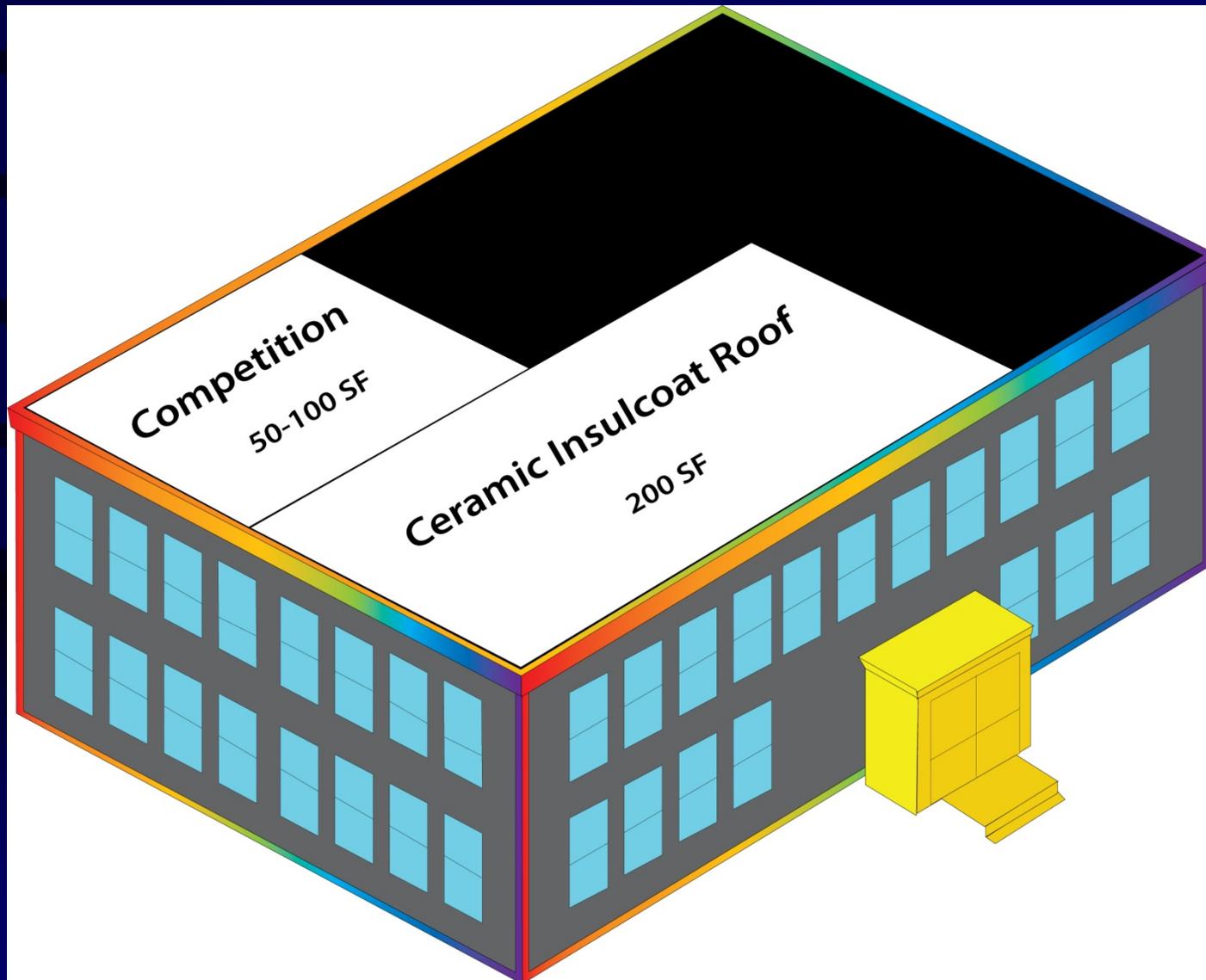
- Ceramic InsulCoat Roof is generally more expensive in the can...
- Knee-jerk reaction is to purchase the least expensive product in the can...

*Is it the Best Value Proposition?*

# Initial Project Application Costs

- Ceramic InsulCoat Roof spreads at 200SF per gallon, per coat. Competition averages 50SF to 100SF per gallon, per coat.
- Re-coat in 2 hours. Other products take 4-6-8-24 hours between coats.
- No standing around. Saves man-hours required to apply.
- Easy on equipment and simple clean-up.

# Square Foot Coverage



# Improve Financial Performance

- Ceramic InsulCoat Roof lasts 3 to 5 times longer than conventional paints and coatings.
- That's 3 to 5 times the labor and material costs – *at future inflated rates* – to repaint or replace the roof system.

# Reduces Energy Costs

- Enhances existing insulation systems.
- Reduces the energy needed to heat and cool a building (month after month).
- That in-turn cuts utility bills.
- Works just as well in polar climates as it will in desert climates.

# End Users Must Consider Initial Costs and Lifetime Benefits

- Ease of Application
- Material and Labor Costs
- Extend the Life of the Roof System
- Save Energy - Year Round
- Exceed Increasingly Strict Environmental Codes and Cool Roof Programs
- Simple Maintenance
- Protect Real Estate Investments

*etc., etc., etc.*

# Preparation and Application Methods



# Topcoat

## Ceramic InsulCoat ROOF

is intended to be a topcoat providing an extension to the existing roof system and is not a stand-alone roof product.

# Clean, Dry and Sound

- Three key essentials to a successful coatings job.
- Majority of coating application failures are due to improper preparation.
- The roof must be in good condition.

# Surface Preparation

- Make required repairs and prepare the substrate according to NRCA guidelines.
- Allow repairs to completely cure before applying Ceramic InsulCoat Roof.
- The roof must be in good condition.

# Application Methods

- Brush
- Roll - Medium to heavy nap roller
- Spray - Commercial Airless sprayer with a 0.023” - 0.584mm tungsten-carbide tip
- Easy to apply and easy to clean up



Ceramic InsulCoat Roof can be applied via brush, roller or sprayer



Safety Recommendation: Wear dark sunglasses



Completed Projects





Completed projects

# Maintenance Procedures



# Out of Sight...Out of Mind

- Roof Systems are exposed to the elements, in all climates, in every type of weather, 365 days a year.
- They become dirty.
- Especially true on Flat Roof Systems.
- Thermal capabilities are reduced - in particular - Solar Reflectance.

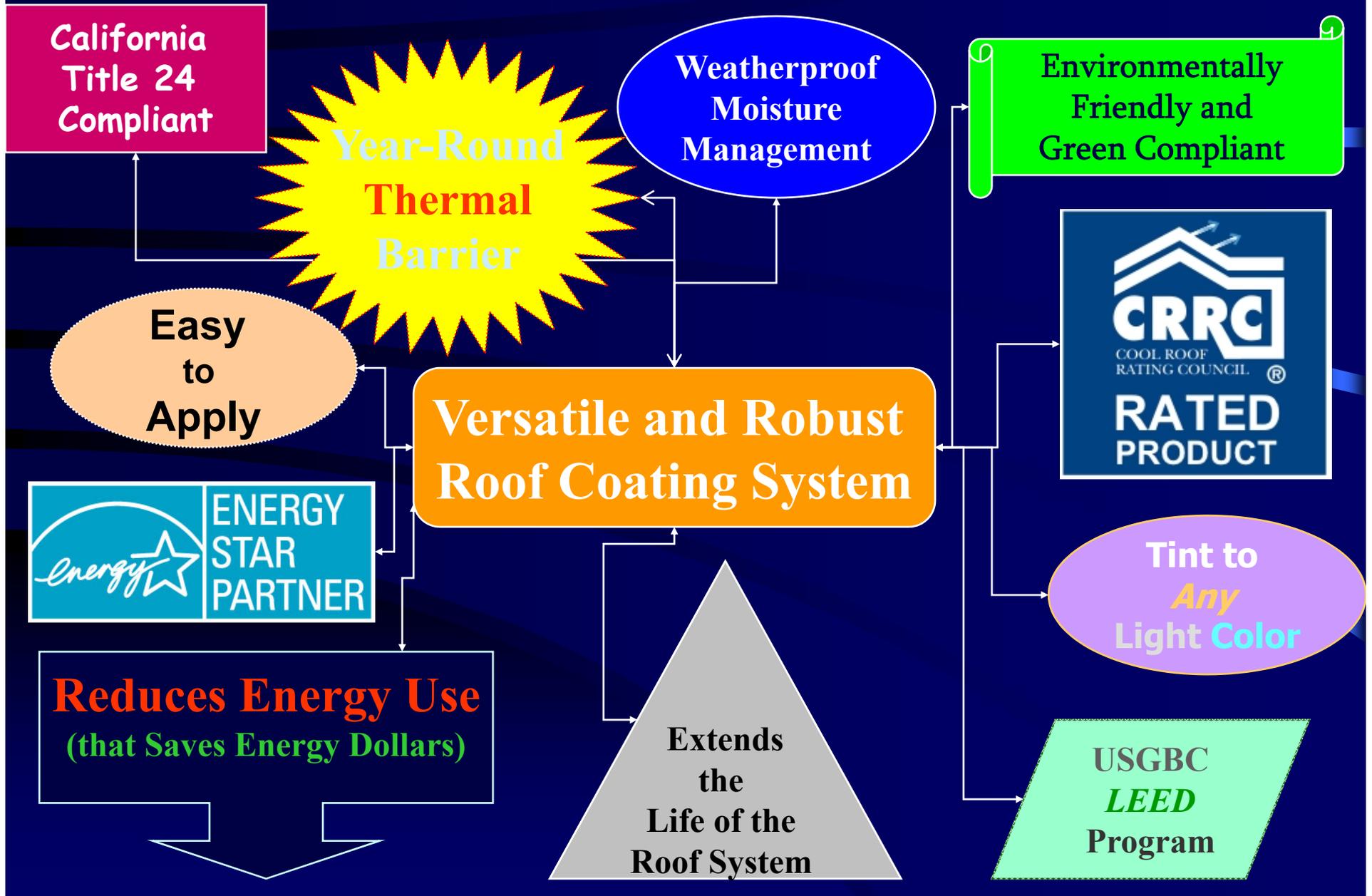
# Preventative Maintenance Schedule

- Most Facilities utilize some sort of preventative maintenance program for equipment.
- EnviroCoatings recommends incorporating the maintenance of Ceramic InsulCoat Roof (and the Roofing System) into your program.

# Safety Tips

- Wear sunglasses and hats on sunny days.
- Ceramic InsulCoat Roof cures to a hard finish and can be slippery.
- Be careful with Morning Dew, Rain, Snow, Ice, and similar conditions.
- Install and use walk pads to move about the Roof System.

# Review: Ceramic InsulCoat Roof



# BEYOND COOL ROOF

You can view and download  
Detailed Application Procedures, Sales Brochures  
and Technical Data Sheets on our Website:

[www.envirocoatingsusa.com](http://www.envirocoatingsusa.com)

