

A publication of the FRSA · Florida's Association of Roofing Professionals

# ROOFING FLORIDA

## COMMERCIAL ROOFING TRENDS

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Change

## COOL ROOF COATINGS ARE HOT

AT YOUR SERVICE  
The FRSA Staff



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# COOL Roof Coatings are HOT

By Tony Leonard, Business Manager  
ERSystems Roofing, Inc.

While the roof coatings of today are described as cool, the roof coatings' market is *HOT*. This article will cover some of the basics of why cool roof restoration is such a sizzling topic.

Most roofing contractors are aware of terms like *sustainable*, *cool*, *green* and *reflective*. Government departments and organizations like Energy Star, the DOE, CRRC, USGBC and LEED are all involved in the sustainable building movement and include the technology in their incentive offerings, regulations and commissioning programs. Cool roof restoration and reflective coatings are riding the sustainability surge and increasing their reach to include

almost all segments of the roofing market. The movement's interest in roofing makes sense because a well-constructed roof contributes to the conservation of energy and, since it lasts longer, minimizes the burden on the environment.

Since traditional commercial roofs are *flat* and dark in color, they tend to be hot, hold water in some locations and wear out. They require a continued commitment to a strict maintenance schedule and, even then, may have to be replaced earlier than expected.

Dark roof surfaces take the infrared portion of sunlight and convert it into heat energy. The heat then travels through the insulation into the

building increasing cooling costs. The heat can also shorten the life of a roof by increasing the rate of chemical deterioration on the surface. As a result, protected roofs last longer, reducing the amount of roofing materials that are placed into landfills.

Roof restoration projects incorporating white coatings protect the surface from moisture, sunlight and heat because they reflect most of the incoming sunlight back into the atmosphere, keeping the roof surface as much as 60-80F cooler than a dark surface. They also reduce the amount of heat flowing into the building, which reduces the cooling load.

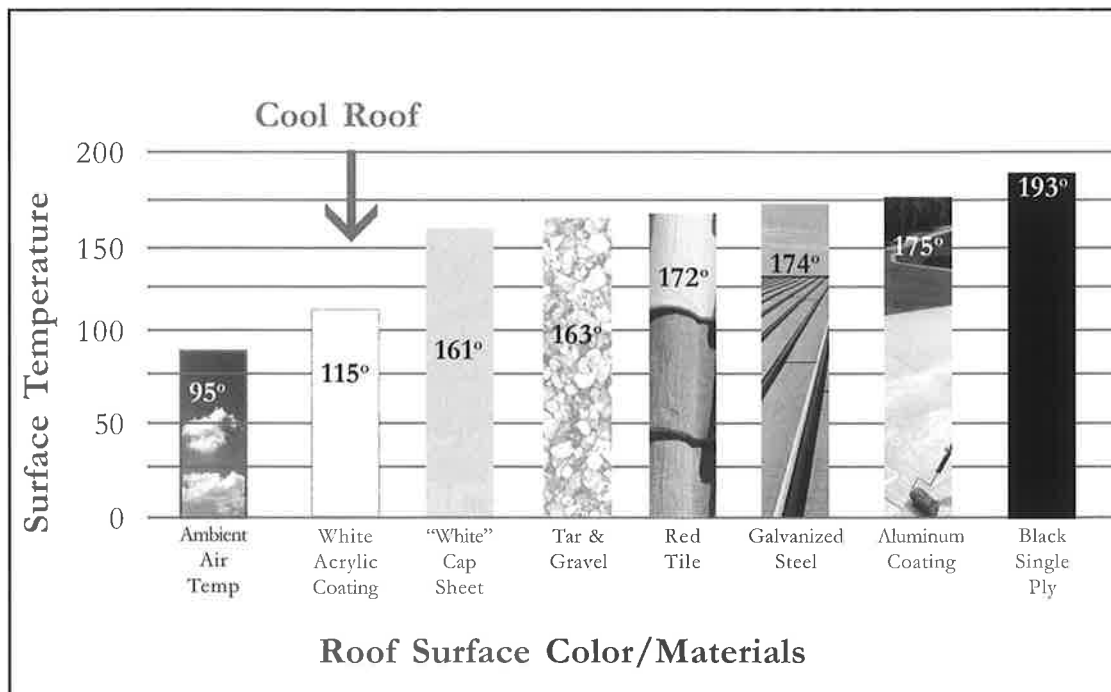
## Value of Repair, Restoration and Maintenance

It protects your building and your bottom line. Talk about a Tax shelter.

In addition to the immediate physical benefits of a roof restoration solution, the financial advantages are equally comparable. A roof maintenance system is a fully tax deductible operating expense. Clarified by the IRS as a maintenance item, it can usually be expensed within

the same accounting period of installation. Coupled with the reduced maintenance and cooling costs, it adds up to be quite an advantageous financial decision.

Chart Statistics Courtesy Tropical Asphalt



## Principles of Roof Restoration

Roof restoration is the process of changing an aged roof into an *as new* or even *better than new* condition. Every roof system has weaknesses/limitations that may lead to roof failure but roof restoration addresses those issues by:

- Reinforcing the original weaknesses and limitations of the roof
- Repairing material inadequacies and failures resulting in leaks
- Using coatings to protect the roof for longer performance life

When a roof is transformed into an *as new* or *better than new* condition, it protects the roof surface from the natural degradation caused by the weather, which extends the life of the roof. Restoration improves the cost/benefit ratio of the original roof from a financial perspective for the building owner and from an environmental perspective because it decreases the amount of roofing materials found in landfills.

## Roof Restoration Qualifications

Not every roof is a good candidate for the restoration process. It must be restorable that is, it must have some life left in it, be structurally sound and in a condition that allows it to be cost-effectively waterproofed. The insulation must be dry or replaced, leaks identified, drainage checked and seams and flashings resealed and reinforced. It's also imperative to identify and correct such specific issues as rust on metal, EPDM shrinkage and SPF blisters.

If the cost of getting the roof system back into a watertight and functional condition is greater than the cost of replacement, it needs to be restored not replaced.

## Roof Restoration Systems

### Metal Roof Restoration

Metal roofs are typically great candidates for restoration. The limitations/failures of many metal roofs can be attributed to corrosion, fastener issues and/or seam



Metal Roof Restoration

Clean, seal, & prime metal seams prior to coating.

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separation. Preparation is the key to successfully restoring these types of roofs and it should include the removal of rust and loose material, the tightening and replacement of fasteners where necessary and the sealing of seams, fasteners and penetrations.

After completing all of the above and checking to be sure the areas are watertight, wash the surface, prime it (if necessary) for rust control and then apply the white reflective finish coat.

*Continued on page 17*

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## Roof Coatings continued from page 15

### Single-Ply Restoration

Thermoset restoration requires the reinforcing of both seams and flashings. Once all repairs and reinforcement procedures are completed, the roof is washed, primed if necessary (to ensure sufficient adhesion) and then coated.

### Thermoplastic Restoration

Thermoplastic restoration requires that the surface and seams be repaired and/or reinforced and then thoroughly cleaned (especially those with PVC membranes). Then, to prevent plasticizer migration, a base/prime coat may be necessary. Finish it all off with an application of white coating.

### Asphalt Restoration

The asphalt surface must be examined and surface splits, flashing issues and general repairs addressed to insure the surface is watertight. Coatings must be compatible with asphalt, able to resist incidental water ponding and protect the surface from UV deterioration as well as keep the roof surface cool.

The chemistry of the coating should be considered. It must be compatible with the roof substrate, adhere to the substrate surface and achieve the desired results. It may need to possess the qualities needed to bridge cracks allowing it to move with the substrate, resist rust and corrosion, prevent incidental standing water and accommodate cold weather movement and moisture.

### Energy Savings

While roof restoration is known to extend roof life and minimize the amount of roofing materials in landfills, the excitement associated with sustainable roofing originates from the proven energy savings derived from the presence of a cool reflective surface on a restored roof.

Documentation proves that a white coating provides enough cooling energy to reduce energy costs by 20% or more over traditional uncoated dark surfaced roofs depending on the building's location, the local climate and the roof's construction (R-Value).

Infrared photos taken of a project consisting of both white and dark roof surfaces verifies the documented results.



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While the part of the building covered in EPDM registers a temperature of about 140F, the adjacent white coated membrane registers at approximately 70F.

It's also important to note that white roof surfaces affect the temperature of the entire roof system, making the roof insulation more effective. With less

heat penetrating the roof system, heat is reduced in the building's interior and the electrical demands for cooling are greatly diminished. A cooler roof surface may also make the air temperature above the surface cooler, which may increase the efficiency of the roof-mounted HVAC equipment.

The energy savings derived from white reflective coatings are greatest in warmer climates with large cooling demands while northern climates with large heat demands may be penalized. However, according to a study conducted by the Lawrence Berkeley National Laboratory (LBNL), the energy savings realized with white reflective roofing exceeds the cost of a heat energy penalty in all of the US except the most remote areas of Alaska.

### A Solar Example

Let's use a building in Dallas, Texas as an example. It's covered by a fully adhered EPDM roof with an original R-Value of 10 fully restored and the customer's price of \$1.25/sf includes the cost of the coating and reinforcement of

all the seams and flashings. The finish coat possesses an aged solar reflectance of 0.85 and cooling electrical cost were \$.07/KWH.

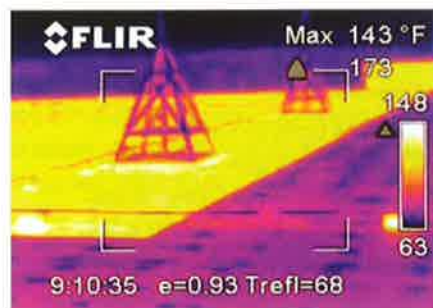
Using the ORNL energy savings calculator, savings were projected at \$8300 annually, with a 15-year payback on the entire roof restoration based on just the energy savings alone.

A recent study conducted by the LBNL projects a dramatic reduction in our carbon footprint based on the energy saving potential of white roofs. They project that if 80% of US commercial buildings were to have white reflective roofs, it would reduce CO<sub>2</sub> emissions by 6.23 metric tons, which is equal to the annual CO<sub>2</sub> produced from 1.2 million automobiles!

Cool roof restoration is a sustainable roofing practice. Its energy saving properties extends roof life and minimizes the burden on the environment, which definitely qualifies cool roofing as a hot topic!

*Tony Leonard is a Business Manager for ERSystems. He has worked in the roofing industry, specifically with coatings and restoration, since 1994. He has a BS in Environmental Science and is a member of the NRCA, SPFA and RCI.*

*ERSystems Roofing is a manufacturer and distributor of high performance elastomeric coatings and membranes designed for the roof restoration and re-roof markets. For further information, visit their website [www.ersystems.com](http://www.ersystems.com).*



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