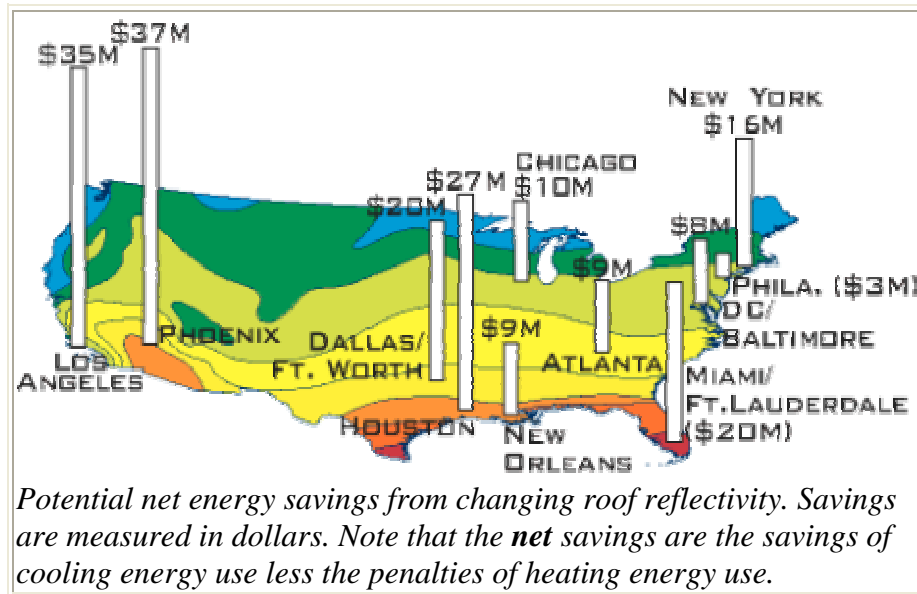


Cool Roofs



Dark materials absorb more heat from the sun--as anyone who has worn a black t-shirt on a sunny day knows. Black surfaces in the sun can become up to 70°F (40°C) hotter than the most reflective white surfaces. If those dark surfaces are roofs, some of the heat collected by the roof is transferred inside.

Staying comfortable in under a dark shingle roof often means more air conditioning and higher utility bills. These roofs also heat the air around them, contributing to the heat island effect. Conversely, cool roofs can reduce the heat island effect and save energy. In a study funded by the U.S. EPA, the Heat Island Group carried out a detailed analysis of energy-saving potentials of light-colored roofs in 11 U.S. metropolitan areas. About ten residential and commercial building prototypes in each area were simulated. We considered both the savings in cooling and penalties in heating. We estimated saving potentials of about \$175 million per year for the 11 cities. Extrapolated national energy savings were about \$750 million per year.

The Heat Island Group has monitored buildings in Sacramento with lightly colored, more reflective roofs. We found that these buildings used up to **40% less energy** for cooling than buildings with darker roofs. The Florida Solar Energy Center performed a similar study, also showing up to 40% cooling energy savings.

Energy Seal Coatings

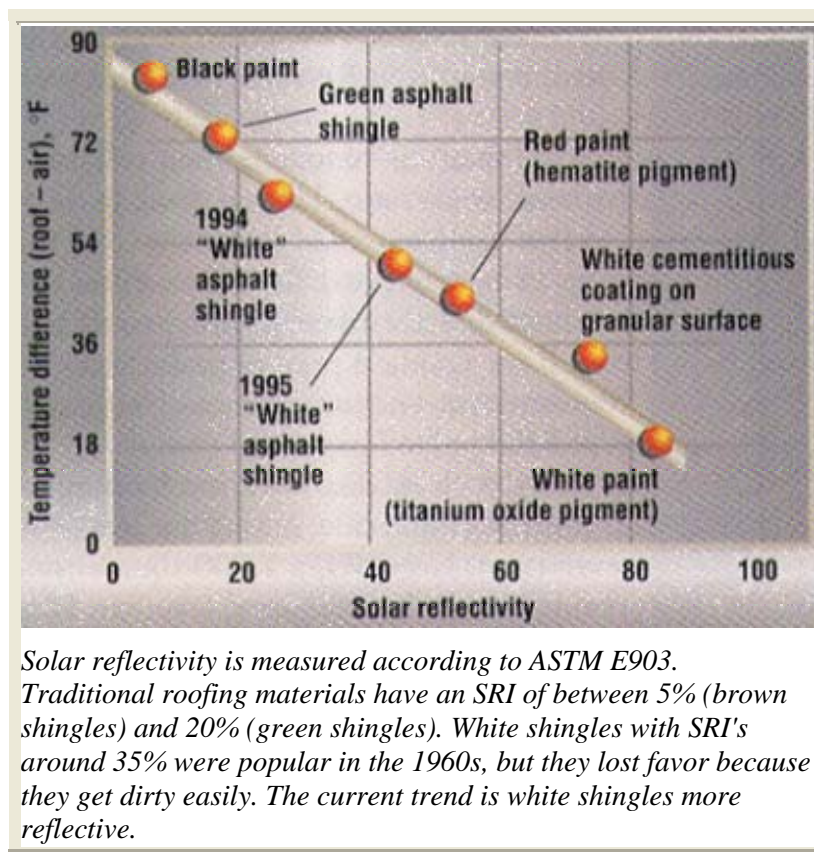
Acrylic Coatings for Roof and Wall Applications



The Heat Island Group continues to monitor buildings and measure or simulate the effects of increased roof reflectivities for:

- different types of buildings,
- different climate zones and seasons, and
- different roof insulation levels, angles and orientations.

This important research is needed to find the best ways to save energy and money using reflective roofing.





Also, materials specialist Paul Berdahl is developing a new rating system called the **solar reflectance index (SRI)** to measure how hot materials are in the sun. The extremes of white and black paint (on the graph above) define the solar reflectance index (SRI). Berdahl compiles and measures the solar reflectance and infrared emittance of roofing materials. *Reliable* summary data and information on heat transfer are posted on our web-based database. We also collaborate with manufacturers to find ways to make roofing materials cooler. Sample data for some examples of cool roofing materials are available.

Manufacturers have recently developed clean, "self-washing" white shingles with even higher SRIs--up to 62%. This is useful because the labor costs of maintaining the high albedo of a roof coating may exceed the cost of conserved energy.

Look for the SRI to start appearing on roofing products! **Reroofing with shingles rated SRI 50% or higher will keep a home cooler and reduce energy bills.** Reroofing offers a quicker and even less expensive method to cool your home than planting trees, as well as making our buildings and cities cooler and more comfortable.

| Energy Seal Coatings | | |
|----------------------|-------------|-------------------|
| SRI Values | | |
| Brand | Initial SRI | SRI after 3 years |
| Acu-Shield | .88 | .84 |

Energy Seal Coatings

Acrylic Coatings for Roof and Wall Applications



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