



Cool Roofs and Emissivity

What is Emissivity?

The *emittance* of a material refers to its ability to release absorbed heat. Scientists use a number between 0 and 1, or 0% and 100%, to express emittance. With the exception of a metallic surface, most roofing materials can have emittance values above 0.85 (85%). One example is a metal wrench left in the sun, which is hot to the touch because it has a low emissivity value.

Link Between Energy Savings and Emissivity

Solar reflectance is the most important characteristic of a roof product in terms of yielding the highest energy savings during warmer months. The higher the solar reflective value the more efficient the product is in reflecting sunlight and heat away from the building and reducing roof temperature. This is particularly important in areas of the U.S. where peak load is a concern.

Emissivity can also contribute to a cool roof. In warm and sunny climates highly emissive roof products can help reduce the cooling load on the building by releasing the remaining heat absorbed from the sun. However, there is also evidence that low emissivity may benefit those buildings located in colder climates by retaining heat and reducing the heating load. Research on the benefits of emissivity is ongoing. Discuss reflectance and emissivity with your roofing contractor to determine what characteristics matter most given your unique climate.

ENERGY STAR Requirements

ENERGY STAR qualified roof products must meet minimum initial and aged solar reflectance values. Emissivity is not currently a requirement for ENERGY STAR qualification. However, starting December 31, 2007, EPA will post emissivity values for all products on the ENERGY STAR Qualified Products List to assist consumers in their purchasing decision. Longer term, EPA plans to revisit the possibility of adding an emissivity component to the ENERGY STAR specification.

Additional Tips for Superior Performance of Roof Products

Choose an installer carefully to ensure proper installation of the roof product or roof coating that will maximize durability and solar reflectance. The National Roofing Contractors Association (NRCA) provides helpful advice in its “Guidelines for Selecting a Roofing Contractor” (available at www.nrca.net EXIT ↗). To maximize energy and costs savings consider upgrading or installing other energy savers such as insulation and ENERGY STAR windows and HVAC equipment.