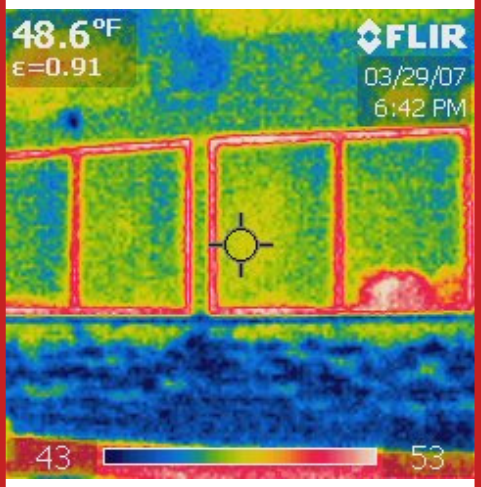
TRUPROTECT

MULTI-LAYER HIGHLY ENERGY EFFICIENT REFLECTIVE SHEETING

RESISTANT TO HAIL, MOLD, FIRE, SOUND & HEAT

Radiant Barrier & Insulation



Infrared photo of exterior wall pictured above shows how TruProtect helps keep warm air inside during the winter. The argon filled windows and window frames show loss of interior warm air. In the summer, TruProtect helps keep hot air out and cool air in.

U.S. GREEN BUILDING COUNCIL MEMBER

ENERGY STAR ASK ABOUT ENERGY STAR

TruProtect's components and their arrangement make it an amazing barrier to radiant, convective, and conductive heat transfer.

Heat always travels from warmer spaces to cooler spaces. There are three ways in which it goes from warm spaces (outside in summer, inside in winter) to cold spaces (inside in summer and outside in winter).

1. **Conduction** is the flow of heat through matter as in a hot iron applied to wrinkled clothes. In general, the more dense a substance, the better conductor it is. Air has low density and, thus, is a poor conductor of heat. TruProtect uses this fact to its advantage. With 6 "dead-air" zones, conduction of heat is reduced, providing TruProtect with an R-factor of 1.6, which is okay, but certainly not the end of the story!
2. **Convection** is the transfer of heat through a gas or a liquid. This is the reason hot air rises. The primary function of conventional, bulk insulation is to trap still air within the insulation and reduce heat transfer by air movement.
3. **Radiation** is a significant means of heat transfer and is where TruProtect really "shines." The sun's heat arrives by infrared waves traveling through space. When these rays hit an object, they either are reflected or are absorbed. Only the rays that are absorbed will produce heat. The amount of the radiation emitted depends on the emissivity of the object's surface. Emissivity is the rate at which radiation is given off. Common objects used in buildings such as brick and wood have emissivity rates from 80-90%, meaning it is absorbing the heat and making the building hot. The surface of TruProtect has the emissivity rate of 2%, meaning almost none of the heat is absorbed and 98% of the infrared rays are reflected and never enter the attic.

TruProtect installed on a roof will help achieve thermal comfort by hindering all three ways of heat transfer. Starting with TruProtect's outsanding radiant barrier qualities, it reduces the amount of infrared waves entering the attic. The result is that the attic remains much cooler in the summer. This makes the bulk insulation more efficient and the home cooler. The reverse works in the winter, holding warm air in. And as an added bonus, the 6 "dead-air" zones work to block conduction of heat.

Since radiant barriers reduce radiation of heat to or from the surface of the material rather than heat conducted through the material, associating R-values with radiant barriers is difficult and inappropriate. The R-value test measures heat transfer through the material, not to or from its surface. There is no universally accepted laboratory method to measure the resistance to heat flow of a multi-layer foil product.

Atlas Weathering Services Group, Phoenix, Arizona

Total Emittance measurements performed in accordance with ASTM E408-71 Method A. TruProtect tested at .98 reflectance. Near-normal emittance was calculated at .02. Hemispherical spectal reflectance measurements were performed using ASTM Standard Test Method E903. TruProtect test results showed a solar reflectance of 81.5%.

Architectural Testing, St. Paul, Minnesota

Standard test method for the thermal performance of Bulding assemblies by means of hot box, ASTM C 1363-97. Thermal transmittance - 0.32; Thermal conductance - 0.62; Thermal resistance 1.61; Overall thermal resistance 3.11.

TruProtect - Future Solutions Now!
Mike McDonald
5507 10th Street
Lubbock, TX 79416
(806) 281-9698
(806) 781-2554 cell
m.mcdonald@truprotect.com
www.truprotect.com