

Technical Review of Super Therm

Basic Technology:

Super Therm® is an externally applied ceramic coating product, designed to prevent solar heat from loading on all external surfaces (Buildings, Vehicles, Tents, etc.). When Super Therm® is painted on any external surface, **the surface will always be, and feel, cool when touched**, regardless of how hot the ambient temperature is outside that day. Additionally, **the surface temperature of any external surface painted with Super Therm®, will always be ambient, or near ambient**, depending on humidity levels.

When Super Therm® is applied to an external surface it will always be, and feel, cool to the human touch, because of two reasons: 1) **Super Therm's® ability to block 95% of the total solar heat attempting to load** on an external surface; 2) The specific ceramics used in its formulation **cannot physically hold solar heat, as a result of a lack of density**. For example, if a piece of paper was placed next to a freshly painted white car, regardless of how hot the day is, the paper **will not** load with heat, it will always be cool to the touch and at an ambient temperature level, because paper does not have enough density, in its composition, to hold solar heat. In this example, the freshly painted white car, however, **will** load with heat and **will** feel hot to the human touch, as it is made of metal (a very dense material that will hold heat) and **merely being white in color will help, but will not prevent it from loading with heat. But, if painted with Super Therm®, the car will always be, and feel, cool to the human touch and 95% of the solar heat will not load, even on dense metal. The specific ceramics used in Super Therm's® formulation are 50 times lighter than paper and, thus, like paper, does not have enough density to load, hold and conduct solar heat.**

Buildings that cannot load and conduct solar heat will have lower surface temperatures on their roof, and lower solar BTU load and transmission, which will result in lower air conditioning and maintenance cost. Super Therm® is very unique in its ability to dramatically shatter air conditioning cost, by keeping the surface cool to the touch and maintaining ambient or near ambient surface temperatures on the roofs of buildings and external surfaces of all types. Meaning that, on an 85 F degree day, regardless of the roof's existing material type (Metal, Asphalt, Concrete, etc.), the roof's surface temperature, once simply painted with Super Therm®, **will be 85 F or near 85 F**, (within 1-10 degrees, depending on humidity levels), rather than 140-200 F without Super Therm®. This is a direct reflection of Super Therm's® ability to lower the surface temperature and to block 95% of the total solar heat radiation attempting to load on the roof of buildings and any external surface. Infrared is 57%, Visual Light is 40% and UV is 3% of the solar heat attempting to load.

Specifically, Super Therm® blocks 99.5% of infrared heat, 92% of visual light, and 99% of ultraviolet (UV) light. In terms of composition, Super Therm® is made of 4 very unique and specific ceramics, with very little density, **within a water based formula**, that not only reflects visual light (40 % of the heat load - white coatings can only impact Visual light as long as they stay clean, which they rarely do), Super Therm® also blocks infrared (57% of the total heat load), as well. Infrared cannot effectively be reflected, by a coating, by merely being white in color, which is why most external surfaces just painted white, will still get hot, load with heat and feel hot to the touch. This explains why Super Therm continues to perform long term, even if it gets etched with acid rain or gets dirty, as most roofs and external surfaces do. Super Therm® also combines urethane with the acrylic resins and ceramics in its composition, to provide an ASTM certified and breathable moisture barrier.

The combination of Super Therm's® ability to: **block 95% of the solar heat attempting to load on buildings; its high emissivity; its reflectivity; the fact that the ceramics used within its composition have very little density and, therefore, cannot physically hold the solar heat attempting to load; not only results in an ambient or near ambient surface temperatures on the roofs of buildings, but also lower air conditioning cost, when Super Therm® is applied. If the solar heat radiation and subsequent surface temperature on the roofs of buildings are minimized, then the amount of heat that ultimately conducts into the building is also minimized, thus requiring a lower need for air conditioning which equates to lower cost, as well as, lower maintenance cost.**

Ceramics are known for their heat resistant properties and ceramic coatings are already used in the automotive industry, on engine exhaust systems, and in the kitchen for cookware. Ceramic tiles are also well known for protecting the NASA space shuttles from heat generated during re-entry into the earth's atmosphere. The unique ceramics used in Super Therm® have demonstrated the ability to block out 99.5% of infrared heat, 92% of visual light, and 99% of ultraviolet (UV) light. Super Therm® has been tested by multiple laboratories and companies in the US and abroad, over the past 20 years. The U.S. Department of Energy has listed Super Therm® as an Energy Star qualified product for slope roofs.

For technical support and more information call 770-594-0083.