

THERMORAD

A T H E R M A L R A D I A T I O N B A R R I E R



The sun's energy reaches earth as a combination of visible light that allows us to see color, infrared wavelengths that cause the most heating, and ultraviolet rays. White and light colored paints, including roof and wall coatings reflect the visible portion of the light spectrum. Assuming 100% efficiency the best they can do is reflect 43% (Fig. A) of the sun's energy. A much greater amount of heat, 53%, continues beyond the coating and into our living and work areas. The illustration 'A' below shows the three major components that make up the full range of the sun's light.

According to the **International Energy Agency**, buildings currently account for as much as 40% of primary energy consumption in most of its member countries, and are also a significant source of carbon dioxide emissions. The **World Business Council for Sustainable Development** reports that the carbon footprint of buildings exceeds that of all transportation sectors combined. The energy consumed by building air-conditioning units can account for more than 20% of total energy consumption in some Western countries. Needless to say a primary reason for the carbon footprint is the high energy consumption which leads to higher fuel emissions by the power companies.

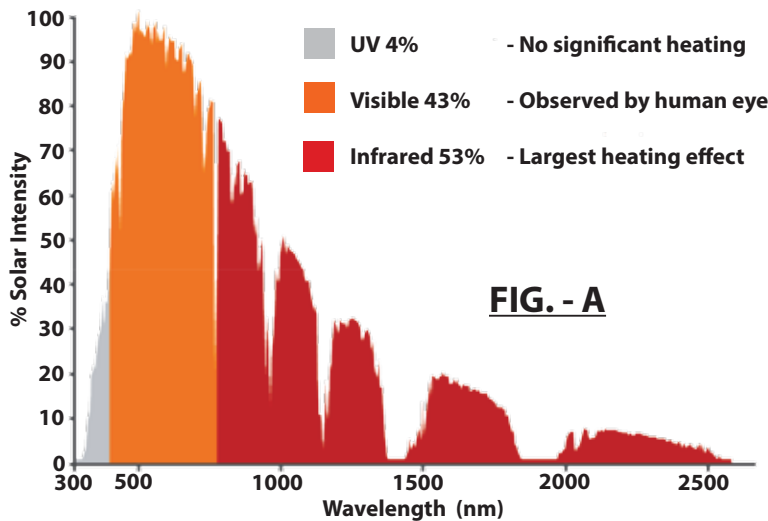


FIG. - A

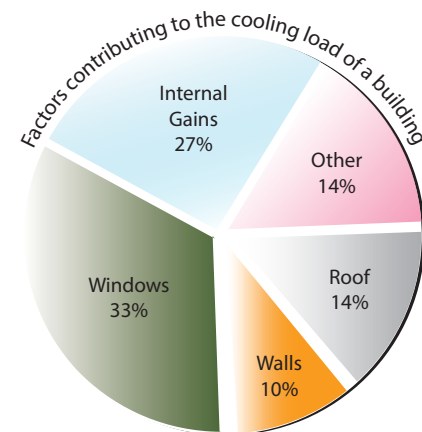


FIG. - B

Dark surfaces absorb all of the sun's energy they are exposed to. An object or surface that radiates (releases) all of its absorbed heat energy is called a "blackbody". The ratio between the energy radiated by an existing surface to the energy radiated by the blackbody is stated as the emissivity of that surface. Lower the emissivity higher the R-Value (commonly understood as the insulation factor). The low-emissive paint increases the R-Value of the wall by changing the heat transfer coefficient in a positive direction.

Reducing energy consumption, increasing energy efficiency and promoting low emission goals are important environmental targets for the global community. Finding energy efficient chemistries and technologies to maintain temperature constants are a pressing issue. This fact is borne out by many national and international standards for solar reflectance directly related to energy conservation. Liqui-guard Technologies supports these efforts with its latest innovation **THERMORAD**, a *thermal radiation barrier coating*.

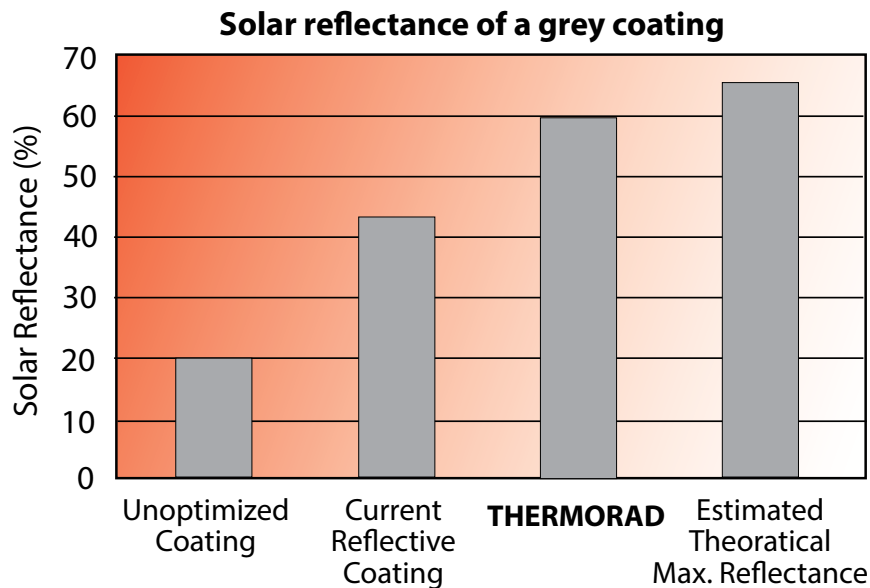
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The combination of the visible light and infrared rays equals 96% of the heat energy source. Restricting a major portion of these two factors makes it possible to achieve energy savings of 50% or greater. While consumers are concerned with both cost and environmental benefits derived from reduced energy consumption, they are not always willing to do this by compromising their desire for aesthetics.

Now **THERMORAD** allows them to have their “cake and eat it too”, while also sharing it with their neighbors, family and friends. **THERMORAD** has been formulated to reflect both the visible light and infrared radiation from the sun. It offers high solar reflectance in an unprecedented range of colors. With **THERMORAD** even black coatings can reach a reflection level greater than 25%, a substantial improvement over conventional black coatings that generally reflect 5 to 8 % of the sun’s energy.



The figure above shows a comparison between various types of exactly color matched paints and their solar reflectivity as compared with **THERMORAD**. Studies clearly show that increasing solar reflectance can have a positive impact on a structures durability due to the reduction in thermal cycling stress. The reduction in coating surface temperature, through reflectance, can reduce delamination and peeling of the coating. One of the technologies used in **THERMORAD** (along with its unique formulation) has been recognized by the coating industry and has the distinction of winning a product innovation award.

THERMORAD is a water based paint with the look and feel of conventional paints. It is applied just as any other paint product using the same tools and techniques. Each gallon of **THERMORAD** will cover approximately 350 square feet with a dry film thickness of 1.5 mils. A minimum of two coats is highly recommended for optimal reflectance and durability. **THERMORAD**'s adhesion and water barrier properties are far superior to those of conventional paints. It is extremely fade resistant and has built-in mold, mildew and algae barriers. There are no fumes or odors associated with **THERMORAD**. Tools and work area can be cleaned with fresh clean water. **THERMORAD** should be stored in air tight containers in temperatures between 60°F to 75°F. Properly stored **THERMORAD** will have a shelf life of at least one year or greater.