Resene Construction Systems

CoolPlast -

Innovative protection and enhancement to your investment

After development, and field testing over the past 10 years we are please to introduce the first CoolPlast coating system with our INTEGRA, Masonry & Graphex Plaster Facade Systems.

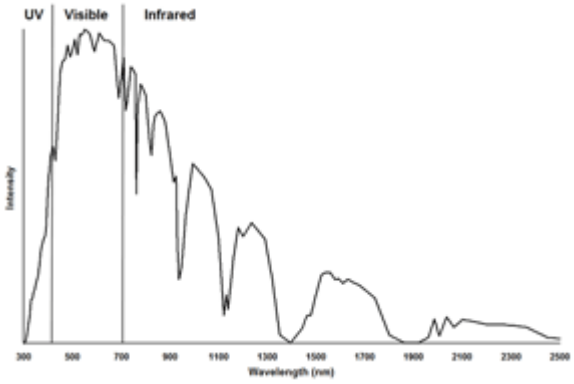
CoolPlast was developed alongside Resene and their CoolColour paint technology as a response to reducing the thermal effects on external plaster facades inturn reducing the characteristic cracking and fading associated with other products.

Our first cavity based, Insulated plaster facade using CoolColour project was completed in Heathcote Valley, Christchurch in 2003. The result, even post earthquakes has been remarkable. No sign of coating or system degradation due to the colour selected – Resene Tuna.cc

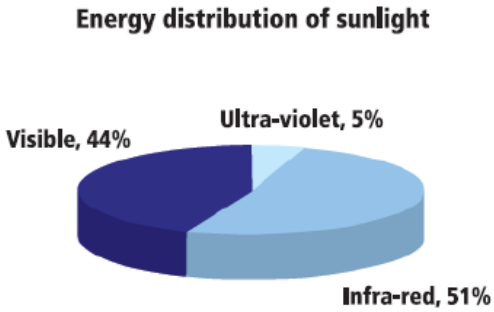
Below is an introduction on how and why the technology works.

The Nature of Sunlight and Color

Mother Nature beat us by a few million years. Most plants have leaves of a very high chroma green and some of them are very dark indeed. If the leaves reached the same temperature when exposed to solar radiation that a similar coloured paint would, they would shrivel and die. The fact that they don't is because the pigment they contain, chlorophyll, absorbs in the visible range in order to photosynthesise its requirement, but reflects in the infra-red range, keeping the plant cool.



So what does this mean? In a practical example in 2004 Resene studied the immensely popular COLORSTEEL® colour Karaka. This colour has a light reflectance value of about 5% (i.e. it absorbs 95% of all visible light) and, when formulated with traditional pigments, adsorbs strongly in the infra-red. Under a standard Resene test of irradiation with infra-red lamps, the surface temperature rises 28.5°C after 5 minutes exposure.



The same colour produced with infra-red reflecting pigments rose only 16.2°C in the same test.

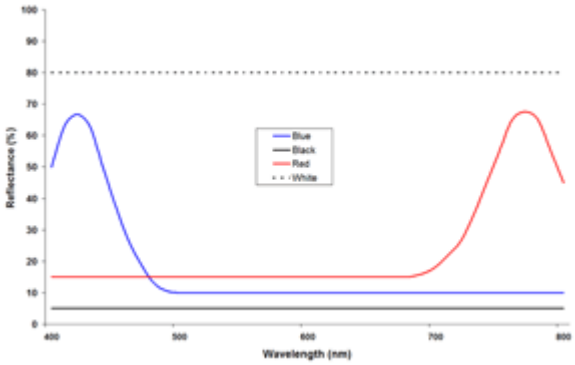
This 12°C difference can make a tremendous difference to the stresses exerted upon the substrate and can have a telling effect on its stability as well as the heat gain of it.

More technical -

Light energy from the sun spans a wide range of wavelengths. Much of the total energy is absorbed in our atmosphere and never reaches the Earth's surface. The light that does get through ranges from 300-2500 nanometers (nm) in wavelength.

A portion of this sunlight is visible to the human eye, and it is these wavelengths, from 400-700 nanometers, that are responsible for color.

If an object reflects across this entire wavelength range, then it is white. Black surfaces absorb these wavelengths. If some regions of this light are absorbed and others reflected, then the object is colored. For example, an object that absorbs all visible light except the region 400-450 nm appears blue to our eyes, while another that reflects only 650-700 nm light has a red color.



Other solar wavelengths are invisible to us. Ultraviolet light (<400nm) is full of energy and is responsible for sunburn. Infrared (IR) light (>700nm) is less energetic but comprises a large percentage of the solar energy that actually reaches us. Both Ultraviolet and Infrared light are invisible, and have no affect on color. However, all light, whether visible or invisible, will heat an object that absorbs it. The more solar energy the object absorbs, the greater the heat build-up. Conversely, the greater the reflectivity of an object, the less it will build up heat sitting under the sun.

Two objects can be identical in visible color, yet have very different reflectance characteristics in the Infrared spectrum. The object that reflects IR-light will remain cooler than the object that absorbs it and because IR-light comprises fully half of sunlight, the IR-reflectivity of an object is even more important than its color when it comes to heat build-up. In other words, an object doesn't have to be white to be cool.

44% of the sun's energy is emitted in the visible wavelengths. It is the ability to reflect this 44% that makes white appear white; and the ability to absorb it that makes black appear black.

Benefits

Cool products last longer

One simple way to preserve materials is to refrigerate them. Heat accelerates chemical reactions, including those responsible for the degradation of physical, chemical or optical properties.

RCS CoolPlast in conjunction with the Resene CoolColour paint system reduces solar driven thermal build-up and the damaging effects associated with it.

CoolPlast reduces thermal stress on the plaster facade

CoolPlast in conjunction with the Resene CoolColour paint system reduces the fatigue normally associated with dark colours over plaster facades. Inturn, the incidence of thermal movement of underlying componentry is lessened significantly which results in less stress on the facade system which results in a more durable Plaster Facade System than is currently available in the market.

CoolPlast System Guarantee

No 'colour waiver' forms. We guarantee the integrity and system performance when using our CoolPlast & Resene CoolColour paint system technology.

Application

Applied as a 1.5 - 2mm levelling coat over reinforced ROCKCOTE & Plaster Systems base plasters with the following applications to achieve our full specification 'CoolColour' solution.

\+ ROCKCOTE Mineral Texture

Resene Limelock

2 x coats Resene X200 CoolColour

or

\+ Resene Limelock

ROCKCOTE Acrylic Texture

2 x coats Resene X200 CoolColour