



Ti-Pure™

R-105 Titanium Dioxide

## Uniquely Suited for Cool Roofing Membranes

When extended service  
life is vital

When evaluating a roofing system, it is important to factor in the real life cycle costs. These include roof longevity, the cost and frequency of maintenance and the roof's impact on building energy use. Studies show that white, reflective roofing membranes can reduce the amount of energy required to maintain comfort in an air conditioned building by as much as 70%.<sup>1</sup>

<sup>1</sup> Energy Savings from Cool Roofs, U.S. Environmental Protection Agency



## Problem

Roofing membranes are a building's first line of defense against nature. Roofing membranes are subject to damage by wind, rain, heat, and sun. Left unprotected from UV exposure, roofing membranes can lose flexibility making them vulnerable to cracking, thereby reducing the service life of the roof. The initial color and strength of the products can degrade over time. Roofing membranes demand superior durability to protect the building against the ravages of nature.

## Solution

Titanium dioxide can provide maximum protection for extended service life but only Ti-Pure® R-105 has the perfect combination of weatherability, optics, and processability to meet the most exacting requirements.

### Ti-Pure® R-105 was specifically designed to achieve...

#### Maximum Weather Resistance

UV energy is absorbed and dissipated by the fine sized particles of Ti-Pure® R-105. Innovative silica encapsulation is used to impart a chemically inert coating on each  $\text{TiO}_2$  particle to prevent microcracks, chalking or other degradation of the plastic (Figure 1).

#### Brighter Color Than Previously Available in a Maximum Durable $\text{TiO}_2$

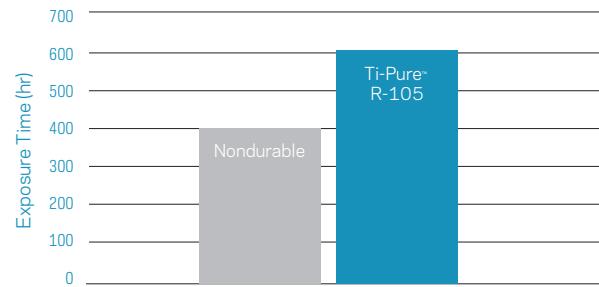
With a unique combination of neutral undertone, excellent opacity, and high brightness, Ti-Pure® R-105 is the easy solution for delivering bright, clean whites (Figure 2).

#### White Color Formulation Flexibility

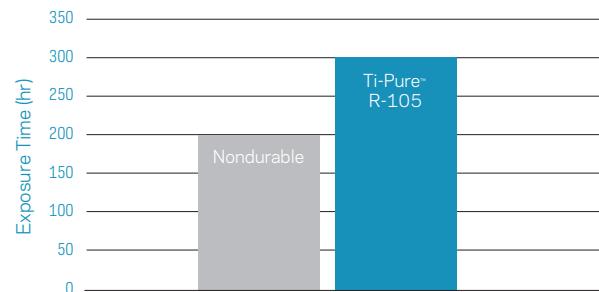
Customers tell us that a brighter membrane is the trend of the future for cool roofing. Roofing enhanced with blue undertone of  $\text{TiO}_2$  achieves whiteness levels that make other roofs seem dull in comparison.

**Figure 1:**

Ti-Pure® R-105 provides maximum weather resistance



Accelerated Exposure — Time to 50% retention of tensile elongation of polyethylene film containing 5%  $\text{TiO}_2$



Accelerated Exposure — Time to 50% retention of gloss 5%  $\text{TiO}_2$  in polypropylene — thick section



**Figure 2:**

Ti-Pure™ R-105 provides excellent opacity



Ti-Pure® R-105



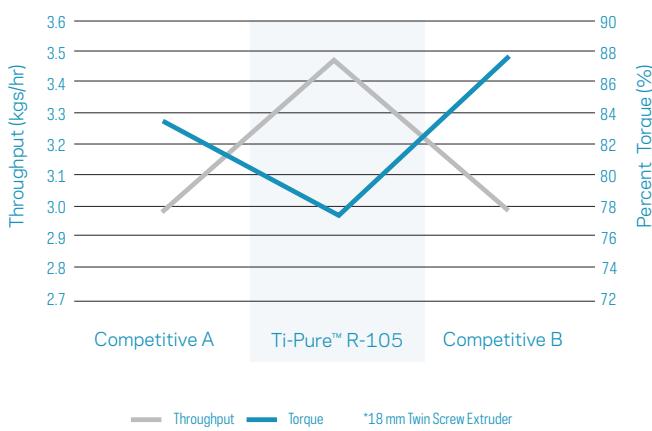
Premier Durable Pigment

### Superior Processing and Dispersion

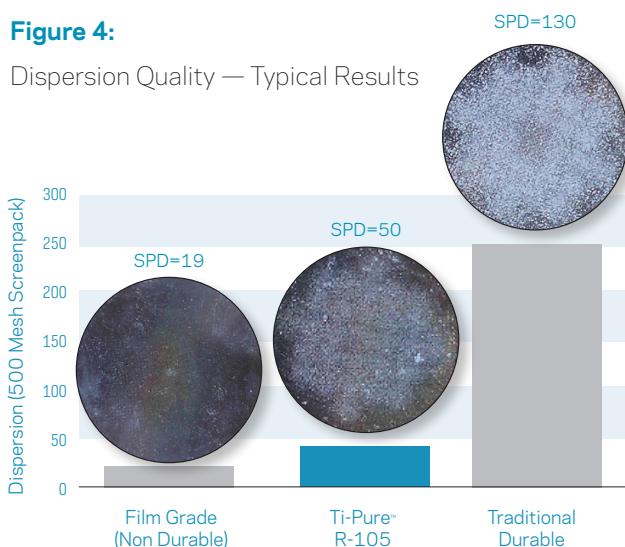
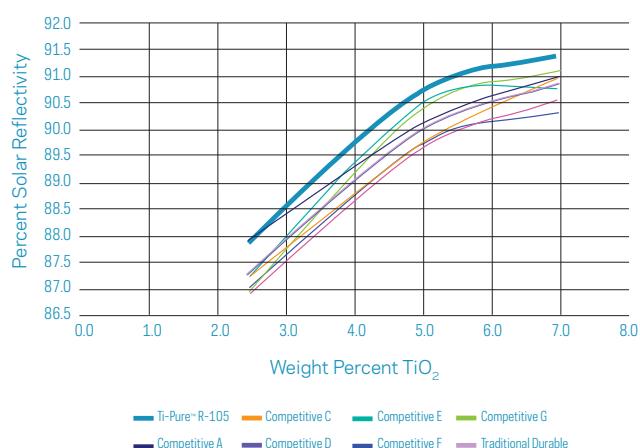
R-105 flows easily and disperses readily into a variety of resins, insuring consistent and reliable high quality products. Its optimized surface chemistry enhances wet-in, delivering maximum process rate and productivity (Figure 3). R-105 is optimized for maximum dispersion in multiple resin systems. Typical results achieved show minimal undispersed particles in twin screw processing when compared to traditional, durable  $\text{TiO}_2$  grades (Figure 4).

### Excellent Solar Reflectivity

R-105 stands out in delivering high solar reflectivity for outstanding performance in your cool roof products (Figure 5).

**Figure 3:** Superior Processing of Durable  $\text{TiO}_2$ \***Figure 4:**

Dispersion Quality — Typical Results

**Figure 5:** Solar Reflectivity versus  $\text{TiO}_2$  Concentration

**Ti-Pure™ R-105 — Request Your Sample Today!**

Ti-Pure™ R-105 titanium dioxide is available in 25 kg polyethylene bags to eliminate fiber contamination from paper bags. It is also available in one metric tonne flexible intermediate bulk containers where larger volumes are processed.



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