



**When Extended Service Life is Vital**

**DuPont™ Ti-Pure® R-105 titanium dioxide**  
UNIQUELY SUITED FOR COOL ROOFING MEMBRANES



*The miracles of science™*

# DuPont™ Ti-Pure® titanium dioxide uniquely suited for cool roofing membranes



**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>**

## 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

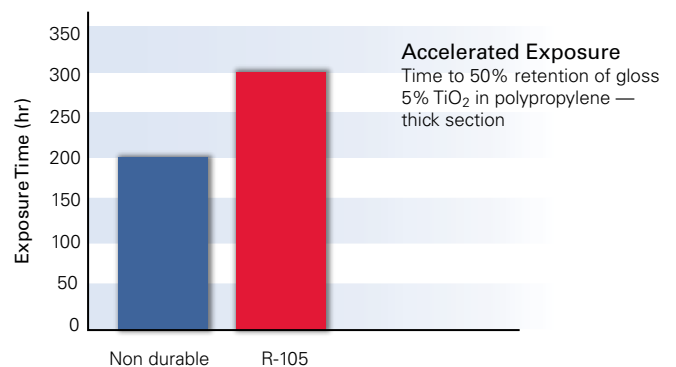
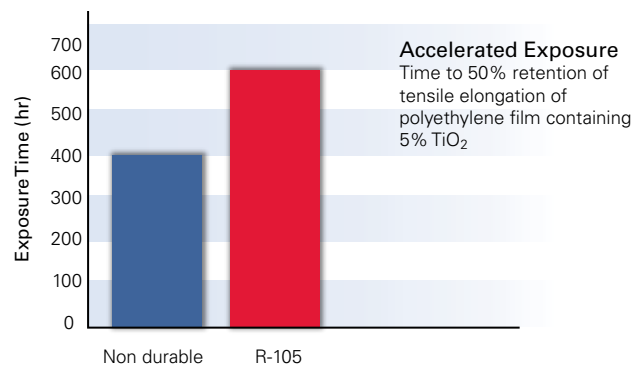
Titanium dioxide can provide maximum protection for extended service life but only DuPont™ Ti-Pure® R-105 has the perfect combination of weatherability, optics, and processability to meet the most exacting requirements.

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

## Maximum weather resistance

UV energy is absorbed and dissipated by the fine sized particles of 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).

**Figure 1: Ti-Pure® R-105 provides maximum weather resistance**



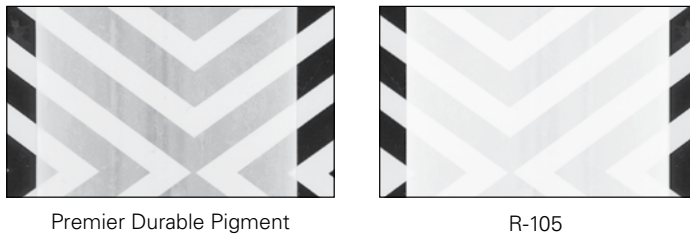
<sup>1</sup> Energy Savings from Cool Roofs, U.S. Environmental Protection Agency



## Brighter color than previously available in a maximum durable TiO<sub>2</sub>

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

Figure 2: Ti-Pure® R-105 provides excellent opacity



## 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 TiO<sub>2</sub> achieves whiteness levels that make other roofs seem dull in comparison.

## 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 TiO<sub>2</sub> grades (Figure 4).

Figure 3: Superior Processing of Durable TiO<sub>2</sub> (18 mm Twin Screw Extruder)

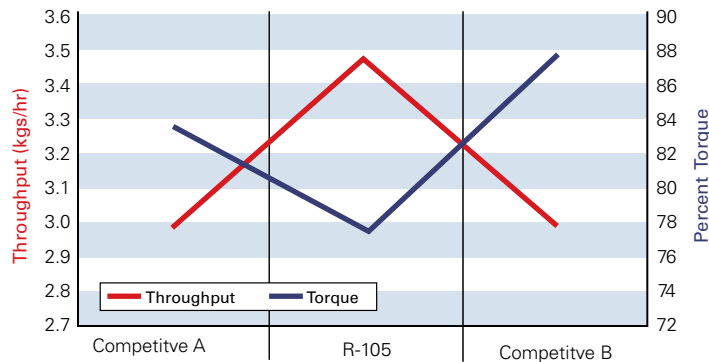
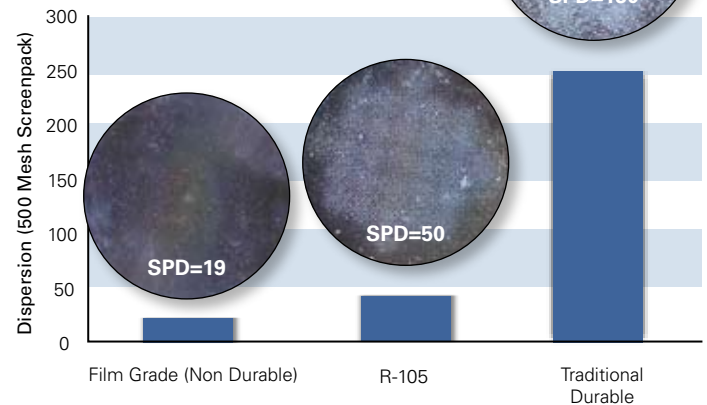


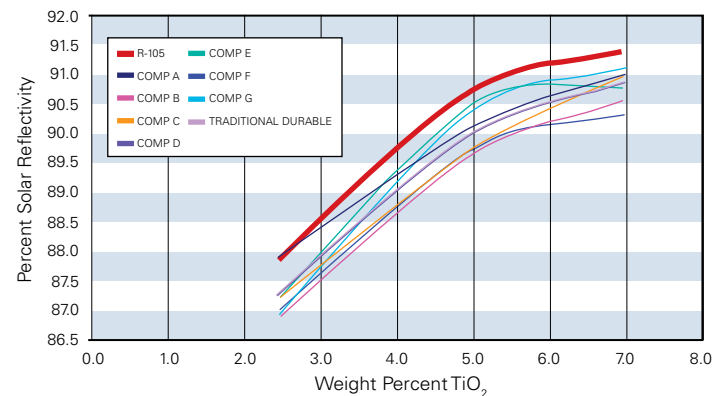
Figure 4: Dispersion Quality—Typical Results



## Excellent Solar Reflectivity

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

Figure 5: Solar Reflectivity versus TiO<sub>2</sub> Concentration





## A winning combination for your PVC roofing membranes...

### DuPont™ Elvaloy® KEE and Ti-Pure® R-105 when extended service life is vital

DuPont™ Elvaloy® KEE is a solid, flexible polymer which has helped provide long lasting flexibility to thermoplastic roofing membranes for more than 25 years. Many manufacturers depend on liquid plasticizers to keep their membranes flexible. These can migrate out, leaving the membrane brittle, subject to tearing and resistant to heat welding. Even under the most demanding conditions, Elvaloy® KEE won't migrate out. As a flexible solid, Elvaloy® KEE remains in your roofing membrane, helping to keep it pliable and heat-weldable for life.

### Request your sample today!

DuPont™ Ti-Pure® R-105 is available in specially packaged 25 kg polyethylene bags and 1 tonne flexible intermediate bulk containers. If you need additional information or would like to request a sample, please visit our website or contact your local representative.



[www.titanium.dupont.com](http://www.titanium.dupont.com)

800.441.9485

302.999.5184

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