

# DuPont™ Ti-Pure® R-960

## TITANIUM DIOXIDE

### Product Description

DuPont™ Ti-Pure® R-960 is a rutile titanium dioxide pigment manufactured by the chloride process. It is excellent for exterior plastic applications that require outstanding chalking resistance and gloss, tint, and physical property retention. The grade is a fine, dry, white powder with typical properties as shown in **Table 1**.

**Table 1**  
**Physical Properties**

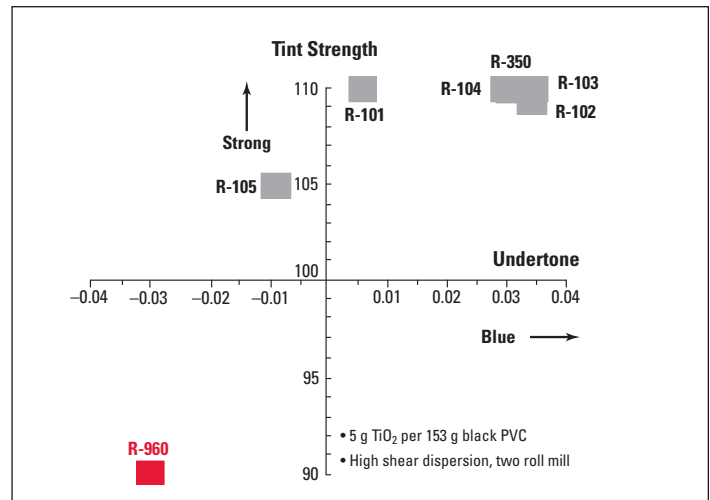
Titanium Dioxide, wt%, min.	89
Alumina, wt%, max.	3.5
Amorphous Silica, wt%, max.	6.5
Organic Treatment	None
Specific Gravity	3.9
pH	7.4
Resistance (aqueous slurry), k ohm-cm, min.	4

### Suggestions for Use

Ti-Pure® R-960 is designed primarily for exterior color durable applications. The surface treatment of R-960 minimizes potential reaction with polymer resins and additives, while continuing to provide the high level of UV radiation protection associated with rutile titanium dioxide. In tinted exterior applications, the lower opacity strength of R-960 actually minimizes the total colorant cost at the desired level of UV protection.

Rutile titanium dioxide is an efficient UV radiation protector for plastic applications because it strongly absorbs radiation below 380 nm. Rutile titanium dioxide, in the presence of water and oxygen, may then act as a photocatalytic agent. Ti-Pure® R-960 is surface coated with silica to minimize this photocatalytic potential. An additional alumina treatment improves dry bulk conveying and dispersibility.

**Figure 1. Optical Properties**

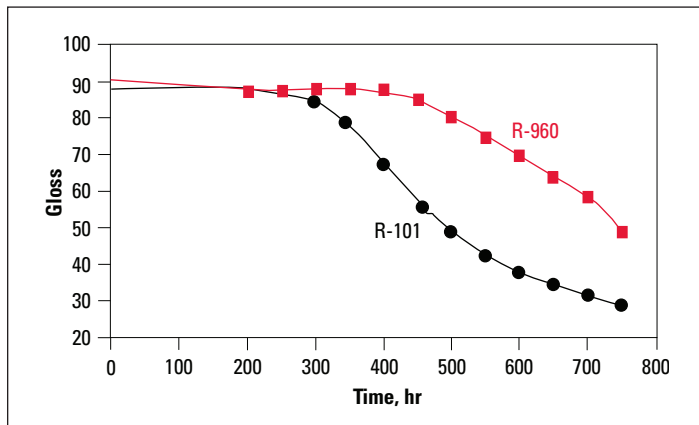


**Table 2**  
**General Properties**

Opacity Strength	Low
Undertone Tint	Cream
Dispersibility in:	
Plasticized Vinyl	Good
Plasticizers	Good
Dry Blending Operations	Good
Melt Compounding	Good
Chalking Resistance	Excellent

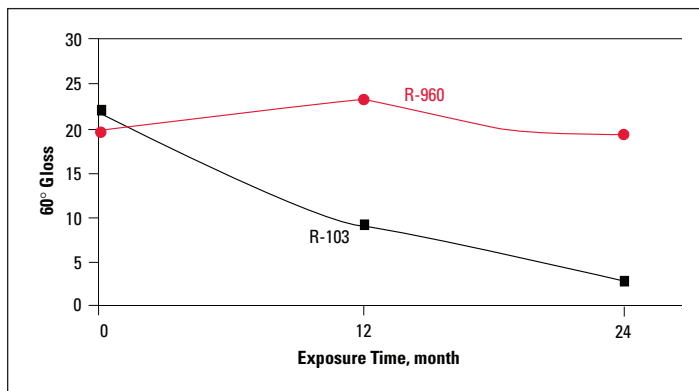
R-960 provides maximum surface retention while still providing efficient UV radiation protection. **Figures 2** and **3** demonstrate the improved gloss retention of R-960 in plastics, compared to grades R-101 and R-103.

**Figure 2. Gloss Retention of Polypropylene, Xenon Exposure**



10 wt% TiO<sub>2</sub>, molded chips

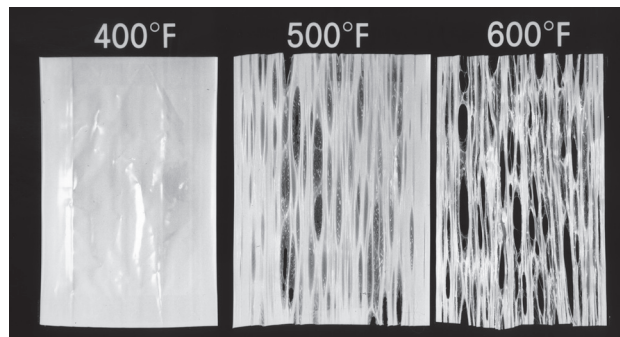
**Figure 3. Gloss Retention of PVC, Florida Exposure 45° South**



4 phr TiO<sub>2</sub> in lead stabilized window compound

The surface treatments used to optimize R-960 outdoor performance are hygroscopic. Moisture absorbed during shipping and storage can affect film integrity at very high TiO<sub>2</sub> loadings and temperatures. As **Figure 4** shows, R-960 must be evaluated carefully for film applications. For applications requiring less moisture, R-105 is recommended.

**Figure 4. Lacing Resistance versus Temperature, Ti-Pure® R-960**



15% TiO<sub>2</sub> in low density polyethylene. Extruded at temperatures shown, 1.5–2 mil thick.

### Shipping Containers

R-960 rutile titanium dioxide is available in a range of packaging to meet your needs:

- 50 lb multi-ply paper bags
- 25 kg multi-ply paper bags
- 1 metric ton (1,000 kg) flexible intermediate bulk containers

For further information about this grade or to request a sample, please see the DuPont Titanium Technologies web site.

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

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