



# Ti-Pure™ R-105 Titanium Dioxide

## Product Information

### Product Description

Ti-Pure™ R-105 is a rutile titanium dioxide pigment manufactured by the chloride process that produces a bright  $\text{TiO}_2$ . Rutile titanium dioxide is the most widely used white pigment. Ti-Pure™ R-105 is specially designed for outdoor plastic applications, combining neutral undertone with moderate opacity strength for easy color formulation work. Silica encapsulation technology minimizes the interaction of the  $\text{TiO}_2$  surface with other materials within the plastic matrix. Ti-Pure™ R-105 also is treated with an organic-based material to provide excellent bulk flow and processing while minimizing the hygroscopic nature of inorganically coated  $\text{TiO}_2$ . Ti-Pure™ R-105 is a fine, dry powder with the following general properties.

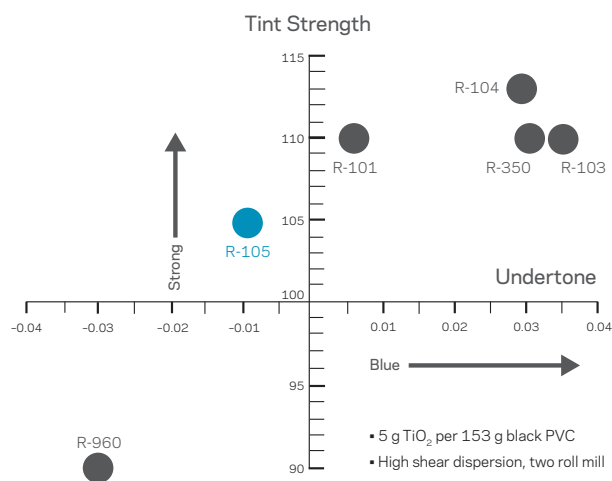
**Table 1.** Physical Properties

Titanium Dioxide, wt%, min.	92
Alumina, wt%, max.	3.2
Silica, wt%, max.	3.5
Carbon, wt%	0.2
Specific Gravity	4.0

### Suggestions for Use

Ti-Pure™ R-105 is recommended for outdoor plastics, especially PVC window profile applications. Ti-Pure™ R-105 utilizes silica encapsulation technology to minimize interaction of the  $\text{TiO}_2$  surface with the surrounding environment. This minimizes “chalking,” crazing, and other surface deterioration frequently seen in outdoor applications. Ti-Pure™ R-105 surface treatment also is optimized for dry flow conveyability and dispersion within plastics.

**Figure 1.** Optical Properties



Ti-Pure™ R-105 optical performance is exceptionally useful for exterior PVC products. Ti-Pure™ R-105 has an excellent combination of brightness, neutral undertone and moderate tinting strength (Figure 1).

### Durability

Ti-Pure™ R-105 technology has optimized  $\text{SiO}_2$  encapsulation for durability. By providing a uniform, complete coating of the  $\text{TiO}_2$  surface, the  $\text{SiO}_2$  layer acts as a barrier to prevent the surface of the  $\text{TiO}_2$  from reacting with the polymer or additives. This is especially important in outdoor applications where the UV energy absorbed by the  $\text{TiO}_2$  particle may induce photocatalytic reactions. Ti-Pure™ R-105 provides excellent gloss retention in outdoor PVC applications (Table 3).

**Table 2.** General Properties

Opacity Strength	Medium
Undertone Tint	Neutral
Weathering Resistance	Excellent
Dispersibility in:	
Plasticized Vinyl	Very Good
Dry Blending Operations	Excellent
Melt Compounding Operations	Very Good

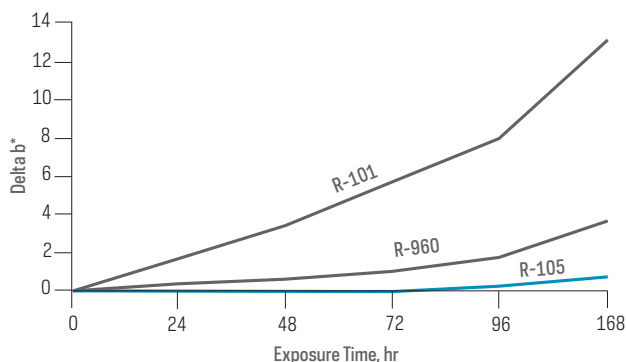
**Table 3.** Gloss Retention—Lead Stabilized PVC Profile

	% Initial Gloss	
	18 months (Florida, USA)	18 months (Bandol, France)
R-103 ("chalking" grade)	14	15
R-105	100	64

**Discoloration Resistance**

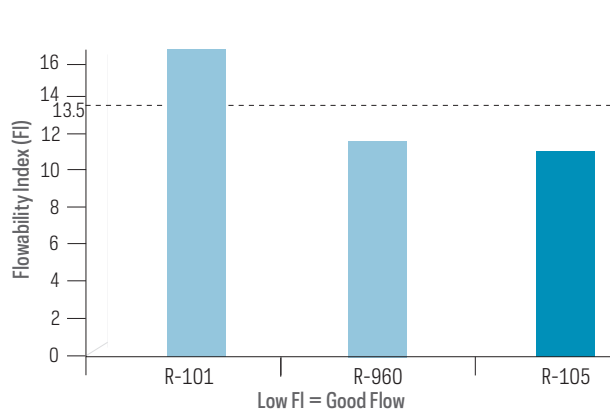
The combination of surface treatments used in Ti-Pure™ R-105 provides excellent resistance to photo-induced discoloration. Ti-Pure™ R-105 minimized lead graying in PVC systems and phenolic yellowing in polyethylene systems (Figure 2).

**Figure 2.** Discoloration Resistance



\*Delta b as a function of UV exposure time. The test was conducted on LDPE with 2.6 wt% TiO<sub>2</sub>. The system was stabilized with 0.3% piperidyl HALS and 0.3% BHT. Exposure was made using an F1518/BLB blacklight illuminating the samples at 25 cm.

**Figure 3.** Bulk Flow Performance



Note: TiO<sub>2</sub> grades with flowability values of 13.5 or less generally perform well in properly designed bulk delivery and silo storage systems.

**Conveyability**

Ti-Pure™ R-105 surface treatment allows for use in bulk delivery and conveying systems. The combination of inorganic and organic surface treatment optimizes R-105's flowability (Figure 3).

**Shipping Containers**

Ti-Pure™ R-105 rutile titanium dioxide is available in two recyclable package types to meet your needs:

- 25 kg polyethylene bags (Paper bag available in Asia Pacific only)
- 1 metric ton (1,000 kg) flexible intermediate bulk containers

Ti-Pure™ R-105 can also be delivered by bulk truck to European customers using silo systems. Please contact your local Ti-Pure™ account manager for details.

For further information about this grade or to request a sample, please see the Ti-Pure™ web site.

**CAUTION:** Do not use or resell Chemours™ materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless agreed to by Seller in a written agreement covering such use. For further information, please contact your Chemours representative. These products may not be directly added to food, pharmaceuticals, cosmetics, or cigarette papers/filters for tobacco products.

For medical emergencies, spills, or other critical situations, call (844) 773-2436 within the United States. For those outside of the United States, call (302) 773-1000. The information set forth herein is furnished free of charge and based on technical data that Chemours believes to be reliable. It is intended for use by persons having technical skill, at their own discretion and risk. The handling precaution information contained herein is given with the understanding that those using it will satisfy themselves that their particular conditions of use present no health or safety hazards. Because conditions of product use are outside our control, Chemours makes no warranties, express or implied, and assumes no liability in connection with any use of this information. As with any material, evaluation of any compound under end-use conditions prior to specification is essential. Nothing herein is to be taken as a license to operate under or a recommendation to infringe any patents.

NO PART OF THIS MATERIAL MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM OR TRANSMITTED IN ANY FORM OR BY ANY MEANS ELECTRONIC, MECHANICAL, PHOTOCOPYING, RECORDING OR OTHERWISE WITHOUT THE PRIOR WRITTEN PERMISSION OF CHEMOURS.

---

For more information, visit [tipure.com](http://tipure.com)

© 2020 The Chemours Company FC, LLC. Ti-Pure™ and any associated logos are trademarks or copyrights of The Chemours Company FC, LLC. Chemours™ and the Chemours Logo are trademarks of The Chemours Company.

C-10425-2 (2/20)