

# DuPont™ Ti-Pure® R-706 Titanium Dioxide

## Grade Description

### Product Description

DuPont™ Ti-Pure® R-706 is a multipurpose rutile titanium dioxide pigment, manufactured by the chloride process, that is designed to deliver both high gloss and excellent durability in coatings. This outstanding combination of end-use performance properties makes it a versatile pigment in solvent and waterborne systems for architectural, industrial, and automotive applications. The properties of R-706 are compared to other Ti-Pure® grades in **Table 1**.

### Key Features

- High gloss
- Super durability
- Excellent dispersibility
- Easy wet-in
- Good hiding
- Blue undertone

### Grade Consolidation

Because of this outstanding combination of performance properties, Ti-Pure® R-706 offers the opportunity for reducing the number of grades that must be stocked, cutting inventory and capital requirements.

### High Gloss

Careful control of the TiO<sub>2</sub> particle size during manufacture of R-706 results in exceptional gloss performance. R-706 has a tight particle size distribution, resulting in less oversized particles that detract from gloss.

### Super Durability

Unique encapsulation of the TiO<sub>2</sub> particle by a continuous coating of silica (SiO<sub>2</sub>) is responsible for the excellent durability of R-706. Preliminary Florida exposure data for R-706 shows excellent gloss retention and chalk resistance in our standard alkyd exposure formula. Further exposure testing in more durable systems is in progress.

### Excellent Dispersibility

The alumina (Al<sub>2</sub>O<sub>3</sub>) surface treatment reduces the contact between TiO<sub>2</sub> particles, resulting in excellent dispersion of R-706 in solventborne systems. To further enhance alkyd dispersion, we apply an organic treatment during manufacture. Likewise, the silica (SiO<sub>2</sub>) surface treatment on the R-706 enhances the waterborne dispersion.

**Table 1**  
**Ti-Pure® Grade Comparison for Coatings**

Property	R-706	R-700	R-900	R-902	R-960
TiO <sub>2</sub> , wt%, min.	93	96	94	91	89
Alumina, wt%	2.5	3.1	4.3	4.3	3.3
Amorphous Silica, wt%	3.0	—	—	1.4	5.5
Specific Gravity	4.0	4.0	4.0	4.0	3.9
Bulking Value, L/kg	0.25	0.25	0.25	0.25	0.255
gal/lb	0.03	0.03	0.03	0.03	0.031
Organic Treatment	Yes	Yes	No	No	No
Color CIE L*	99.4	99.3	99.8	99.8	99.9
Median Particle Size, μm	0.36	0.34	0.41	0.42	0.50
Oil Absorption	13.9	13.5	15.2	16.1	18.7
pH	8.2	7.3	8.1	8.1	7.2
Resistance at 30°C (86°F) (1,000 ohm)	10	14	12	10	6
Carbon Black Undertone	14.5	14.8	12.4	11.7	11.6

Note: All values are typical unless otherwise specified.

## Easy Wet-in

Novel precipitation of the silica and alumina surface treatments result in the low oil absorption properties of R-706 that are responsible for its excellent wet-in. Less power required for R-706 wet-in could result in productivity gains and capacity increases.

## Good Hiding

The low surface treatment levels, 3% amorphous silica and 2.5% alumina, result in a high TiO<sub>2</sub> content for R-706, contributing to good hiding. The mean particle size of R-706 approaches the optimum particle size for scattering efficiency.

## Blue Undertone

Small particle size TiO<sub>2</sub> grades scatter blue light more effectively than larger particle size grades and hence have a bluer undertone. The bluer undertone of R-706 imparts a brighter, cleaner tint.

## Safety Precautions

- Titanium dioxide is classified as a nuisance dust. Follow all local regulations and DuPont recommendations for exposure limits as described in the Material Safety Data Sheet (MSDS). If the recommended exposure limits of TiO<sub>2</sub> are to be exceeded, NIOSH-approved air-purifying respirators with particulate filters should be used.
- As a matter of good industrial hygiene, gloves and safety glasses with side shields or better eye protection should be worn when handling TiO<sub>2</sub>. For more details, refer to the MSDS.

## First Aid

- If large amounts of TiO<sub>2</sub> are inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- In case of eye contact, immediately flush with water for at least 15 min. Call a physician. In case of skin contact, the compound is not likely to be hazardous, but cleaning the skin after use is advised.

## Shipping Containers

Ti-Pure® R-706 is available in 50-lb and 25-kg paper bags and semi-bulk containers (½ and 1 metric ton). Truckload shipments of the dry product are available directly from DuPont. Less-than-truckload volumes are available through one of the authorized DuPont distributors. Call your local sales office for the distributor nearest you.

Water slurries are available in some regions in truckload shipments (15 metric ton) and railcar (67 metric ton).

## Product Storage

The shelf life of DuPont™ Ti-Pure® TiO<sub>2</sub> is indefinite as long as the material is kept from direct contact with moisture.

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