


**Ti-Pure® Titanium Dioxide Pigment - Paint Coatings - Dry Grades**

Version 5.0

Revision Date 2010/12/03

Ref. 15000002071

This SDS adheres to the standards and regulatory requirements of Korea and may not meet the regulatory requirements in other countries.

**1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**

**Product name** : Ti-Pure® Titanium Dioxide Pigment - Paint Coatings - Dry Grades  
: R-706, R-900, R-902+, R-931, R-960, TS-6200

**Recommended use of the chemical and restrictions on use**

Recommended use : Colouring agents, pigments

**Information on the Manufacturer/Supplier/Distributor**

Company : DuPont (Korea) Inc.  
Street address : Ulsan Factory, Ulsan, Nam-ku, 453-4 Yongjam-dong

Responsible Department : No information available.

Telephone : 052-979-4114  
Telefax : 052-979-4041  
Emergency telephone : 052-979-4038  
number

**2. HAZARDS IDENTIFICATION**
**GHS-Classification**

Not a dangerous substance according to GHS.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Pure substance/mixture : Mixture

**Components**

Chemical Name	CAS-No.	Concentration
Titanium dioxide	13463-67-7	80 - 98%
Aluminum hydroxide	21645-51-2	0 - 9%
Silicon dioxide, amorphous	7631-86-9	0 - 11%

**4. FIRST AID MEASURES**

Eye contact : Rinse with plenty of water.

Skin contact : Wash off with soap and water.

Inhalation : Remove person to fresh air. If signs/symptoms continue, get medical attention.

Ingestion : No specific intervention is indicated. Consult a physician if necessary.

Notes for physicians and etc. : No information available.


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**5. FIRE-FIGHTING MEASURES**

Suitable (and inappropriate) extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Specific hazards arising from the chemical : The product itself does not burn.

Special protective equipment for fire-fighters : No information available.

**6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures : Avoid breathing dust.

Environmental precautions : Do not flush into surface water or sanitary sewer system.

Methods and materials for containment and cleaning up : Pick up and arrange disposal without creating dust. After cleaning, flush away traces with water.

**7. HANDLING AND STORAGE**
**Precautions for safe handling**

Technical measures/Precautions : Avoid breathing dust.

Precautions for safe handling : This is a fully oxidized mineral product. As such it cannot support combustion or participate in a dust explosion.

Hygiene measures : Wash hands before breaks and at the end of workday.

**Conditions for safe storage**

Suitable storage conditions : Keep container tightly closed in a dry and well-ventilated place.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**
**Exposure Limits of the chemical substance, biological exposure limits and etc.**

Chemical Name	Occupational Exposure Limits		Regulation
Titanium dioxide	TWA	10 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (2009)


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	TWA	10 mg/m <sup>3</sup>	Industrial Safety and Health Act (06 2008)
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**Engineering measures** : Use sufficient ventilation to keep employee exposure below recommended limits.

**Personal protective equipment**

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Eye protection : Safety glasses with side-shields

Hand protection : Gloves

Skin and body protection : No information available.

**9. PHYSICAL AND CHEMICAL PROPERTIES**
**Appearance**

Physical state : solid

Form : crystalline

Colour : white

**Odour** : odourless

**Odour Threshold** : no data available

**pH** : not applicable

**Melting point/freezing point**

Melting point : 1,843 °C

**Boiling point/boiling range**

Boiling point : 3,000 °C

**Flash point** : does not flash

**Evaporation rate** : not applicable

**Flammability (solid, gas)** : The product is not flammable.

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**Upper and lower flammable or explosive limits**

Upper explosion limit : not applicable

Lower explosion limit : not applicable

**Vapour pressure** : not applicable**Solubility(ies)**

Water solubility : insoluble

Solubility in other solvents : not applicable

**Vapour density** : not applicable**Specific gravity**

Relative density : 3.4 - 4.3

**Partition coefficient:  
n-octanol/water** : not applicable**Autoignition temperature** : not applicable**Decomposition temperature** : not applicable**Viscosity** : no data available**Molecular Weight** : 79.9 g/mol**10. STABILITY AND REACTIVITY**Chemical stability &  
Possibility of hazardous  
reactions : Stable

Conditions to avoid : not applicable

Materials to avoid : None.

Hazardous decomposition  
products : not applicable**11. TOXICOLOGICAL INFORMATION****Information on likely routes of exposure**

Respiratory system: Refer to below subheading

Oral: Refer to below subheading

Eye/Skin contact: Refer to below subheading


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**Health hazard information**

- Acute toxicity : Ti-Pure<sup>®</sup> Titanium Dioxide Pigment - Paint Coatings - Dry Grades:  
 Oral: ALD/rat : > 24,000 mg/kg  
 Inhalation: ALC/4 h/rat : > 6.82 mg/l  
 Dermal: ALD/rabbit : > 10,000 mg/kg
- Skin corrosion/irritation : Ti-Pure<sup>®</sup> Titanium Dioxide Pigment - Paint Coatings - Dry Grades:  
 slight irritation
- Serious eye damage/eye irritation : Ti-Pure<sup>®</sup> Titanium Dioxide Pigment - Paint Coatings - Dry Grades:  
 slight irritation
- Respiratory sensitization / Skin sensitization : Ti-Pure<sup>®</sup> Titanium Dioxide Pigment - Paint Coatings - Dry Grades:  
 Did not cause sensitization on laboratory animals.
- Germ cell mutagenicity : Ti-Pure<sup>®</sup> Titanium Dioxide Pigment - Paint Coatings - Dry Grades:  
 Not mutagenic in Ames Test.
- Carcinogenicity : Ti-Pure<sup>®</sup> Titanium Dioxide Pigment - Paint Coatings - Dry Grades:  
 In lifetime inhalation studies rats were exposed for 2 years to respectively 10, 50 and 250 mg/m<sup>3</sup> of respirable TiO<sub>2</sub>. Slight lung fibrosis was observed at 50 and 250 mg/m<sup>3</sup> levels. Microscopic lung tumours were also observed in 13 percent of the rats exposed to 250 mg/m<sup>3</sup>, an exposure level that caused lung overloading and impairment of rat lungs clearance mechanisms.  
 In further studies, these tumours were found to occur only under particle overload conditions in a uniquely sensitive species, the rat, and have little or no relevance for humans. The pulmonary inflammatory response to TiO<sub>2</sub> particles exposure was also found to be much more severe in rats than in other rodent species.  
 In February 2006, IARC has re-evaluated Titanium dioxide as pertaining to Group 2B: "possibly carcinogenic to humans", based upon inadequate evidence in humans and sufficient evidence in experimental animals for the carcinogenicity of titanium dioxide. IARC evaluation guidelines consider the generation of tumours, in 2 different studies within the same animal species, to be adequate criteria for an assessment of sufficient evidence.  
 The conclusions of several epidemiology studies on more than 20000 TiO<sub>2</sub> industry workers in Europe and the USA did not suggest a carcinogenic effect of TiO<sub>2</sub> dust on the human lung. Mortality from other chronic diseases, including other respiratory diseases, was also not associated with exposure to TiO<sub>2</sub> dust. Based upon all available study results, DuPont scientists conclude that titanium dioxide will not cause lung cancer or chronic respiratory diseases in humans at concentrations experienced in the workplace.


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- Reproductive toxicity : no data available
- Specific Target Organs : Refer to acute toxicity and/or repeated dose toxicity data for more information  
Toxicity (Single/Repeated) on target organs if applicable.
- Aspiration toxicity : not applicable

**12. ECOLOGICAL INFORMATION**
**Toxicity on aquatic terrestrial organisms**

- Toxicity to fish : Ti-Pure® Titanium Dioxide Pigment - Paint Coatings - Dry Grades:  
LC50/96 h/Fathead minnow: > 1,000 mg/l
- Persistence and degradability : Ti-Pure® Titanium Dioxide Pigment - Paint Coatings - Dry Grades:  
Pigments are practically not biodegradable.
- Bioaccumulation : Ti-Pure® Titanium Dioxide Pigment - Paint Coatings - Dry Grades:  
Does not bioaccumulate.
- Mobility in soil : no data available
- Other adverse effects : Ti-Pure® Titanium Dioxide Pigment - Paint Coatings - Dry Grades:  
not applicable

**13. DISPOSAL CONSIDERATIONS**

- Waste disposal methods : Dispose of in accordance with local regulations.
- Precautions for Disposal : no data available

**14. TRANSPORT INFORMATION**

Not classified as dangerous in the meaning of transport regulations.

**15. REGULATORY INFORMATION**
**Industrial Safety and Health Act**

Not a dangerous substance according to GHS.

**Toxic Chemicals Control Law**

- Toxic Release Inventory : Aluminum hydroxide >= 1 %  
Chemicals

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**Dangerous Substance Safety Management Act**

not regulated

**Waste Management Law**

Dispose of in accordance with local regulations.

**Regulations in other countries**

No information available.

**16. OTHER INFORMATION**

Sources of key data used to compile the Safety Data Sheet : not applicable

Issuing date : 2005/09/25

Number of revision times and the date of preparation of the latest revision : 2010/12/03  
Version 5.0

Other : For specific information on composition and properties, see DuPont Ti-Pure<sup>®</sup> Titanium Dioxide Pigment literature. Please see [www2.dupont.com/Titanium\\_Technologies/en\\_US/](http://www2.dupont.com/Titanium_Technologies/en_US/) for the latest version of this MSDS.  
Ti-Pure<sup>®</sup> products may not be directly added to food or pharmaceuticals and are not recommended for use in medical devices or cosmetics., Do not use DuPont materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless the material has been provided from DuPont under a written contract that is consistent with DuPont policy regarding medical applications and expressly acknowledges the contemplated use. For further information, please contact your DuPont representative. You may also request a copy of the DuPont POLICY Regarding Medical Applications H-50103-3 and DuPont CAUTION Regarding Medical Applications H-50102-3.

Significant change from previous version is denoted with a double bar.

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