SAFETY DATA SHEET

Chemours

Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades

Version 29.0
Revision Date 05.11.2015 Document no. 150000002071

This SDS adheres to the standards and regulatory requirements of Singapore 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, TS-6300

Recommended use of the chemical and restriction on use
Recommended use : Colouring agent, Pigment, For industrial use only.

Manufacturer, importer, supplier
Company : THE CHEMOURS COMPANY SINGAPORE PTE. LTD.
Street address : 1 HarbourFront Place, #16-01 HarbourFront Tower One
098633
Singapore
Telephone : 65-6715-8688
Telefax : 65-6715-8697

Emergency telephone number : 65 429 595

2. HAZARDS IDENTIFICATION

Product hazard classification
Not a hazardous substance or mixture.

Endpoints which are not classified, cannot be classified or are not applicable are not shown.

Other hazards
Contact with dust can cause mechanical irritation or drying of the skin. Dust contact with the eyes can lead to mechanical irritation. May cause nose, throat, and lung irritation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : 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

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

Skin contact : Wash off with soap and water.

Eye contact : Rinse with plenty of water.

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

Most important symptoms/effects, acute and delayed	:	irritant effects
Protection of first-aiders	:	No special precautions are necessary for first aid responders. Not applicable
Notes to physician	:	No specific intervention is indicated. No special protective equipment required.

5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	None known.
Specific hazards	:	Not a fire or explosion hazard.
Special protective equipment for firefighters	:	No special protective equipment required.
Specific extinguishing methods	:	Not applicable
Further information	:	The product itself does not burn.

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.
Additional advice	:	For disposal considerations see section 13.

7. HANDLING AND STORAGE

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.

Storage

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

Do not allow product to become wet during storage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Chemical Name	Occupational Exposure Limits	Regulation
Titanium dioxide		
TWA	10 mg/m3	SG PEL (2006)
TWA	10 mg/m3	US ACGIH (2011)

Engineering measures : Use sufficient ventilation to keep employee exposure below recommended limits.

Biological occupational exposure limits : Not applicable

Personal protective equipment

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

Hand protection : Gloves

Eye protection : Safety glasses with side-shields

Skin protection : No personal body protection normally required.

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

Protective measures : No other specific measures identified.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (Physical state, form, colour, etc.)
Physical state : solid
Form : crystalline
Colour : white

Odour : odourless

Odour Threshold : Not applicable

pH : Not applicable

Melting point/freezing point
Melting point : 1,843 °C

Initial boiling point and boiling range
Boiling point : 3,000 °C

Flash point : does not flash

Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	The product is not flammable.
Upper/lower flammability or explosive limits		
Upper explosion limit	:	Not applicable
Lower explosion limit	:	Not applicable
Vapour pressure	:	Not applicable
Vapour density	:	Not applicable
Density		
Density	:	Not applicable
Specific gravity (Relative density)	:	3.4 - 4.3
Bulk density	:	Not applicable
Solubility(ies)		
Water solubility	:	insoluble
Solubility in other solvents	:	Not applicable
Partition coefficient: n-octanol/water	:	Not applicable
Auto-ignition temperature		
Auto-ignition temperature	:	Not applicable
Ignition temperature	:	Not applicable
Decomposition temperature	:	Not applicable
Viscosity		
Viscosity, kinematic	:	Not applicable
Viscosity, dynamic	:	Not applicable
Molecular weight	:	Not applicable

10. STABILITY AND REACTIVITY

Reactivity	:	None reasonably foreseeable.
Chemical stability	:	Stable
Possibility of hazardous reactions	:	None known.
Conditions to avoid	:	None known.
Materials to avoid	:	None known.
Hazardous decomposition products	:	Not applicable

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral

Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades	:	LD50/Rat: > 5,000 mg/kg

Inhalation

Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades	:	LC50/4 h/Rat(dust/mist): > 6.82 mg/l The substance or mixture has no acute inhalation toxicity

Dermal

Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades	:	LD50/Rabbit: > 10,000 mg/kg

Skin corrosion/irritation

Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades	:	Species: Rabbit Result: No skin irritation Classification: Not classified as irritant Contact with dust can cause mechanical irritation or drying of the skin.

Serious eye damage/eye irritation

Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades	:	Species: Rabbit Result: No eye irritation Classification: Not classified as irritant Dust contact with the eyes can lead to mechanical irritation.

Respiratory or skin sensitisation

Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades	:	Local lymph node test Species: Mouse Result: Did not cause sensitisation on laboratory animals. Buehler Test Species: Guinea pig Result: Did not cause sensitisation on laboratory animals.

Germ cell mutagenicity

Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades	:	Did not cause genetic damage in animals. Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Carcinogenicity

Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades	:	In lifetime inhalation studies rats were exposed for 2 years to respectively 10, 50 and 250 mg/m3 of respirable TiO2. Slight lung fibrosis was observed at 50 and 250 mg/m3 levels. Microscopic lung tumours were also observed in 13 percent of the rats exposed to 250 mg/m3, 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 TiO2 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 TiO2 industry workers in Europe and the USA did not suggest a carcinogenic effect of TiO2 dust on the human lung. Mortality from other chronic diseases, including other respiratory diseases, was also not associated with exposure to TiO2 dust. Based upon all available study results, Chemours scientists conclude that titanium dioxide will not cause lung cancer or chronic respiratory diseases in humans at concentrations experienced in the workplace.

Reproductive toxicity

Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades	:	Reproductive toxicity: Animal testing showed no reproductive toxicity. Teratogenicity: Animal testing showed no developmental toxicity.

Specific Target Organ Toxicity

Specific target organ toxicity - single exposure

Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades	:	Refer to acute toxicity and/or repeated dose toxicity data for more information on target organs if applicable.

Aspiration hazard

Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades	:	Not applicable

Other

Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades	:	Repeated dose toxicity: Oral/Rat No toxicologically significant effects were found. Inhalation/Rat No toxicologically significant effects were found.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Acute and prolonged toxicity to fish
Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades : LC50/96 h/Pimephales promelas (fathead minnow): > 1,000 mg/l

Toxicity to aquatic plants
Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades : EC50/72 h/Pseudokirchneriella subcapitata (green algae): > 100 mg/l

Acute toxicity to aquatic invertebrates
Ti-Pure™ Titanium Dioxide Pigment - Paint Coatings - Dry Grades : EC50/48 h/Daphnia magna (Water flea): > 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 information 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.

Contaminated packaging : Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

15. REGULATORY INFORMATION

not regulated

16. OTHER INFORMATION

References
SDS Number: 150000002071

Revision Date/Version

Date of first preparation	:	29.03.2006
Revision Date	:	05.11.2015
Version	:	29.0

For specific information on composition and properties, see Ti-Pure™ Titanium Dioxide Pigment literature. Please see www.Chemours.com/Titanium_Technologies/en_US/ for the latest version of this MSDS.

These products may not be directly added to food or pharmaceuticals and are not recommended for use in medical devices or cosmetics.

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.

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

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The above information relates only to the specific material(s) designated herein and may not be valid for such material(s) used in combination with any other materials or in any process or if the material is altered or processed, unless specified in the text.