

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Material name	Tronox® Titanium Dioxide, All Grades
Recommended use	White pigment for applications in coatings, inks, fibers, plastics, paper, glass, vitreous enamels, and ceramics.
Version No.	03
Revision date	12-January-2011
Synonym(s)	CR-470, CR-800, CR-800E, CR-813, CR-822, CR-826, CR-828, CR-834, CR-880, 8300, 8400, 8670, 8700, 820, 8120.
Product code	77891, Pigment White #6
Manufacturer	
Company name	Tronox Western Australia Pty. Ltd. P.O. Box 305 Kwinana, Western Australia 6966
Telephone	+61-8-9411-1460
Emergency	1-760-476-3960 (Access code 333318)

2. HAZARDS IDENTIFICATION

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS No.	Percent
Titanium dioxide	13463-67-7	86 - 97
Silicon dioxide	7631-86-9	0 - 15
Aluminium hydroxide	21645-51-2	0 - 10
Zirconium dioxide	1314-23-4	0 - 2

Composition comments Components listed make up an inseparable chemically reacted pigment.

4. FIRST-AID MEASURES

Inhalation	Move to fresh air. Get medical attention if any discomfort continues.
Skin contact	Flush skin thoroughly with water. Get medical attention if irritation develops or persists.
Eye contact	Immediately rinse eyes with water. Remove any contact lenses, and continue flushing eyes with running water for at least 15 minutes. Hold eyelids apart to ensure rinsing of the entire surface of the eye and lids with water. Get immediate medical attention.
Ingestion	Rinse mouth thoroughly. Do not induce vomiting without advice from poison control centre. Never give anything by mouth to an unconscious person. If ingestion of a large amount does occur, call a poison control centre immediately.
General advice	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.
Notes to physician	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	Use fire-extinguishing media appropriate for surrounding materials.
Extinguishing media which must not be used for safety reasons	No restrictions known.
Unusual fire & explosion hazards	This product is not flammable.
Specific hazards	None known.
Special protective equipment for fire-fighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace.
Specific methods	In the event of fire, cool tanks with water spray. Move container from fire area if it can be done without risk.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Avoid inhalation of dust and contact with skin and eyes. Wear appropriate protective equipment and clothing during clean-up. Local authorities should be advised if significant spillages cannot be contained.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not contaminate water.
Containment procedures	Collect and dispose of spillage as indicated in Section 13. Prevent entry into waterways, sewer, basements or confined areas.
Methods for cleaning up	Avoid dust formation. Collect powder using special dust vacuum cleaner with particle filter or carefully sweep into closed container. For waste disposal, see Section 13.

7. HANDLING AND STORAGE

Handling	Avoid inhalation of dust and contact with skin and eyes. Use only with adequate ventilation. Use Personal Protective Equipment recommended in section 8 of the MSDS. Wash thoroughly after handling. Observe good industrial hygiene practices.
Storage	Titanium dioxide is a stable chemical compound that does not decompose during storage but can pick up moisture from the environment if not stored properly effecting product performance. Store indoors in a dry place, away from rain and wet floors. Use on a first-in first-out basis from receipt of the shipment.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Aluminium hydroxide (21645-51-2)	TWA	1 mg/m ³	Respirable fraction.
Titanium dioxide (13463-67-7)	TWA	10 mg/m ³	
Zirconium dioxide (1314-23-4)	STEL	10 mg/m ³	
	TWA	5 mg/m ³	

Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment)

Components	Type	Value	Form
Silicon dioxide (7631-86-9)	TWA	2 mg/m ³	Respirable fraction.
Titanium dioxide (13463-67-7)	TWA	10 mg/m ³	Inspirable dust.
Zirconium dioxide (1314-23-4)	STEL	10 mg/m ³	
	TWA	5 mg/m ³	

Engineering measures	Ventilate as needed to control airborne dust. Provide adequate ventilation. Observe Occupational Exposure Limits and minimise the risk of inhalation of dust.
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Personal protective equipment

Respiratory protection	In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter. Seek advice from local supervisor.
Hand protection	Wear suitable gloves. Suitable gloves can be recommended by the glove supplier.
Eye protection	Wear dust-resistant safety goggles where there is danger of eye contact.
Skin and body protection	Wear appropriate clothing to prevent repeated or prolonged skin contact.

Environmental exposure controls	Contain spills and prevent releases and observe national regulations on emissions.
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Hygiene measures	Do not breathe dust. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
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Control parameters	Follow standard monitoring procedures.
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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White powder.
Physical state	Solid.
Form	Powder.
Colour	White.
Odour	Odourless.

pH	5 - 8.5 (10% slurry)
Boiling point	2500 - 3000 °C (4532 - 5432 °F)
Melting point/freezing point	1830 - 1850 °C (3326 - 3362 °F)
Solubility (water)	Insoluble
Specific gravity	4.1 Approx. (@ 20°C)
Bulk density	600 kg/m ³ Approx. (@ 20°C)

10. STABILITY AND REACTIVITY

Chemical stability	Material is stable under normal conditions.
Conditions to avoid	Avoid dust formation.
Hazardous decomposition products	No hazardous decomposition products are known.
Hazardous polymerisation	Hazardous polymerisation does not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological data

Components	Test results
Aluminium hydroxide (21645-51-2)	Acute Oral LD50 Rat: > 5000 mg/kg
Acute toxicity	May cause discomfort if swallowed.
Routes of exposure	Inhalation. Eye contact. Skin contact.
Chronic toxicity	Frequent inhalation of dust over a long period of time may increase the risk of developing chronic lung diseases and skin irritation.
Sensitisation	Not a skin sensitiser.
Carcinogenicity	Suspected of causing cancer. IARC has classified TiO ₂ as 2B Possibly carcinogenic to humans. However, the only evidence of carcinogenicity is in rats exposed to very high concentrations. Two major epidemiology studies among titanium dioxide workers in the US and in EUROPE could not demonstrate an elevated lung cancer risk. Boffetta et. al. Mortality among workers employed in the titanium dioxide production industry in Europe. <i>Cancer Causes Control</i> . 2004 Sep;15(7):697-706. Fryzek et. al. A cohort mortality study among titanium dioxide manufacturing workers in the United States. <i>J Occup Environ Med</i> . 2003 Apr;45(4):400-9. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. IARC Monographs, Volume 93 (Summary)
IARC Monographs. Overall Evaluation of Carcinogenicity	
Silicon dioxide (CAS 7631-86-9)	3 Not classifiable as to carcinogenicity to humans.
Titanium dioxide (CAS 13463-67-7)	2B Possibly carcinogenic to humans.
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Teratogenicity	None known.
Reproductivity	None known.
Epidemiology	None known.
Neurotoxicity	None known.
Local effects	Dusts may irritate the respiratory tract, skin and eyes.
Symptoms and target organs	Dusts or powder may irritate the respiratory tract, skin and eyes. Coughing. Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases.
Further information	No other specific acute or chronic health impact noted.

12. ECOLOGICAL INFORMATION

Ecotoxicity	The product is not expected to be hazardous to the environment.
Persistence and degradability	The degradability of the product has not been stated.
Mobility	The product is insoluble in water and will sediment in water systems.
Bioaccumulation	Bioaccumulation is unlikely to be significant because of the low water solubility of this product.
Environmental effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

13. DISPOSAL CONSIDERATIONS

Disposal instructions	Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal. Dispose of this material and its container to hazardous or special waste collection point. Do not allow this material to drain into sewers/water supplies.
Waste from residues / unused products	Dispose of in accordance with local regulations.
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. TRANSPORT INFORMATION

ADG

The product is not covered by international regulation on the transport of dangerous goods.

IATA

The product is not covered by international regulation on the transport of dangerous goods.

IMDG

The product is not covered by international regulation on the transport of dangerous goods.

15. REGULATORY INFORMATION

National regulations	This Material Safety Data Sheet was prepared in accordance with the Australia National Code of Practice for the Preparation of Material Safety Data Sheets (NOHSC: 2011.) No poison schedule number allocated.
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Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. OTHER INFORMATION

Recommended use	White pigment for applications in coatings, inks, fibers, plastics, paper, glass, vitreous enamels, and ceramics.
Further information	Nanoparticle Statement- The average primary particle size of this product is larger than the nanoparticle size range as described by ISO/TC 229 and should not be considered as manufactured nanoparticles or nanomaterials. As with other particulate materials there will be a distribution of particle sizes around the average and a small portion of these may be covered by the nanoparticle definition. In this product, the primary particle size is in the 200-300 nm range. However, the primary particle size does not represent the size of particles in this product as supplied since these tend to aggregate or agglomerate into larger particles.
Bibliography	ACGIH HSDB® - Hazardous Substances Data Bank IARC Monographs. Overall Evaluation of Carcinogenicity
Disclaimer	The information in the sheet was written based on the best knowledge and experience currently available.
Issue date	12-January-2011

This data sheet contains changes from the previous version in section(s):

COMPOSITION/INFORMATION ON INGREDIENTS: Component information
FIRE-FIGHTING MEASURES: Special protective equipment for fire-fighters
HANDLING AND STORAGE: Storage
EXPOSURE CONTROLS/PERSONAL PROTECTION: Hand protection
EXPOSURE CONTROLS/PERSONAL PROTECTION: Control parameters
EXPOSURE CONTROLS/PERSONAL PROTECTION: Environmental exposure controls
STABILITY AND REACTIVITY: Hazardous decomposition products
TOXICOLOGICAL INFORMATION: Carcinogenicity
TOXICOLOGICAL INFORMATION: Teratogenicity
TOXICOLOGICAL INFORMATION: Acute toxicity
TOXICOLOGICAL INFORMATION: Epidemiology
TOXICOLOGICAL INFORMATION: Neurotoxicity
TOXICOLOGICAL INFORMATION: Reproductivity
TOXICOLOGICAL INFORMATION: Symptoms and target organs
OTHER INFORMATION: Further information