

1. Chemical and company identification

Name of chemical (Product name) **Tronox® Titanium Dioxide, All Grades**

Manufacturer/Supplier

Company name Tronox LLC
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 Oklahoma City, OK 73134

Country USA

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Emergency telephone number +1-760-476-3960 (Access code 333318)

Product code 77891, Pigment White #6

Recommended use of the chemical and restrictions on use

Intended use White pigment for applications in coatings, inks, fibers, plastics, paper.

Reference number B-5017

2. Hazards identification

GHS classification

The product is not classified according to GHS.

GHS label elements

Symbols None.

Signal words None.

Hazard statement The product does not meet the criteria for classification.

Precautionary statements

Prevention Observe good industrial hygiene practices.

Response Flush skin thoroughly with water.

Storage Store in a sealed container.

Disposal Dispose of waste and residues in accordance with local authority requirements.

3. Composition/information on ingredients

Substance or mixture Mixture

Components	CAS Number	Gazette notification		Concentration (%)
		ENCS No.	ISHL No.	
Titanium dioxide	13463-67-7	(1)-558	(1)-558	80 - 97
Silicon dioxide	7631-86-9	(1)-548	(1)-548	0 - 15
Aluminium hydroxide	21645-51-2	(1)-17	(1)-17	0 - 10
Zirconium dioxide	1314-23-4	(1)-563	(1)-563	0 - 2

Synonym(s) CR-470, CR-800E, CR-813, CR-822, CR-826, CR-828, CR-834, 8120, CR-880, 8300, 8400, 8410, 8670, 8800, 8870, 8140, 41J.

Chemical formula O₂-Ti (13463-67-7), O₂Si (7631-86-9), Al-H₃-O₃ (21645-51-2), O₂Zr (1314-23-4)

Composition comments Components listed make up an inseparable chemically reacted pigment. Silicon dioxide is present in finished product as amorphous silica.

4. First aid measures

If inhaled Move to fresh air. Get medical attention if any discomfort continues.

IF ON SKIN Flush skin thoroughly with water. Get medical attention if irritation develops or persists.

IF IN EYES Do not rub eyes. 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.

If swallowed Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Never give anything by mouth to an unconscious person. If ingestion of a large amount does occur, call a poison control centre immediately.

Most important symptoms/effects, acute and delayed	Dusts 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.
Protection of first-aid responders	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

Extinguishing media	Use fire-extinguishing media appropriate for surrounding materials.
Extinguishing media to avoid	No restrictions known.
Specific hazards	None known.
Protection of fire-fighters	Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
General fire hazards	The product is not flammable.

6. Accidental release measures

Personal precautions, protective equipment and emergency measures	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.
Methods or materials for containment and cleaning up	Avoid dust formation. Collect powder using special dust vacuum cleaner with particle filter or carefully sweep into closed container. Prevent entry into waterways, sewer, basements or confined areas. For waste disposal, see section 13 of the SDS.
Prevention of secondary hazards	Avoid release to the environment.

7. Handling and storage

Handling

Technical measures (e.g. Local and general ventilation)	Avoid dust formation. Provide adequate ventilation.
Safe handling advice	Avoid inhalation of dust and contact with skin and eyes. Use personal protection recommended in Section 8 of the SDS. Wash thoroughly after handling.
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.

Storage

Safe storage conditions	Store in a well-ventilated place. 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.
Safe packaging materials	Keep in original container.

8. Exposure controls/personal protection

Occupational exposure limits

Japan. OELs - JSOH (Japan Society of Occupational Health: Recommendation of Occupational Exposure Limits)

Components	Type	Value	Form
Titanium dioxide (CAS 13463-67-7)	TWA	4 mg/m ³	Total dust.
		1 mg/m ³	Respirable dust.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Aluminium hydroxide (CAS 21645-51-2)	TWA	1 mg/m ³	Respirable fraction.
Titanium dioxide (CAS 13463-67-7)	TWA	10 mg/m ³	
Zirconium dioxide (CAS 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 risk of eye contact.
Skin and body protection	Wear appropriate clothing to prevent repeated or prolonged skin contact.

9. Physical and chemical properties

Appearance	White powder.
Physical state	Solid.
Form	Powder.
Colour	White.
Odour	Odourless.
Odour threshold	Not applicable.
pH	Not applicable.
Melting point/freezing point	1830 - 1850 °C (3326 - 3362 °F)
Boiling point, initial boiling point, and boiling range	2500 - 3000 °C (4532 - 5432 °F)
Flash point	Not available.
Combustion characteristics (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit – upper (%)	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Specific gravity	4.1 Approx. (@ 20°C)
Solubility(ies)	
Solubility (water)	Insoluble in water.
Partition coefficient (n-octanol/water)	Not applicable.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity (Coefficient of viscosity)	Not applicable.
Other information	
Bulk density	600 kg/m ³ Approx. (@ 20°C)
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerisation does not occur.
Conditions to avoid	Avoid dust formation.
Incompatible materials	None known.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Acute toxicity	May cause discomfort if swallowed.
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Components	Species	Test results
Aluminium hydroxide (CAS 21645-51-2)		
Acute		
<i>Oral</i>		
LD50	Rat	> 5000 mg/kg
Skin corrosion/irritation	Dust may irritate skin. Skin irritation occurs on contact with moist or wet skin.	
Serious eye damage/eye irritation	Dust may irritate the eyes. Dust in the eyes: Exposed may experience eye tearing, redness, and discomfort.	
Respiratory or skin sensitisation		
Respiratory sensitisation	None known.	
Skin 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)	
ACGIH Carcinogens		
Aluminium hydroxide (CAS 21645-51-2)	A4 Not classifiable as a human carcinogen.	
Titanium dioxide (CAS 13463-67-7)	A4 Not classifiable as a human carcinogen.	
Zirconium dioxide (CAS 1314-23-4)	A4 Not classifiable as a human carcinogen.	
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.	
Reproductive toxicity	None known.	
Specific target organ toxicity - single exposure	None known.	
Specific target organ toxicity - repeated exposure	None known.	
Aspiration hazard	Not classified.	
Other 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.
Bioaccumulation	Bioaccumulation is unlikely to be significant because of the low water solubility of this product.
Mobility in soil	Not available.
Hazardous to the ozone layer	Not available.
Other hazardous effects	Not established.

13. Disposal considerations

Dispose of in accordance with local regulations.	
Residual waste	Dispose of in accordance with local regulations.
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied.
Local disposal regulations	Do not allow this material to drain into sewers/water supplies.

14. Transport information

IATA	Not regulated as dangerous goods.
IMDG	Not regulated as dangerous goods.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

15. Regulatory information

Industrial Safety and Health Act

Notifiable substances

Silica	5.0 - 15
TITANIUM DIOXIDE	87 - 97
Zirconium compounds	0 - 2.0

Labeling substances

Not regulated.

Poisonous and Deleterious Substances Control Act

Specified poisonous substances

Not regulated.

Poisonous substances

Not regulated.

Deleterious substances

Not regulated.

Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.

Class I specified chemical substances

Not regulated.

Class II specified chemical substances

Not regulated.

Monitoring chemical substances

Not regulated.

Priority Assessment Chemical Substances (PACs)

Not regulated.

Reporting Exempted Substances

Silicon dioxide
TITANIUM DIOXIDE

Law concerning Pollutant Release and Transfer Register

Specified class 1 substances (substance name, ordinance number and content)

Not regulated.

Class 1 substances (substance name, ordinance number and content)

Not regulated.

Class 2 substances (substance name, ordinance number and content)

Not regulated.

Fire Service Act

Not dangerous goods under Fire Service Law

Ship Safety Law, Dangerous Goods Marine Transport and Storage Rule

Not regulated.

Air Law, Enforcement Rule

Not regulated.

Explosives Control Act

Not regulated.

Act on Prevention of Marine Pollution and Maritime Disaster

TITANIUMOXIDE
MICROSILICA SLURY

Category: Z

Category: Other Substances

16. Other information

Bibliography

HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity

The information in the sheet was written based on the best knowledge and experience currently available.

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.

This SDS contains revisions in the following section(s): This safety data sheet contains revisions in the following section(s): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16