



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name Tronox® Titanium Dioxide Slurry CR-813S, CR-826S, 8101
Version # 02
Revision date 12-07-2009
CAS # Mixture
Product Code 77891, Pigment White #6 slurry
MSDS Number B-5033
Product use White pigment slurry for applications in coatings
Manufacturer information Tronox LLC
3301 NW 150th Street
Oklahoma City, OK 73134 US
ChemProdSteward@tronox.com
1-405-775-5000 (24-hours)
Emergency CHEMTREC 1-800-424-9300

2. Hazards Identification

Physical state Liquid
Appearance Slurry.
Emergency overview CAUTION

May cause eye, skin and respiratory tract irritation.

The pH of slurry may be as high as 10.4. At this level it may cause irritation to the skin, to mucous membranes, and especially to the eyes.

OSHA regulatory status This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects

Routes of exposure

Eye contact. Ingestion. Inhalation. Skin contact.

Eyes

May cause eye irritation. When cured: Dust or powder may irritate eye tissue.

Skin

May cause skin irritation. When cured: Dust or powder may irritate the skin.

Inhalation

May cause respiratory tract irritation. When cured: Dust may irritate throat and respiratory system and cause coughing. Inhaling the dust can cause lung irritation.

Ingestion

May cause irritation or burns of the mouth, throat and gastrointestinal tract.

Target organs

Eyes. Respiratory tract. Skin.

Chronic effects

When cured: Frequent inhalation of fume/dust over a long period of time may increase the risk of developing lung diseases although epidemiological studies among titanium dioxide workers could not demonstrate this.

Signs and symptoms

Symptoms include itching, burning, redness and tearing. Upper respiratory tract irritation. Coughing. Irritation of eyes and mucous membranes. Skin irritation.

Potential environmental effects

The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Titanium dioxide	13463-67-7	55-74
Silicon dioxide	7631-86-9	0-15
Aluminium hydroxide	21645-51-2	0-7
Water	7732-18-5	Balance

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

4. First Aid Measures

First aid procedures

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.
Skin contact	Flush skin thoroughly with water. Get medical attention if irritation develops or persists.
Inhalation	Move to fresh air. Get medical attention if any discomfort continues.
Ingestion	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 center immediately.

Notes to physician Treat symptomatically.

General advice Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties This product is not flammable.

Extinguishing media

Suitable extinguishing media Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media No restrictions known.

Protection of firefighters

Protective equipment and precautions for firefighters Firefighters should wear full protective clothing including self contained breathing apparatus. 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 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 for containment Collect and dispose of spillage as indicated in Section 13 of the MSDS. Prevent entry into waterways, sewer, basements or confined areas.

Methods for cleaning up Small Spillages: Shovel up and place in a non-metal waste container for later disposal.
Large Spillages: Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container.
When cured: 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 of the MSDS.

Other information Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling Use only with adequate ventilation. Avoid inhalation and contact with skin and eyes. Use Personal Protective Equipment recommended in section 8 of the MSDS. Wash thoroughly after handling.
When cured: Avoid dust formation. Observe good industrial hygiene practices.

Storage Store in tightly closed original container in a dry and cool place. Store in a closed container away from incompatible materials. Store above freezing.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	Type	Value	Form
Aluminium hydroxide (21645-51-2)	TWA	1 mg/m3	Respirable fraction.
Titanium dioxide (13463-67-7)	TWA	10 mg/m3	

U.S. - OSHA

Components	Type	Value	Form
Silicon dioxide (7631-86-9)	TWA	20 mppcf 6 mg/m3	
Titanium dioxide (13463-67-7)	PEL TWA	15 mg/m3 10 mg/m3	Total dust. Total dust.

Canada - Alberta

Components	Type	Value
Silicon dioxide (7631-86-9)	TWA	10 mg/m3
Titanium dioxide (13463-67-7)	TWA	10 mg/m3

Canada - British Columbia

Components	Type	Value	Form
Silicon dioxide (7631-86-9)	TWA	4 mg/m3 1,5 mg/m3	Total Respirable.
Titanium dioxide (13463-67-7)	TWA	10 mg/m3 3 mg/m3	Total dust. Respirable fraction.

Canada - Ontario

Components	Type	Value	Form
Silicon dioxide (7631-86-9)	TWA	10 mg/m3	
Titanium dioxide (13463-67-7)	TWA	10 mg/m3	Total dust.

Canada - Quebec

Components	Type	Value	Form
Silicon dioxide (7631-86-9)	TWA	6 mg/m3	Respirable dust.
Titanium dioxide (13463-67-7)	TWA	10 mg/m3	Total dust.

Mexico

Components	Type	Value
Silicon dioxide (7631-86-9)	TWA	10 mg/m3
Titanium dioxide (13463-67-7)	STEL TWA	20 mg/m3 10 mg/m3

Engineering controls

Provide adequate ventilation. Observe occupational exposure limits and minimize the risk of exposure to a minimum. When cured: Provide explosion-proof ventilation for high dust concentrations.

Personal protective equipment**Eye / face protection**

Risk of splashes: Wear approved safety goggles.

Skin protection

Risk of contact: Wear protective gloves. Wear appropriate clothing to prevent repeated or prolonged skin contact.

Respiratory protection

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use. Seek advice from local supervisor. When engineering controls are not sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH approved respirator.

General hygiene considerations

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.

9. Physical & Chemical Properties

Appearance	Slurry.
Color	White.
Odor	Odorless.
Odor threshold	Not available.
Physical state	Liquid

Form	Slurry.
pH	7 - 10.4
Melting point	Not available.
Freezing point	Not available.
Boiling point	212 °F (100 °C) (Water)
Flash point	Not available.
Evaporation rate	Not available.
Flammability	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Similar to water
Vapor density	Not available.
Specific gravity	1.75 - 2.4
Solubility (water)	Miscible.
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Density	14.5 - 20 lb/gal @ 20 °C

10. Chemical Stability & Reactivity Information

Chemical stability	Material is stable under normal conditions.
Conditions to avoid	Excessive heat. Freezing. When cured: Avoid dust formation.
Incompatible materials	None known.
Hazardous decomposition products	Silicon oxides.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Components

Test Results

Aluminium hydroxide (21645-51-2)

Acute Oral LD50 Rat: > 5000 mg/kg

Acute effects

May cause eye, skin and respiratory tract irritation.

Local effects

The pH of slurry may be as high as 10.4. At this level it can cause irritation to the skin, to mucous membranes, and especially to the eyes. When cured: Dusts may irritate the respiratory tract, skin and eyes. Inhaling the dust can cause lung irritation.

Sensitization

Not a skin sensitizer.

Chronic effects

Frequent inhalation of dust over a long period of time may increase the risk of developing chronic lung diseases and skin irritation.

Carcinogenicity

Suspected of causing cancer. IARC has classified TiO₂ as 2B Possibly carcinogenic to humans. However, the only evidence of carcinogenicity is in rodents 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. *Cancer Causes Control*. 2004 Sep;15(7):697-706.
 Fryzek et. al. A cohort mortality study among titanium dioxide manufacturing workers in the United States. *J Occup Environ Med*. 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)
 Titanium dioxide (CAS 13463-67-7)

A4 Not classifiable as a human carcinogen.
 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.

Epidemiology	Not available.
Mutagenicity	Not available.
Neurological effects	Not available.
Reproductive effects	Not available.
Teratogenicity	Not available.
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.
Environmental effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Persistence and degradability	The degradability of the product has not been stated.
Bioaccumulation / Accumulation	Bioaccumulation is unlikely to be significant because of the low water solubility of this product.
Partition coefficient (n-octanol/water)	Not available
Mobility in environmental media	The product is insoluble in water and will sediment in water systems.

13. Disposal Considerations

Waste codes	Not regulated.
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 at a 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

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

TDG

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.

CERCLA (Superfund) reportable quantity (lbs)

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	Yes
Drug Enforcement Agency (DEA)	Not controlled
WHMIS status	Controlled
WHMIS classification	D2A - Other Toxic Effects-VERY TOXIC
WHMIS labeling	



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)

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - California Hazardous Substances (Director's): Listed substance

Silicon dioxide (CAS 7631-86-9) Listed.

US - Massachusetts RTK - Substance: Listed substance

Silicon dioxide (CAS 7631-86-9) Listed.

Titanium dioxide (CAS 13463-67-7) Listed.

US - New Jersey RTK - Substances: Listed substance

Silicon dioxide (CAS 7631-86-9) Listed.

Titanium dioxide (CAS 13463-67-7) Listed.

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Silicon dioxide (CAS 7631-86-9) Listed.

Titanium dioxide (CAS 13463-67-7) Listed.

16. Other Information

Further information HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings
 Health: 1*
 Flammability: 0
 Physical hazard: 0
 Personal protection: X

NFPA ratings
 Health: 1
 Flammability: 0
 Instability: 0

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

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