

Material Safety Data Sheet

Version 4.1
 Revision Date 05/03/2011
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1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Titanium(IV) oxide, mixture of rutile and anatase

Product Number : 634662
 Brand : Aldrich

Supplier : Sigma-Aldrich
 3050 Spruce Street
 SAINT LOUIS MO 63103
 USA

Telephone : +1 800-325-5832
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 Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555

Preparation Information : Sigma-Aldrich Corporation
 Product Safety - Americas Region
 1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards

Carcinogen

GHS Classification

Skin irritation (Category 3)

GHS Label elements, including precautionary statements

Pictogram : none

Signal word : Warning

Hazard statement(s)
 H316 : Causes mild skin irritation.

Precautionary statement(s) : none

HMIS Classification

Health hazard: 0
 Chronic Health Hazard: *
 Flammability: 0
 Physical hazards: 0

NFPA Rating

Health hazard: 0
 Fire: 0
 Reactivity Hazard: 0

Potential Health Effects

Inhalation : May be harmful if inhaled. May cause respiratory tract irritation.
Skin : May be harmful if absorbed through skin. May cause skin irritation.
Eyes : May cause eye irritation.
Ingestion : May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Titanium dioxide
Titania

Formula : O₂Ti

Molecular Weight : 79.87 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Titanium dioxide			
13463-67-7	236-675-5	-	-

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Titanium/titanium oxides

Further information

The product itself does not burn.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Avoid breathing dust.

Environmental precautions

Do not let product enter drains.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Provide appropriate exhaust ventilation at places where dust is formed.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

Keep in a dry place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
Titanium dioxide	13463-67-7	TWA	10 mg/m ³	USA. ACGIH Threshold Limit Values (TLV)
Remarks	Lower Respiratory Tract irritation Not classifiable as a human carcinogen: Agents which cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of a lack of data. In vitro or animal studies do not provide indications of carcinogenicity which are sufficient to classify the agent into one of the other categories.			
		TWA	15 mg/m ³	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		TWA	10 mg/m ³	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
	Potential Occupational Carcinogen See Appendix A			
		TWA	2.4 mg/m ³	USA. NIOSH Recommended Exposure Limits
	fine particles			
		TWA	0.3 mg/m ³	USA. NIOSH Recommended Exposure Limits
	ultrafine particles (including engineered nanoscale)			

Personal protective equipment

Respiratory protection

Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form powder

Colour white

Safety data

pH no data available

Melting point/freezing point	Melting point/range: > 350 °C (> 662 °F)
Boiling point	no data available
Flash point	not applicable
Ignition temperature	no data available
Autoignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	no data available
Density	4.26 g/mL at 25 °C (77 °F)
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Relative vapour density	no data available
Odour	odourless
Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

no data available

Conditions to avoid

no data available

Materials to avoid

Strong acids

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Titanium/titanium oxides

Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50

LD50 Oral - rat - > 10,000 mg/kg

Inhalation LC50

no data available

Dermal LD50

LD50 Dermal - rabbit - > 10,000 mg/kg

Other information on acute toxicity

no data available

Skin corrosion/irritation

Skin - Human - Mild skin irritation - 3 h

Serious eye damage/eye irritation

Eyes - rabbit - No eye irritation

Respiratory or skin sensitization

Will not occur

Germ cell mutagenicity

Genotoxicity in vitro - Hamster - ovary
Micronucleus test

Genotoxicity in vitro - Hamster - Lungs
DNA inhibition

Genotoxicity in vitro - Hamster - ovary
Sister chromatid exchange

Genotoxicity in vivo - mouse - Intraperitoneal
Micronucleus test

Carcinogenicity

Carcinogenicity - rat - Inhalation
Tumorigenic: Carcinogenic by RTECS criteria. Lungs, Thorax, or Respiration: Tumors.

Carcinogenicity - rat - Intramuscular
Tumorigenic: Neoplastic by RTECS criteria. Blood: Lymphomas including Hodgkin's disease. Tumorigenic: Tumors at site or application.

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Titanium dioxide)

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects

no data available

Additional Information

RTECS: Not available

12. ECOLOGICAL INFORMATION**Toxicity**

Toxicity to fish LC50 - other fish - > 1,000 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates. EC50 - Daphnia magna (Water flea) - > 1,000 mg/l - 48 h
EC0 - Daphnia magna (Water flea) - 1,000 mg/l - 48 h

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

15. REGULATORY INFORMATION

OSHA Hazards

Carcinogen

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Chronic Health Hazard

Massachusetts Right To Know Components

Titanium dioxide

CAS-No.
13463-67-7

Revision Date
1994-04-01

Pennsylvania Right To Know Components

Titanium dioxide

CAS-No.
13463-67-7

Revision Date
1994-04-01

New Jersey Right To Know Components

Titanium dioxide

CAS-No.
13463-67-7

Revision Date
1994-04-01

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information

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