1. PRODUCT AND COMPANY IDENTIFICATION

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

Product Number: 645006

Brand: Aldrich

Supplier: Sigma-Aldrich
3050 Spouge Street
SAINT LOUIS MO 63113
USA

Telephone: +1 800-325-5632
Fax: +1 800-325-5552
Emergency Phone # (For both supplier and manufacturer): (314) 776-6555

Preparation Information: Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8955

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): Causes mild skin irritation.

Precautionary statement(s): None

HMIS Classification:

Health hazard: 0
Chronic Health Hazard: 0
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

Formula: TiO2

Molecular Weight: 79.87 g/mole

Component: Concentration

Titanium dioxide
CAS No.: 13463-67-7
EC No.: 233-675-5

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. FIREFIGHTING MEASURES

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

Special protective equipment for firefighters: 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 area. Keep in a cool place.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>TWA 10 mg/m³</td>
<td>USA, ACGIH Threshold Limit Values (TLV)</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: Lower Respiratory Tract irritation Not classifiable as a human carcinogen

| TWA 15 mg/m³ | USA, Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants |
| TWA 10 mg/m³ | USA, OSHA - Table Z-1 Limits for Air Contaminants - 1910.1000 |

Potential Occupational Carcinogen See Appendix A

<table>
<thead>
<tr>
<th>TWA</th>
<th>2.4 mg/m³</th>
<th>USA, NIOSH Recommended Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA</td>
<td>0.3 mg/m³</td>
<td>USA, NIOSH Recommended Exposure Limits</td>
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<tr>
<td>TWA</td>
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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
- Form: powder
- Colour: white

Safety data
- pH: no data available
- 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: colourless
- 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
  - no data available
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
Genetic toxicity
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
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.

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
LD50: 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
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. Dispose of as unused product.
Contaminated packaging
Dispose of as an unused product.

14. TRANSPORT INFORMATION
DOT (US)
Not hazardous materials
IMDG
Not hazardous materials
IATA
Not hazardous materials

15. REGULATORY INFORMATION
OSHA Hazards
Carcinogenic
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

<table>
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#### Pennsylvania Right To Know Components

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#### 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.

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### 16. OTHER INFORMATION

**Further Information**

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