1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Titanium(IV) oxide, mixture of rutile and anatase
Product Number: 700247
Supplier: Sigma-Aldrich
Address: 3050 Spruce Street
Saint Louis MO 63103 USA
Telephone: +1 606-325-5832
Fax: +1 800-325-5652
Emergency Phone # (For both supplier and manufacturer): (314) 778-6555
Preparation Information: Sigma-Aldrich Corporation
Product Safety - Americas Region 1-800-521-8958

2. HAZARDS IDENTIFICATION

OSHA Hazards: Carcinogenic, Corrosive
GHS Classification:
- Skin irritation (Category 3)
- Serious eye damage (Category 1)
GHS Label elements, including precautionary statements:
- Signal word: Danger
- Hazard statement(s):
  - H316 Causes moderate skin irritation
  - H318 Causes serious eye damage
- Precautionary statement(s):
  - P280 Wear protective gloves/eye protection/face protection
  - P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium oxide</td>
<td>CAS-No. 13463-67-7</td>
<td>30 - 60 %</td>
</tr>
<tr>
<td>EC-No. 236-675-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[2-(2-Methoxyethoxy)ethoxy]acetic acid</td>
<td>CAS-No. 16024-56-1</td>
<td>5 - 10 %</td>
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<tr>
<td>EC-No. 240-162-1</td>
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</tbody>
</table>

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: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.
If swallowed: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Conditions of flammability: Not flammable or combustible.
Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide,
Special protective equipment for firefighters: Wear self-contained breathing apparatus for fire fighting if necessary.
Hazardous decomposition products: Hazardous decomposition products formed under fire conditions. - Carbon oxides, Titanium/titanium oxides

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.
Environmental precautions: Do not let product enter drains.
7. HANDLING AND STORAGE
Precautions for safe handling
Avoid inhalation of vapour or mist.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Light sensitive. Keep in a dark place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION
Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>GAS-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>
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<tr>
<td>Remarks</td>
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<td></td>
<td>Lower Respiratory Tract irritation Not classifiable as a human carcinogen</td>
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<td></td>
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<td></td>
<td>TWA 15 mg/m³ USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA 10 mg/m³ USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Potential Occupational Carcinogen See Appendix A</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>TWA 2.4 mg/m³ USA. NIOSH Recommended Exposure Limits</td>
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<td>Fine particles USA. NIOSH Recommended Exposure Limits</td>
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<td>Ultrafine particles (including engineered nanofibres) USA. NIOSH Recommended Exposure Limits</td>
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Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. 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
Tightly fitting safety goggles. Face shield (6-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete skin protecting against chemicals. 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 liquid
Microscope powder

Colour white

Safety data
pH no data available
Melting point/freezing point no data available
Boiling point 100 °C (212 °F) at 1,013 hPa (760 mmHg)
Flash point > 100 °C (> 212 °F)
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 1.900 g/cm³
Water solubility no data available
Partition coefficient: n-octanol/water no data available
Relative vapour density no data available
Odour no data available
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
11. TOXICOLOGICAL INFORMATION

Acute toxicity
- Oral LD50: no data available
- Inhalation LC50: no data available
- Dermal LD50: no data available
- Other information on acute toxicity: no data available

Skin corrosion/irritation
- no data available

Serious eye damage/eye irritation
- Eyes: no data available

Respiratory or skin sensitization
- no data available

Germ cell mutagenicity
- no data available

Carcinogenicity
- IARC: 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. Material is extremely destructive to the tissues of the mucous membranes and upper respiratory tract.
- Ingestion: May be harmful if swallowed.
- Skin: May be harmful if absorbed through skin. Causes skin burns.
- Eyes: Causes eye burns.

12. ECOLOGICAL INFORMATION

Toxicity
- no data available

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
- Other 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, Corrosive

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
- Acute Health Hazard
- Chronic Health Hazard

Massachusetts Right To Know Components

Titanium dioxide

CAS-No. 13463-87-7

Revision Date 1994-04-01
Pennsylvania Right To Know Components

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<td>1994-04-01</td>
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New Jersey 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.

16. OTHER INFORMATION

Further Information

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