**Material Safety Data Sheet**

**Section 1 - Product and Company Information**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Titanium(IV) oxide, mixture of rutile and anatase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Number</td>
<td>700339</td>
</tr>
<tr>
<td>Brand</td>
<td>Sigma-Aldrich</td>
</tr>
<tr>
<td>Company</td>
<td>Sigma-Aldrich</td>
</tr>
<tr>
<td>Address</td>
<td>3000 Spacees Street</td>
</tr>
<tr>
<td>City, State, Zip, Country</td>
<td>SAINT LOUIS, MO 63163US</td>
</tr>
<tr>
<td>Technical Phone</td>
<td>800-225-5632</td>
</tr>
<tr>
<td>Fax</td>
<td>800-225-5653</td>
</tr>
<tr>
<td>Emergency Phone</td>
<td>314-776-5555</td>
</tr>
</tbody>
</table>

**Section 2 - Composition/Information on Ingredient**

<table>
<thead>
<tr>
<th>Substance Name</th>
<th>CAS#</th>
<th>SARA 313</th>
<th>EC no</th>
<th>Annex Index Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TITANIUM(IV) OXIDE, MIXTURE OF RUTILE AND ANATASE NANOPISTACHES, &lt;100 NM</td>
<td>None</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PARTICLE SIZE (DLS), DISPERSION, IN XYLENE, 99.9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ingredient Name</td>
<td>CAS#</td>
<td>Percent</td>
<td>SARA 313</td>
<td></td>
</tr>
<tr>
<td>XYLENE, MIXTURE OF ISOMERS</td>
<td>1330-20-7</td>
<td>&lt;= 50.000%</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>TITANIUM(IV) OXIDE</td>
<td>13463-87-7</td>
<td>&lt;= 10.000%</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>PHOSPHORIC ACID ESTERS</td>
<td>51811-79-1</td>
<td>&lt;= 10.000%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Formula**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym</td>
<td></td>
</tr>
</tbody>
</table>

**Section 3 - Hazards Identification**

**Emergency Overview**

- Flammable: Harmful
- Inhaling and in contact with skin irritating to skin. Risk of serious damage to eyes.
- Target organ(s): Liver, Kidneys.

**HMIS Rating**

<table>
<thead>
<tr>
<th></th>
<th>Flammability</th>
<th>Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

**NFPA Rating**

<table>
<thead>
<tr>
<th></th>
<th>Flammability</th>
<th>Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

**Section 4 - First Aid Measures**

**Oral Exposure**

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

**Inhalation Exposure**

If inhaled, remove to fresh air. If not breathing give artificial respirator. If breathing is difficult, give oxygen.

**Dermal Exposure**

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

**Eye Exposure**

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

**Section 5 - Fire Fighting Measures**

**Flammable Hazards**

- Yes

**Explosion Hazards**

Vapor may travel considerable distance to source of ignition and flashback. Container explosion may occur under fire conditions.

- Flash Point: 80.6°F 27°C

- Autoignition Temp: N/A

- Flammability: Yes

**Extinguishing Media**

- Suitable
- For small (incidental) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For larger fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray. Solid streams of water may be effective.
- Cool at affected containers with flooding quantities of water.

**Firefighting**

**Protective Equipment**

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

**Specific Hazards**

- Flammable liquid. Emits toxic fumes under fire conditions.

**Section 6 - Accidental Release Measures**

Procedure to be Followed in Case of Leak or Spill:

- Evacuate area. Shut off all sources of ignition. Use nonsparking tools.

**Procedure(s) of Personal Precaution(s)**

- Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

**Methods for Cleaning Up**

- Cover with dry lime, sand, or soda ash. Place in covered containers using nonsparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

**Section 7 - Handling and Storage**

**Handling**

- Avoid contact with eyes, skin, and clothing. Do not breathe vapor. Avoid prolonged or repeated exposure.
Section 8 - Exposure Controls / PPE

Engineering Controls
Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

Personal Protective Equipment
Respiratory
Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full face respirator with a multipurpose 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.

Hand
Compatible chemical resistant gloves.

Eye
Chemical safety goggles.

General Hygiene Measures
Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Physical State</th>
<th>Color</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid</td>
<td></td>
<td>Almost white</td>
<td>Suspension</td>
</tr>
</tbody>
</table>

| pH          | N/A            |
| BVBP Range  | > 105 °C       |
| MP/MP Range | N/A            |
| Freezing Point | N/A          |
| Vapor Pressure | N/A          |
| Vapor Density | 1.3 g/l       |
| Saturated Vapor Cenc. | N/A          |
| Solubility | 1.2 g/l (in 3) |
| Bulk Density | N/A           |
| Odor Threshold | N/A          |
| Viscosity  | N/A            |
| VOC Content | N/A            |
| Water Content | N/A          |
| Solvent Content | N/A       |
| Evaporation Rate | N/A        |
| Flammability | N/A            |
| Autoignition Temp | N/A       |

Solubility: N/A

N/A = not available

Section 10 - Stability and Reactivity

Stability
Stable.

Materials to Avoid
Strong oxidizing agents

Hazardous Decomposition Products
Nature of decomposition products not known

Hazardous Polymerization
Will not occur

Section 11 - Toxicological Information

Route of Exposure
Skin Contact
May cause skin irritation.

Skin Absorption
May be harmful if absorbed through the skin.

Eye Contact
May cause eye irritation.

Inhalation
May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion
May be harmful if swallowed.

Target Organ(s) or System(s)
Nervous, Liver, Kidneys, Blood, Eyes, Ears, Heart, Bone marrow.

Signs and Symptoms of Exposure
Exposure can cause CNS depression. Dermatitis, Anorexia, Dyspnea, Bronchitis, Tremors, Blurred vision, Incoordination, Headache.

 RTECS Number: N/A

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation
Contact a licensed professional waste disposal service to dispose of this material.

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.

Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT
Proper Shipping Name: Xylenes solution
UN#: 1307
Class: 3
Section 15 - Regulatory Information

EU Additional Classification
Symbol of Danger: Xn
Indication of Danger: Harmful.
Risk Statements: R: 10 20 21 38
Flammable. Harmful by inhalation and in contact with skin. Irritating to skin.
Safety Statements: S: 2 25
Keep out of the reach of children. Avoid contact with eyes.

US Classification and Label Text
Risk Statements: Harmful by inhalation and in contact with skin. Irritating to skin. Risk of serious damage to eyes.
Safety Statements: Keep away from sources of ignition - no smoking. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing and eye/face protection.

United States Regulatory Information
SARA Listed: Yes
Notes: This product is or contains a component that is subject to SARA313 reporting requirements.

Canada Regulatory Information
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, as the MSDS contains all the information required by the CPR.
DSL: Yes
NDSL: No

Section 16 - Other Information

Disclaimer:
For R&D use only. Not for drug, household or other use.

Warranty:
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice packing slip for additional items and conditions of sale. Copyright 2012 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.