SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Identifier
Product Description: Titanium(IV) bromide
Cat No. 391240000; 391240050; 391240250; 391241000

Relevant identified uses of the substance or mixture and uses advised against
Recommended Use Laboratory chemicals
Uses advised against No Information available

Details of the supplier of the safety data sheet
Company
Acros Organics BVBA
Janssen Pharmaceuticaalaan 3a
2440 Geel, Belgium
E-mail address begel.sdsdesk@thermofisher.com

Emergency Telephone Number
For information in the US, call: 001-800-ACROS-01
For information in Europe, call: +32 14 57 52 11
Emergency Number, Europe: +32 14 57 52 99
Emergency Number, US: 001-201-796-7100
CHEMTREC Phone Number, US: 001-800-424-9300
CHEMTREC Phone Number, Europe: 001-703-527-3887

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture or substance or mixture
REGULATION (EC) No 1272/2008
Skin Corrosion/Irritation Category 1 B
Serious Eye Damage/Eye Irritation Category 1

Classification according to EU Directives 67/548/EEC or 1999/45/EC
For the full text of the R-phrases and H-Statements mentioned in this Section, see Section 16
Symbol(s) C - Corrosive
R-phrase(s) R14 - Reacts violently with water
R34 - Causes burns
SECTION 2. HAZARDS IDENTIFICATION

Label Elements

- Signal Word: Danger
- Hazard Statements:
  - H314 - Causes severe skin burns and eye damage
  - EUH014 - Reacts violently with water
- Precautionary Statements - EU (§28, 1272/2008)
  - P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
  - P280 - Wear 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
  - P310 - Immediately call a POISON CENTER or doctor/ physician
  - P402 + P404 - Store in a dry place. Store in a closed container

Other Hazards
No information available.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>EC-No.</th>
<th>Weight %</th>
<th>CAS-No</th>
<th>67/548/EEC Classification</th>
<th>CLP Classification - Regulation (EC) No 1272/2008</th>
<th>REACH No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium tetrabromide</td>
<td>EEC No. 232-185-0</td>
<td>98</td>
<td>7789-68-6</td>
<td>R14 C; R34</td>
<td>Skin Corr. 1B (H314) (EUH014)</td>
<td>-</td>
</tr>
</tbody>
</table>

For the full text of the R-phrases and H-Statements mentioned in this Section, see Section 16

SECTION 4. FIRST AID MEASURES

Description of first aid measures

Eye Contact
Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Skin Contact
Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Immediate medical attention is required.

Ingestion
Do not induce vomiting. Call a physician immediately.

Inhalation
Remove from exposure, lie down. Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Immediate medical attention is required.

Notes to Physician
Treat symptomatically

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable Extinguishing Media
Carbon dioxide (CO₂). Dry chemical. chemical foam.

Extinguishing media which must not be used for safety reasons
Water.

Special hazards arising from the substance or mixture
Thermal decomposition can lead to release of irritating gases and vapors

Advice for fire-fighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Ensure adequate ventilation

Environmental precautions
Prevent further leakage or spillage if safe to do so

Methods and material for containment and cleaning up
Sweep up or vacuum up spillage and collect in suitable container for disposal. Do not let this chemical enter the environment.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling
Do not breathe dust. Do not breathe vapors or spray mist. Do not get in eyes, on skin, or on clothing. Do not ingest. Use only in area provided with appropriate exhaust ventilation.
Conditions for safe storage, including any incompatibilities

Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Corrosives area.

Specific End Uses

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits
This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Biological limit values
This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

Derived No Effect Level (DNEL)  
Predicted No Effect Concentration (PNEC)
No information available.  
No information available.

Exposure controls

Engineering Measures
Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

Eye Protection  
Goggles

Hand Protection  
Protective gloves

Skin and body protection
Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls
No information available.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State
Low melting solid, Solid

Appearance
Orange

Boiling Point/Range
230°C / 446°F

Melting Point/Range
39°C / 102.2°F

Flash Point
No information available.

Autoignition Temperature
No information available.

Water Solubility
reacts

Molecular Formula
Ti Br4

Molecular Weight
367.5

SECTION 10. STABILITY AND REACTIVITY
SECTION 10. STABILITY AND REACTIVITY

Reactivity

Chemical Stability
Stable under normal conditions. Moisture sensitive.

Possibility of Hazardous Reactions

Hazardous Polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
No information available.

Conditions to Avoid
Incompatible products, Exposure to moist air or water.

Incompatible Materials
Water, Strong oxidizing agents, Strong bases.

Hazardous Decomposition Products
Hydrogen halides.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on Toxicological Effects

Acute Toxicity

Product Information
No acute toxicity information is available for this product

Component Information

Chronic Toxicity

Carcinogenicity
There are no known carcinogenic chemicals in this product

Sensitization
No information available.

Mutagenic Effects
No information available

Reproductive Effects
No information available.

Developmental Effects
No information available.

Target Organs
No information available.

Other Adverse Effects
The toxicological properties have not been fully investigated.

Endocrine Disruptor Information
None known
SECTION 12. ECOLOGICAL INFORMATION

Toxicity

Ecotoxicity effects
Do not empty into drains

Persistence and degradability

No information available

Bioaccumulative potential

No information available.

Mobility in soil

No information available.

Results of PBT and vPvB assessment

Other adverse effects

No information available

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from Residues / Unused Products
Dispose of in accordance with local regulations

Contaminated Packaging
Empty containers should be taken to local recyclers for disposal

SECTION 14. TRANSPORT INFORMATION

IMDG/IMO

<table>
<thead>
<tr>
<th>UN-No</th>
<th>Hazard Class</th>
<th>Packing Group</th>
<th>Proper Shipping Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>3260</td>
<td>8</td>
<td>II</td>
<td>CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.</td>
</tr>
</tbody>
</table>

ADR

<table>
<thead>
<tr>
<th>UN-No</th>
<th>Hazard Class</th>
<th>Packing Group</th>
<th>Proper Shipping Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>3260</td>
<td>8</td>
<td>II</td>
<td>CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.</td>
</tr>
</tbody>
</table>
SECTION 14. TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>IATA</th>
<th>UN-No</th>
<th>Hazard Class</th>
<th>Packing Group</th>
<th>Proper Shipping Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3260</td>
<td>8</td>
<td>II</td>
<td>CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.*</td>
</tr>
</tbody>
</table>

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>PICCS</th>
<th>ENCS</th>
<th>CHINA</th>
<th>AICS</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium tetrabromide</td>
<td>232-185-0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
PICCS - Philippines Inventory of Chemicals and Chemical Substances
ENCS - Japan Existing and New Chemical Substances
CHINA - China Inventory of Existing Chemical Substances
AICS - Inventory of Chemical Substances
KECL - Existing and Evaluated Chemical Substances

Chemical Safety Assessment

SECTION 16. OTHER INFORMATION

Full text of R-phrases referred to under sections 2 and 3
*R14 - Reacts violently with water
R34 - Causes burns

Revision Date 06-Feb-2012
Revision Summary Not applicable
This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006
SECTION 16. OTHER INFORMATION

Disclaimer
The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of Safety Data Sheet