Oligomycin A: sc-201551

MATERIAL SAFETY DATA SHEET

1 Identification of substance:
   Product Name: Oligomycin A
   Catalog Number: sc-201551
   Supplier: Santa Cruz Biotechnology, Inc.
             2145 Delaware Avenue
             Santa Cruz, California 95060
             800.457.3801 or 831.457.3800
   Emergency: ChemWatch
               Within the US & Canada: 877-715-9305
               Outside the US & Canada: +800 2436 2255
               (1-800-CHEMCALL) or call +613 9573 3112

2 Hazards identification
   Classification of the substance or mixture
   Classification according to Regulation (EC) No 1272/2008
   GHS06 Skull and crossbones
   Acute Tox. 3 H301 Toxic if swallowed.
   Classification according to Directive 67/548/ECC or Directive 1999/45/EC
   Xn; Harmful
   R22: Harmful if swallowed.
   Information concerning particular hazards for human and environment: Not applicable
   Label elements
   Labelling according to Regulation (EC) No 1272/2008
   The substance is classified and labelled according to the CLP regulation.
   Hazard pictograms

Signal word Danger

Hazard statements
   H301 Toxic if swallowed.

Precautionary statements
   P264 Wash thoroughly after handling.
   P270 Do not eat, drink or smoke when using this product.
   P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
   P321 Specific treatment (see on this label).
   P405 Store locked up.
   P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard description:
   WHMIS classification Not controlled
   Classification system
   HMIS ratings (scale 0-4)
   (Hazardous Materials Identification System)

   HEALTH 2
   Health (acute effects) = 2
   FIRE 1
   Flammability = 1
   REACTIVITY 1
   Reactivity = 1
Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Substances
CAS# Description:
579-13-5 Oligomycin A
Identification number(s):
EC number: 209-437-3

4 First aid measures

Description of first aid measures
After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.

After skin contact
Immediately wash with water and soap and rinse thoroughly.
Seek immediate medical advice.

After eye contact
Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing Seek medical treatment.

Information for doctor
Most important symptoms and effects, both acute and delayed
No further relevant information available.

Indication of any immediate medical attention and special treatment needed
No further relevant information available.

5 Firefighting measures

Extinguishing media
Suitable extinguishing agents
Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide

Advice for firefighters
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation

Environmental precautions:
Do not allow material to be released to the environment without proper governmental permits.

Methods and material for containment and cleaning up:
Dispose contaminated material as waste according to item 13.

Prevention of secondary hazards: No special measures required.

Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

Handling
Precautions for safe handling
Keep container tightly sealed.
Ensure good ventilation at the workplace.

Information about protection against explosions and fires: No information known.

Conditions for safe storage, including any incompatibilities
Storage Store at -20° C.
Requirements to be met by storerooms and receptacles: Store in freezer.
Information about storage in one common storage facility:
Protect from heat.
Store away from oxidizing agents.

Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Store in freezer.

Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Control parameters
Components with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Additional information: No data

Exposure controls
Personal protective equipment
General protective and hygienic measures
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Maintain an ergonomically appropriate working environment.

Breathing equipment: Use suitable respirator when high concentrations are present.

Protection of hands:
Impervious gloves
Check protective gloves prior to each use for their proper condition.
The selection of suitable gloves not only depends on the material, but also on quality.
Quality will vary from manufacturer to manufacturer.

Eye protection: Safety glasses

Body protection: Protective work clothing.

9 Physical and chemical properties

<table>
<thead>
<tr>
<th>Information on basic physical and chemical properties</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>General Information</td>
<td></td>
</tr>
<tr>
<td>Appearance: Powder</td>
<td></td>
</tr>
<tr>
<td>Form: Powder</td>
<td></td>
</tr>
<tr>
<td>Formula: C45H74O11</td>
<td></td>
</tr>
<tr>
<td>Weight: 791.07</td>
<td></td>
</tr>
<tr>
<td>pH-value: Not applicable.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Change in condition</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/Melting range: Not determined</td>
<td></td>
</tr>
<tr>
<td>Boiling point/Boiling range: Not determined</td>
<td></td>
</tr>
<tr>
<td>Sublimation temperature / start: Not determined</td>
<td></td>
</tr>
<tr>
<td>Flammability (solid, gaseous): Not determined</td>
<td></td>
</tr>
<tr>
<td>Ignition temperature: Not determined</td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature: Not determined</td>
<td></td>
</tr>
<tr>
<td>Auto igniting: Not determined</td>
<td></td>
</tr>
<tr>
<td>Explosion limits: Not determined</td>
<td></td>
</tr>
<tr>
<td>Lower: Not determined</td>
<td></td>
</tr>
<tr>
<td>Upper: Not determined</td>
<td></td>
</tr>
<tr>
<td>Vapor pressure: Not applicable.</td>
<td></td>
</tr>
<tr>
<td>Density: Not determined</td>
<td></td>
</tr>
<tr>
<td>Relative density: Not determined</td>
<td></td>
</tr>
<tr>
<td>Vapor density: Not applicable.</td>
<td></td>
</tr>
<tr>
<td>Evaporation rate: Not applicable.</td>
<td></td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water): Not determined</td>
<td></td>
</tr>
<tr>
<td>Viscosity:</td>
<td></td>
</tr>
<tr>
<td>dynamic: Not applicable</td>
<td></td>
</tr>
<tr>
<td>kinematic: Not applicable</td>
<td></td>
</tr>
</tbody>
</table>
10 Stability and reactivity

Reactivity: No information known.
Chemical stability: Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.
Possibility of hazardous reactions: Reacts with strong oxidizing agents
Incompatible materials:
- Oxidizing agents
- Heat
Hazardous decomposition products: Carbon monoxide and carbon dioxide

11 Toxicological information

Information on toxicological effects
Acute toxicity:
- Toxic if swallowed.
- The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute and/or other multiple dose toxicity data for components in this product.
LD/LC50 values that are relevant for classification: No data
Skin irritation or corrosion: May cause irritation
Eye irritation or corrosion: May cause irritation
Sensitization: No sensitizing effects known.
Germ cell mutagenicity: No effects known.
Carcinogenicity:
- No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.
Reproductive toxicity: No effects known.
Specific target organ system toxicity - repeated exposure: No effects known.
Specific target organ system toxicity - single exposure: No effects known.
Aspiration hazard: No effects known.
Additional toxicological information:
- To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

12 Ecological information

Toxicity
- Aquatic toxicity: No further relevant information available.
- Persistence and degradability: No further relevant information available.
Behavior in environmental systems:
- Bioaccumulative potential: No further relevant information available.
Mobility in soil: No further relevant information available.
Additional ecological information:
- General notes:
  - Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
  - Do not allow material to be released to the environment without proper governmental permits.
Results of PBT and vPvB assessment
- PBT: Not applicable.
- vPvB: Not applicable.
Other adverse effects: No further relevant information available.

13 Disposal considerations

Waste treatment methods
- Recommendation: Consult state, local or national regulations to ensure proper disposal.
Uncleaned packagings:
- Recommendation: Disposal must be made according to official regulations.

14 Transport information

<table>
<thead>
<tr>
<th>UNNumber</th>
<th>DOT, ADR, ADN, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
UN proper shipping name
DOT, ADR, ADN, IMDG, IATA
Not applicable

Transport hazard class(es)
DOT, ADR, ADN, IMDG, IATA
Class
Not applicable

Packing group
DOT, ADR, IMDG, IATA
Not applicable

Environmental hazards:
Marine pollutant:
No

Special precautions for user
Not applicable.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable.

UN "Model Regulation":
-

15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture
National regulations
This product is not listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted to research and development only.
Some or all of the components of this product are not listed on the Canadian Domestic Substances List (DSL) or the Canadian Non-Domestic Substances List (NDSL).
Information about limitation of use: For use only by technically qualified individuals.
Other regulations, limitations and prohibitive regulations
Substances of very high concern (SVHC) according to REACH, Article 57
Substance is not listed.
REACH - Pre-registered substances Substance is listed.
Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information:

The above information is believed to be correct but does not purport to be complete and should be used only as a guide. The burden of safe use of this material rests entirely with the user.

1/20/2014