SAFETY DATA SHEETS

According to the UN GHS revision 8

1. Identification

1.1 GHS Product identifier

Product name: Ursodeoxycholic acid

1.2 Other means of identification

1.3 Recommended use of the chemical and restrictions on use

Identified uses: Industrial and scientific research uses.
Uses advised against: no data available

1.4 Supplier’s details

Company: Target Molecule Corp.
Address: Suite 260, 36 Washington Street, Wellesley Hills, Massachusetts, USA
Tel/Fax: +1 (857) 239-0968

1.5 Emergency phone number

Emergency phone number: 400-821-2233
Service hours: Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

2. Hazard identification

2.1 Classification of the substance or mixture

Skin irritation, Category 2
Eye irritation, Category 2

2.2 GHS label elements, including precautionary statements

Pictogram(s)

Signal word: Warning
Hazard statement(s): H315 Causes skin irritation
H319 Causes serious eye irritation
Precautionary statement(s)
Prevention: P264 Wash ... thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
Response: P302+P352 IF ON SKIN: Wash with plenty of water/...
P321 Specific treatment (see ... on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.
2.3 Other hazards which do not result in classification

no data available
3. Composition/information on ingredients

3.1 Substances

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common names and synonyms</th>
<th>CAS number</th>
<th>EC number</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ursodeoxycholic acid</td>
<td>Ursodeoxycholic acid</td>
<td>128-13-2</td>
<td>204-879-3</td>
<td>100%</td>
</tr>
</tbody>
</table>

4. First-aid measures

4.1 Description of necessary first-aid measures

General advice

Medical attention is required. Consult a doctor. Show this safety data sheet (SDS) to the doctor in attendance.

If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

4.2 Most important symptoms/effects, acute and delayed

no data available

4.3 Indication of immediate medical attention and special treatment needed, if necessary

no data available

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Use dry chemical, carbon dioxide or alcohol-resistant foam.

5.2 Specific hazards arising from the chemical

no data available

5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

6.2 Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in
accordance with appropriate laws and regulations.

7. **Handling and storage**

7.1 **Precautions for safe handling**
Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 **Conditions for safe storage, including any incompatibilities**
Store the container tightly closed in a dry, cool and well-ventilated place. Store apart from foodstuff containers or incompatible materials.
Recommended storage temperature: Store at -20°C

8. **Exposure controls/personal protection**

8.1 **Control parameters**
**Occupational Exposure limit values**
no data available

8.2 **Appropriate engineering controls**
Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 **Individual protection measures, such as personal protective equipment (PPE)**

**Eye/face protection**
Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

**Skin protection**
Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

**Respiratory protection**
If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

**Thermal hazards**
no data available

9. **Physical and chemical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical state</strong></td>
<td>Solid. Powder.</td>
</tr>
<tr>
<td><strong>Colour</strong></td>
<td>White - almost white.</td>
</tr>
<tr>
<td><strong>Odour</strong></td>
<td>no data available</td>
</tr>
<tr>
<td><strong>Melting point/ freezing point</strong></td>
<td>203 °C.</td>
</tr>
<tr>
<td><strong>Boiling point or initial boiling point</strong></td>
<td>547.1 °C. Atm. press.:760 mm Hg.</td>
</tr>
<tr>
<td><strong>Boiling range</strong></td>
<td>no data available</td>
</tr>
<tr>
<td><strong>Flammability</strong></td>
<td>no data available</td>
</tr>
<tr>
<td><strong>Lower and upper explosion limit / flammability limit</strong></td>
<td>no data available</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>298.8 °C.</td>
</tr>
<tr>
<td><strong>Auto-ignition temperature</strong></td>
<td>&gt; 400 °C. Remarks:Pressure value is not available.</td>
</tr>
<tr>
<td><strong>Decomposition temperature</strong></td>
<td>no data available</td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>no data available</td>
</tr>
<tr>
<td><strong>Kinematic viscosity</strong></td>
<td>no data available</td>
</tr>
<tr>
<td><strong>Solubility</strong></td>
<td>In water: 20 mg/L. Temperature:20 °C. Remarks:PH value is not available.</td>
</tr>
<tr>
<td><strong>Partition coefficient n-octanol/water</strong></td>
<td>log Pow = 3.38. Temperature:20 °C.</td>
</tr>
</tbody>
</table>


10. Stability and reactivity

10.1 Reactivity
no data available

10.2 Chemical stability
no data available

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
no data available

10.5 Incompatible materials
no data available

10.6 Hazardous decomposition products
no data available

11. Toxicological information

Acute toxicity

- Oral: LD50 - rat - 4 600 mg/kg bw.
- Inhalation: no data available
- Dermal: no data available

Skin corrosion/irritation
no data available

Serious eye damage/irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity
no data available

Reproductive toxicity
no data available

STOT-single exposure
no data available

STOT-repeated exposure
no data available

Aspiration hazard
no data available
12. Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 - Danio rerio (previous name: Brachydanio rerio) - > 100 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: IC50 - Daphnia magna - > 100 mg/L - 48 h.
- Toxicity to algae: EC50 - Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum) - > 100 mg/L - 72 h.
- Toxicity to microorganisms: EC50 - activated sludge, domestic - > 1 000 mg/L - 3 h. Remarks: Respiration rate.

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Other adverse effects

no data available

13. Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

14. Transport information

14.1 UN Number

ADR/RID: Not dangerous goods. (For reference only, please check.)   IMDG: Not dangerous goods. (For reference only, please check.)   IATA: Not dangerous goods. (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: Not dangerous goods. (For reference only, please check.)   IMDG: Not dangerous goods. (For reference only, please check.)   IATA: Not dangerous goods. (For reference only, please check.)

14.3 Transport hazard class(es)

ADR/RID: Not dangerous goods. (For reference only, please check.)   IMDG: Not dangerous goods. (For reference only, please check.)   IATA: Not dangerous goods. (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: Not dangerous goods. (For reference only, please check.)   IMDG: Not dangerous goods. (For reference only, please check.)   IATA: Not dangerous goods. (For reference only, please check.)

14.5 Environmental hazards

ADR/RID: No   IMDG: No   IATA: No

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
15. **Regulatory information**

15.1 **Safety, health and environmental regulations specific for the product in question**

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- European Inventory of Existing Commercial Chemical Substances (EINECS) Listed.
- EC Inventory Listed.
- United States Toxic Substances Control Act (TSCA) Inventory Not Listed.
- China Catalog of Hazardous chemicals 2015 Not Listed.
- New Zealand Inventory of Chemicals (NZIoC) Listed.
- Philippines Inventory of Chemicals and Chemical Substances (PICCS) Listed.
- Vietnam National Chemical Inventory Listed.
- Chinese Chemical Inventory of Existing Chemical Substances (China IECSC) Not Listed.
- Korea Existing Chemicals List (KECL) Not Listed.

16. **Other information**

**Information on revision**

Creation Date      July 15, 2019
Revision Date      July 15, 2019

**Abbreviations and acronyms**

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

**References**

- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home
- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/
- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

**Disclaimer:** 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. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.