1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier
Product Name  Cyclooctatetraene
Product Code  SC-257273

Recommended use of the chemical and restrictions on use
For research use only. Not intended for diagnostic or therapeutic use.

2. HAZARDS IDENTIFICATION

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification
Skin sensitization  Category 1
Carcinogenicity  Category 2
Flammable liquids  Category 2

Label elements
Signal word  Danger
Hazard statements  May cause an allergic skin reaction
  Suspected of causing cancer
  Highly flammable liquid and vapor

Symbols/Pictograms

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
In case of fire: Use CO2, dry chemical, or foam for extinction

Precautionary Statements - Storage
Store locked up
Precautionary Statements - Disposal
Store in a well-ventilated place. Keep cool
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Hazards not otherwise classified (HNOC)
Not applicable

Other Information
Unknown acute toxicity
99.9% of the mixture consists of ingredient(s) of unknown toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight %</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclooctatetraene</td>
<td>629-20-9</td>
<td>&gt;98</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hydroquinone</td>
<td>123-31-9</td>
<td>&lt;1</td>
<td>= 298 mg/kg (Rat)</td>
<td>= 74800 mg/kg (Rabbit)</td>
<td>-</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

First Aid Measures
General advice
Immediate medical attention is required. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Eye contact
Wash with plenty of water.

Skin Contact
Wash off immediately with plenty of water.

Inhalation
Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration.

Ingestion
Never give anything by mouth to an unconscious person. Clean mouth with water.

Self-protection of the first aider
Remove all sources of ignition.

Most important symptoms and effects, both acute and delayed
Symptoms
No information available.

Indication of any immediate medical attention and special treatment needed
Note to physicians
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media
None.

Specific hazards arising from the chemical
Specific hazards arising from the chemical
No information available.

Hazardous combustion products
Carbon oxides.

Explosion data
Sensitivity to Mechanical Impact
No information available.

Sensitivity to Static Discharge
No information available.

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Personal precautions
Remove all sources of ignition. Evacuate personnel to safe areas. Ensure adequate ventilation, especially in confined areas.

Environmental precautions
Environmental precautions
Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up
Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Dam up. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling
Advice on safe handling
Ensure adequate ventilation, especially in confined areas. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment. All equipment used when handling the product must be grounded.

Conditions for safe storage, including any incompatibilities
Storage Conditions
Keep tightly closed in a dry and cool place. Keep in properly labeled containers. Store at -20 °C.

Incompatible materials
None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure Guidelines
.

Other Information
Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).
<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroquinone</td>
<td>TWA: 1 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td>IDLH: 50 mg/m³</td>
</tr>
<tr>
<td>123-31-9</td>
<td></td>
<td>(vacated) TWA: 2 mg/m³</td>
<td>Ceiling: 2 mg/m³ 15 min</td>
</tr>
</tbody>
</table>

NIOSH IDLH: Immediately Dangerous to Life or Health

**Appropriate engineering controls**

**Engineering Controls**
- Showers
- Eyewash stations
- Ventilation systems

**Individual protection measures, such as personal protective equipment**

**Eye/face protection**
Wear safety glasses with side shields (or goggles).

**Skin and Body Protection**
Wear protective gloves and protective clothing.

**Respiratory protection**
If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

**General Hygiene Considerations**
When using do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing is recommended.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

- **Physical State**: liquid
- **Appearance**: No information available
- **Odor**: No information available

**Property**
- **Values**
  - **pH**: No information available
  - **Melting point/freezing point**: -5 °C
  - **Boiling point**: 142 °C
  - **Flash point**: 22 °C CC (closed cup)
  - **Density**: 0.93 g/mL
  - **Evaporation rate**: No information available
  - **Upper flammability limits**: No information available
  - **Lower flammability limit**: No information available
  - **Vapor pressure**: 7.6
  - **Vapor density**: No information available
  - **Specific gravity**: No information available
  - **Water solubility**: No information available
  - **Solubility in other solvents**: No information available
  - **Partition coefficient**: 3.08
  - **Autoignition temperature**: No information available
  - **Decomposition temperature**: No information available
  - **Kinematic viscosity**: No information available
  - ** Explosive properties**: No information available
  - **Oxidizing properties**: No information available

**10. STABILITY AND REACTIVITY**

- **Reactivity**: Not applicable
- **Chemical stability**: Stable under recommended storage conditions.
- **Possibility of Hazardous Reactions**: None under normal processing.
- **Hazardous polymerization**: No information available.
- **Conditions to avoid**: Heat, flames and sparks.
- **Incompatible materials**: Strong oxidizing agents.
- **Hazardous Decomposition Products**: Carbon oxides.
11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
- Inhalation: No data available.
- Eye contact: No data available.
- Skin Contact: No data available.
- Ingestion: No data available.

Information on toxicological effects
- Symptoms: No information available.
- Delayed and immediate effects as well as chronic effects from short and long-term exposure:
  - Chronic Toxicity: No information available.
  - Carcinogenicity: The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroquinone</td>
<td>A3</td>
<td>Group 3</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**ACGIH (American Conference of Governmental Industrial Hygienists)** A3 - Animal Carcinogen
**IARC (International Agency for Research on Cancer)** Not classifiable as a human carcinogen

Numerical measures of toxicity - Product Information
- Unknown acute toxicity: 99.9% of the mixture consists of ingredient(s) of unknown toxicity

12. ECOLOGICAL INFORMATION

Ecotoxicity
- May cause long lasting harmful effects to aquatic life

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to Microorganisms</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroquinone</td>
<td>13.5: 120 h Desmodesmus subspicatus mg/L EC50 0.335: 72 h Pseudokirchneriella subcapitata mg/L EC50</td>
<td>0.044: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 0.17: 96 h Brachydanio rerio mg/L LC50 0.1 - 0.18: 96 h Pimephales promelas mg/L LC50 static 0.044: 96 h Pimephales promelas mg/L LC50 flow-through</td>
<td>-</td>
<td>0.29: 48 h Daphnia magna mg/L EC50</td>
</tr>
</tbody>
</table>

99.9% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

- Persistence and degradability: No information available.
- Bioaccumulation: No information available.
- Mobility: No information available.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Partition coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroquinone</td>
<td>0.5</td>
</tr>
</tbody>
</table>

13. DISPOSAL CONSIDERATIONS

Disposal of wastes
- Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging
- Do not reuse container.
14. TRANSPORT INFORMATION

DOT
UN/ID no | UN2358
Hazard Class | 3
Packing Group | II
Proper shipping name | Cyclooctatetraene
Description | UN2358, Cyclooctatetraene, 3, II
Emergency Response Guide Number | 128P

IMDG
UN/ID no | UN2358
Hazard Class | 3
Packing Group | II
Proper shipping name | Cyclooctatetraene
Description | UN2358, Cyclooctatetraene, 3, II, (22°C c.c.)
EmS-No | F-E, S-D

IATA
UN/ID no | UN2358
Hazard Class | 3
Packing Group | II
Proper shipping name | Cyclooctatetraene
Description | UN2358, Cyclooctatetraene, 3, II

15. REGULATORY INFORMATION

International Inventories
All of the components in the product are on the following Inventory lists
TSCA (United States): Canada (DSL/NDSL) Europe (EINECS/ELINCS/NLP) Australia (AICS) South Korea (KECL): Philippines (PICCS)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>ENCS</th>
<th>IECSC</th>
<th>KECL</th>
<th>PICCS</th>
<th>AICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclooctatetraene</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hydroquinone</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

X - Listed
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENC - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

US Federal Regulations
SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories
Acute health hazard | No
Chronic Health Hazard | No
Fire hazard | Yes
Sudden release of pressure hazard | No
Reactive hazard | No
CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclooctatetraene 629-20-9</td>
<td>X</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

Revision note
No information available

Disclaimer
The information provided in this Material 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 guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered 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 materials or in any process, unless specified in the text.

End of Safety Data Sheet