1. IDENTIFICATION

Product Identifier
Product Name: Sulfolane

Other means of identification
SDS #: CG-023

Recommended use of the chemical and restrictions on use
Recommended Use: Amine solution.

Details of the supplier of the safety data sheet
Supplier Address: ORG Chem Group, LLC
2406 Lynch Road
Evansville, IN 47711
www.chem-group.com

Emergency Telephone Number
Company Phone Number: Non ER questions 800-489-2306 / 812-464-4446
Emergency Telephone (24 hr) Chemtrec 1-800-424-9300 (North America) 1-703-527-3887 (International)

2. HAZARDS IDENTIFICATION

Appearance: Clear liquid
Physical State: Liquid
Odor: Slight ammonia-like odor

Classification
Acute toxicity - Oral Category 4

Hazard Not Otherwise Classified (HNOC)
May be harmful in contact with skin

Signal Word
Warning

Hazard Statements
Harmful if swallowed
Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product

Precautionary Statements - Response
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
May be harmful in contact with skin
Harmful to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfolane</td>
<td>126-33-0</td>
<td>80-10060-100</td>
</tr>
</tbody>
</table>

**If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.**

4. FIRST-AID MEASURES

First Aid Measures

General Advice
Provide this SDS to medical personnel for treatment.

Eye Contact
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.

Skin Contact
IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. Get medical attention. Get medical attention if irritation develops or persists.

Inhalation
Remove exposed individual(s) to fresh air for 20 minutes. Consult a physician / poison center if individual's condition declines or if symptoms persist.

Ingestion
Do not induce vomiting. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention.

Most important symptoms and effects

Symptoms
May cause skin and eye irritation. Harmful if swallowed.
5. FIRE-FIGHTING MEASURES

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

Unsuitable Extinguishing Media
High volume water jet.

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating and toxic gases and vapors.

Hazardous Combustion Products
Carbon oxides. Sulfur oxides.

5. FIRE-FIGHTING MEASURES

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. Water spray may be used to keep fire exposed containers cool.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions
Ensure adequate ventilation, especially in confined areas. Wear protective clothing as described in Section 8 of this safety data sheet. Remove all sources of ignition.

Environmental Precautions
Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Collect spillage. 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. Soak up and contain spill with an inert (i.e. vermiculite, dry sand or earth) absorbent material.

Methods for Clean-Up
Use clean non-sparking tools to collect absorbed material. Sweep up absorbed material and shovel into suitable containers for disposal. US regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling
Wash face, hands, and any exposed skin thoroughly after handling. Use personal protection recommended in Section 8. Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when handling this product.

Conditions for safe storage, including any incompatibilities

Storage Conditions
Keep container tightly closed and store in a cool, dry and well-ventilated place.

Incompatible Materials
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines
The following information is given as general guidance

Other Information
Sulfolane, Manufacturer TWA 0.37 ppm.

Appropriate engineering controls

Engineering Controls
Maintain eye wash fountain and quick-drench facilities in work area.

Individual protection measures, such as personal protective equipment

Eye/Face Protection
Use chemical safety goggles and/or a full face shield where splashing is possible.

Skin and Body Protection
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory Protection
Respiratory protection is not required except in emergencies or when conditions cause excessive airborne levels, mist, or vapors. Select the appropriate approved organic vapor air-purifying respirator, self-contained breathing apparatus, or air supplied respirators in situations where there may be potential for overexposure.

General Hygiene Considerations
Avoid contact with skin, eyes and clothing. After handling this product, wash hands before eating, drinking, or smoking. If contact occurs, remove contaminated clothing. If needed, take first aid action shown on section 4 of this SDS. Launder contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Liquid</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear liquid</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>Slight ammonia-like odor</td>
<td></td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Melting Point/Freezing Point</td>
<td>27.5 °C / 82 °F</td>
<td>5.5-10.0 °C / 41.9-100 °C</td>
</tr>
<tr>
<td>Boiling Point/Boiling Range</td>
<td>285 °C / 545 °F</td>
<td>100-286 °C / 212-547 °F</td>
</tr>
<tr>
<td>Flash Point</td>
<td>165 °C / 329 °F</td>
<td>166 °C / 331 °F Cleveland Open Cup</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Flammability (Solid, Gas)</td>
<td>Liquid-not applicable</td>
<td></td>
</tr>
<tr>
<td>Upper Flammability Limits</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Lower Flammability Limit</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
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<td></td>
</tr>
<tr>
<td>Vapor Density</td>
<td>4.2 : 1.0</td>
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</tr>
<tr>
<td>Specific Gravity</td>
<td>1.26</td>
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<tr>
<td>Water Solubility</td>
<td>Partially soluble</td>
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<tr>
<td>Solubility in other solvents</td>
<td>Not determined</td>
<td></td>
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<tr>
<td>Partition Coefficient</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>528 °C / 982 °F</td>
<td>Not determined</td>
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<tr>
<td>Decomposition Temperature</td>
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<td></td>
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<tr>
<td>Kinematic Viscosity</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Dynamic Viscosity</td>
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<td></td>
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<tr>
<td>Explosive Properties</td>
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<tr>
<td>Oxidizing Properties</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Molecular weight</td>
<td>120.18 g/mol</td>
<td></td>
</tr>
</tbody>
</table>

Molecular weight
10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions. This material reacts violently with acids.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization
Hazardous polymerization does not occur.

Conditions to Avoid
Incompatible materials, ignition sources and excessive heat.

Incompatible Materials

Hazardous Decomposition Products
None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact
May cause temporary irritation on eye contact.

Skin Contact
Prolonged contact may cause redness and irritation. May be harmful in contact with skin.

Inhalation
Avoid breathing vapors or mists.

Ingestion
Harmful if swallowed.

Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfolane</td>
<td>= 1846 mg/kg (Rat)</td>
<td>&gt; 2000 mg/kg (Rat)</td>
<td>&gt; 12 mg/L (Rat) 4 h</td>
</tr>
<tr>
<td>126-33-0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Information on physical, chemical and toxicological effects

Symptoms
Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity
Based on the information provided, this product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Numerical measures of toxicity
Not determined
12. ECOLOGICAL INFORMATION

Ecotoxicity
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Component Information

<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>Sulfolane 126-33-0</td>
<td>1000: 96 h Pseudokirchneriella subcapitata mg/L EC50</td>
<td>4800: 24 h Carassius auratus mg/L LC50 1930: 96 h Gambusia affinis mg/L LC50</td>
<td>40: 48 h Daphnia magna mg/L EC50</td>
<td></td>
</tr>
</tbody>
</table>

Persistence/Degradability
Not readily biodegradable.

Bioaccumulation
This material is not expected to bioaccumulate.

Mobility
Not determined

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

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

Contaminated Packaging
Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

Note
Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT
Not regulated

IATA
Not regulated

IMDG
Not regulated
15. REGULATORY INFORMATION

International Inventories

<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>Sulfolane</td>
<td>Present</td>
<td>X</td>
<td>Present</td>
<td>Present</td>
<td>X</td>
<td>Present</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- **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
- **ENCS** - 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
- **AICS** - Australian Inventory of Chemical Substances

US Federal Regulations

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 311/312 Hazard Categories

- **Acute Health Hazard**: Yes

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

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>Sulfolane</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>126-33-0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Instability</th>
<th>Special Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Physical Hazards</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

Issue Date: 01-Dec-2014
Revision Date: 12-Dec-2014
Revision Note: New format

Disclaimer
The information provided in 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 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