Material Safety Data Sheet
alpha-Ketoglutaric Acid

Section 1 - Chemical Product and Company Identification

**MSDS Name:** alpha-Ketoglutaric Acid  
**Synonyms:** 2-Oxopentanedioic acid; 2-Oxoglutaric acid; 2-Ketoglutaric acid.

Section 2 - Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>Percent</th>
<th>EINECS/ELINCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>328-50-7</td>
<td>alpha-Ketoglutaric acid</td>
<td>100</td>
<td>206-330-3</td>
</tr>
</tbody>
</table>

Section 3 - Hazards Identification

**EMERGENCY OVERVIEW**

Appearance: white to off-white solid.  
**Warning!** Causes eye irritation and possible injury. May cause skin and respiratory tract irritation. Keep refrigerated. (Store below 4°C/39°F.) The toxicological properties of this material have not been fully investigated.  
**Target Organs:** Eyes.

**Potential Health Effects**

**Eye:** Causes eye irritation. May result in corneal injury.  
**Skin:** May cause skin irritation.  
**Ingestion:** May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated.  
**Inhalation:** May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.  
**Chronic:** No information found.

Section 4 - First Aid Measures
**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

**Skin:** In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.

**Ingestion:** If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

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**Section 5 - Fire Fighting Measures**

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.

**Extinguishing Media:** Use extinguishing media most appropriate for the surrounding fire.

**Flash Point:** Not available.

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 1; Instability: 0

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**Section 6 - Accidental Release Measures**

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

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**Section 7 - Handling and Storage**

**Handling:** Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

**Storage:** Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Refrigeration has been recommended.
Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

**Exposure Limits**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>alpha-Ketoglutaric acid</td>
<td>none listed</td>
<td>none listed</td>
<td>none listed</td>
</tr>
</tbody>
</table>

**Personal Protective Equipment**

**Eyes:** Wear chemical splash goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

Section 9 - Physical and Chemical Properties

**Physical State:** Solid

**Appearance:** white to off-white

**Odor:** none reported

**pH:** Acidic in solution.

**Vapor Pressure:** Negligible.

**Vapor Density:** Not available.

**Evaporation Rate:** Negligible.

**Viscosity:** Not available.

**Boiling Point:** 280 deg F

**Freezing/Melting Point:** 116 deg C

**Decomposition Temperature:** 280 deg F

**Solubility:** Soluble in water.

**Specific Gravity/Density:** Not available.

**Molecular Formula:** C₅H₆O₅

**Molecular Weight:** 146.10

Section 10 - Stability and Reactivity

**Chemical Stability:** Stable at room temperature in closed containers under normal storage and handling conditions.

**Conditions to Avoid:** Dust generation, excess heat.

**Incompatibilities with Other Materials:** Strong oxidizing agents, strong bases.

**Hazardous Decomposition Products:** Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

**Hazardous Polymerization:** Has not been reported.
Section 11 - Toxicological Information

**RTECS#:**
CAS# 328-50-7 unlisted.
**LD50/LC50:**
Not available.

**Carcinogenicity:**
CAS# 328-50-7: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information available.
**Teratogenicity:** No information available.
**Reproductive Effects:** No information available.
**Mutagenicity:** No information available.
**Neurotoxicity:** No information available.
**Other Studies:**

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste.

Section 14 - Transport Information

<table>
<thead>
<tr>
<th><strong>IATA</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Shipping Name:</strong></td>
<td>Not regulated as a hazardous material</td>
</tr>
<tr>
<td><strong>Hazard Class:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>UN Number:</strong></td>
<td></td>
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<tr>
<td><strong>Packing Group:</strong></td>
<td></td>
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</tbody>
</table>

Section 15 - Regulatory Information
Hazard Symbols: XI

Risk Phrases: R 41 Risk of serious damage to eyes.

Safety Phrases: S 24/25 Avoid contact with skin and eyes.

Section 16 - Additional Information

MSDS Creation Date: 4/30/1999
Revision #6 Date: 10/03/2005

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