Material Safety Data Sheet
(α-Ketoglutaric Acid)

SECTION 1 – PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: alpha-Ketoglutaric Acid
SYNONYM: 2-Oxopentanedioic acid, 2-Oxoglutaric acid, α-Ketoglutaric acid
FORMULA: C₅H₆O₅
CAS NUMBER: 328-50-7

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>PRODUCT NAME</th>
<th>CAS NUMBER</th>
<th>PURITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>alpha-Ketoglutaric Acid</td>
<td>328-50-7</td>
<td>100%</td>
</tr>
</tbody>
</table>

SECTION 3 – HAZARDS IDENTIFICATION

Emergency Overview
OSHA Hazards
Irritant

HMIS Classification
Health Hazard: 2
Flammability: 0
Physical hazards: 0

NFPA Rating
Health Hazard: 2
Fire: 0
Reactivity Hazard: 0

Potential Health Effects
Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.
Skin: May be harmful if absorbed through skin. Causes skin irritation.
Eyes: Causes eye irritation.
Ingestion: May be harmful if swallowed.

SECTION 4 – FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.
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In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

SECTION 5 – FIRE FIGHTING MEASURES

Flammable properties
Flash point no data available
Ignition temperature no data available

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation.

Environmental precautions
Do not let product enter drains.

Methods for cleaning up
Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

SECTION 7- HANDLING AND STORAGE

Handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Storage
Keep container tightly closed in a dry and well-ventilated place.

SECTION 8 - EXPOSURE CONTROLS/ PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment
Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US) or type P1 (EN 143) respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
Hand protection
Handle with gloves.

Eye protection
Safety glasses

Skin and body protection
Choose body protection according to the amount and concentration of the dangerous substance at the workplace.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Form    Fine crystals and fragments
Colour    white

Safety data
pH    no data available
Melting point    114 °C (237 °F)
Boiling point    no data available
Flash point    no data available
Ignition temperature    no data available
Lower explosion limit    no data available
Upper explosion limit    no data available
Water solubility    100 g/l at 20 °C (68 °F)

SECTION 10 – STABILITY AND REACTIVITY DATA

Storage stability
Stable under recommended storage conditions.

Materials to avoid
Bases, Oxidizing agents, Reducing agents
Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute toxicity
no data available

Irritation and corrosion
no data available

Sensitisation
no data available

Chronic exposure
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
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NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Potential Health Effects
Inhalation May be harmful if inhaled. Causes respiratory tract irritation.
Skin May be harmful if absorbed through skin. Causes skin irritation.
Eyes Causes eye irritation.
Ingestion May be harmful if swallowed.

SECTION 12 – ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)
nor data available
Ecotoxicity effects
no data available
Further information on ecology
no data available

SECTION 13 – DISPOSAL CONSIDERATION

Product
Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

SECTION 14 - TRANSPORTATION DATA

DOT (US)
Not dangerous goods
IMDG
Not dangerous goods
IATA
Not dangerous goods

SECTION 15 – REGULATORY INFORMATION

OSHA Hazards
Irritant
TSCA Status
On TSCA Inventory
DSL Status
All components of this product are on the Canadian DSL list.
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SARA 302 Components  
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components  
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards  
Acute Health Hazard

Massachusetts Right To Know Components  
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components  
2-Oxoglutaric acid CAS-No. 328-50-7 Revision Date

New Jersey Right To Know Components  
2-Oxoglutaric acid CAS-No. 328-50-7 Revision Date

California Prop. 65 Components  
This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.

SECTION 16 – OTHER INFORMATION

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.