# Material Safety Data Sheet

## 1. PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Transport Symbol</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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<td>4</td>
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</tbody>
</table>

**Product Name**  MALONONITRILE  
**Product Code**  3301200  
**Synonyms**  Propanedinitrile; Malonic Acid Dinitrile  
**Formula**  C3H2N2  
**CAS Number**  109-77-3  
**Contact**  
ACETO CORPORATION  
One Hollow Lane  
Lake Success, NY 11042-1215  
Phone: (516) 627-6000  
Fax: (516) 627-6093  
Email: regulatory@aceto.com  
ChemTrec Emergency Telephone 1-800-424-9300  
Emergency Numbers 1-703-527-3887

## 2. HAZARDS IDENTIFICATION

**Emergency Overview**  
Highly toxic. May be fatal if inhaled, absorbed through skin, or swallowed. Irritant. Readily absorbed through skin. May cause cyanosis. Dangerous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Appearance**  White, Powder, or, Crystalline.  
**Physical State**  Solid.  
**Odor**  Not available  
**OSHA Regulatory Status**  This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
**Mexico - Grade**  Slight risk, Grade 1  
**Potential Health Effects**  
**Principle Routes of Exposure**  Not available  
**Acute Effects**  
**Eyes**  Severe eye irritation. Avoid contact with eyes.
Skin
Toxic in contact with skin. May be fatal if absorbed through skin. Irritating to skin. Readily absorbed through skin. Avoid contact with skin.

Inhalation
Toxic by inhalation. May be fatal if inhaled. Irritating to mucous membranes. Irritating to respiratory system.

Ingestion
Toxic if swallowed. May cause irritation of the digestive tract.

Acute Effects
Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer. May be partially metabolized to cyanide in the body. The onset of symptoms is generally delayed pending on conversion to cyanide. CNS depression. Lung irritation. Headache. Dizziness. Convulsions. Difficulty in breathing. Weak pulse.

Chronic Effects
Avoid repeated exposure.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions
Not available

Interactions with Other Chemicals
Not available

Potential Environmental Effects
Dangerous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS Number
109-77-3

Formula
C3H2N2

Hazardous Components

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malononitrile</td>
<td>109-77-3</td>
<td>60 - 100</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General Advice
Show this safety data sheet to the doctor in attendance.

Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.

Skin Contact
Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Call a physician immediately.

Inhalation
Move to fresh air. If breathing is difficult, give oxygen. Call a physician immediately.

Ingestion
Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Centre immediately.

Notes to Physician
Treat symptomatically

Protection of First-aiders
Use personal protective equipment. Avoid contact with skin, eyes and clothing.
5. FIRE-FIGHTING MEASURES

Flammable Properties  Not available
Suitable Extinguishing Media  Water spray. Carbon dioxide (CO2). Dry powder. Foam. Water mist may be used to cool closed containers.
Unsuitable Extinguishing Media  Not available
Hazardous Combustion Products  Not available

Explosion Data

- Sensitivity to mechanical impact  Not available
- Sensitivity to static discharge  Not available

Specific Hazards Arising from the Chemical
Keep product and empty container away from heat and sources of ignition

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

NFPA Health 4 Flammability 1 Instability 1

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Evacuate personnel to safe areas. Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. In case of insufficient ventilation, wear suitable respiratory equipment.

Environmental Precautions
Local authorities should be advised if significant spillages cannot be contained. Do not allow material to contaminate ground water system. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system. Should not be released into the environment.

Methods for Containment  Not available
Methods for Cleaning up
Evacuate personnel to safe areas. Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Clean contaminated surface thoroughly.

Other Information  Not applicable

7. HANDLING AND STORAGE

Handling
Use only in an area equipped with a safety shower. Ensure adequate ventilation. Use only in well-ventilated areas. Do not breathe vapours/dust. Avoid contact with skin, eyes and clothing. Avoid repeated exposure.

Storage
Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labelled containers.
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>Ontario TWAEV</th>
<th>Mexico</th>
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</thead>
<tbody>
<tr>
<td>Malononitrile</td>
<td>= 5 mg/m³ TWA prevent or reduce skin absorption</td>
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</tbody>
</table>

Engineering Controls

Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

- **Eye/face Protection**: Tightly fitting safety goggles.
- **Skin Protection**: Protective gloves.
- **Respiratory Protection**: In case of insufficient ventilation wear suitable respiratory equipment.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>NIOSH IDLH</th>
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<tr>
<td>Malononitrile</td>
<td>= 25 mg/m³ IDLH except Hydrogen cyanide</td>
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</table>

IDLH: Immediately Dangerous to Life or Health

General Hygiene Considerations

When using, do not eat, drink or smoke. Remove and wash contaminated clothing before re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance**: White, Powder, or, Crystalline

**Physical State**: Solid

**Odor**: Not available

**pH**: Not available

**Flash Point**: 112°C

**Autoignition Temperature**: 365

**Boiling Point/Range**: 220°C

**Melting Point/Range**: 30 - 34°C

**Flammability Limits in Air**:
- **Lower**: Not available
- **Upper**: Not available

**Explosion limits**:
- **Lower**: 2.9%
- **Upper**: 19%

**Vapor Pressure**: 11 mmHg @ 99 °C

**Vapor Density**: 2.3

**Specific Gravity**: 1.049

**Water Solubility**: Soluble

**Reactivity in Water**: Not available

**Molecular Weight**: 66.06

10. STABILITY AND REACTIVITY

**Chemical Stability**: Stable under normal conditions. Violent polymerization can occur. When heated to 130°C. or contact with . strong bases.
Conditions to Avoid
Heat, flames and sparks.

Incompatible Materials

Hazardous Decomposition Products
Carbon monoxide, Carbon dioxide (CO2), Nitrogen oxides (NOx), Hydrogen cyanide (hydrocyanic acid).

Possibility of Hazardous Reactions
None under normal processing

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
LD50 Oral: 60,800ug/kg (rat)

Chronic Toxicity
Carcinogenicity
There are no known carcinogenic chemicals in this product

Irritation
Eye, rabbit: 5 mg/24H SEV

Corrosivity
Not available

Sensitization
Not available

Neurological Effects
Not available

Mutagenic Effects
Not available

Reproductive Effects
Not available

Developmental Effects
Not available

Target Organ Effects
Blood, Central nervous system (CNS), Cardiovascular system, Eyes, Skin, Respiratory system, Central Vascular System (CVS).

12. ECOLOGICAL INFORMATION

Ecotoxicity
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Avoid release to the environment.

Persistence / Degradability
Not available

Bioaccumulation / Accumulation
Not available

Mobility in Soil
Not available

13. DISPOSAL CONSIDERATIONS
**Waste Disposal Method**
Contact waste disposal services. Dispose of in accordance with local regulations.

**Contaminated Packaging**
Dispose of in accordance with local regulations. Empty containers should be taken for local recycling, recovery or waste disposal.

**US EPA Waste Number**
Not available

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>RCRA</th>
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<tr>
<td>Malononitrile - 109-77-3</td>
<td>waste number U149</td>
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## 14. TRANSPORT INFORMATION

**DOT**
- **Proper Shipping Name**: Malononitrile
- **Hazard Class**: 6.1
- **UN-No**: UN2647
- **Packing Group**: II
- **Reportable Quantity (RQ)**: Malononitrile, RQ kg = 454
- **Description**: Malononitrile,6.1,UN2647,PG II,RQ

**TDG**
- **Proper Shipping Name**: Malononitrile
- **Hazard Class**: 6.1
- **UN-No**: UN2647
- **Packing Group**: II
- **Description**: MALONONITRILE,6.1,UN2647,PG II

**MEX**
- **Proper Shipping Name**: Malononitrile
- **Hazard Class**: 6.1
- **UN-No**: UN2647
- **Packing Group**: II
- **Description**: UN2647 Malononitrile,6.1,II

**ICAO**
- **UN-No**: UN2647
- **Proper Shipping Name**: Malononitrile
- **Hazard Class**: 6.1
- **Packing Group**: II
- **Description**: Malononitrile,6.1,UN2647,PG II

**IATA**
- **UN-No**: UN2647
- **Proper Shipping Name**: Malononitrile
- **Hazard Class**: 6.1
- **Packing Group**: II
- **ERG Code**: 6L
- **Description**: UN2647,Malononitrile,6.1,PG II

**IMDG/IMO**
- **Proper Shipping Name**: Malononitrile
- **Hazard Class**: 6.1
- **UN-No**: UN2647
15. REGULATORY INFORMATION

International Inventories

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<th>Country</th>
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<th>Canada (DSL)</th>
<th>EU (EINECS)</th>
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<td>Australia (AICS)</td>
<td>Complies</td>
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<table>
<thead>
<tr>
<th>Chemical Name</th>
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<tr>
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<th>Japan (ENCS)</th>
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<th>Australia (AICS)</th>
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<td>Present</td>
<td>KE-10262</td>
<td>Present</td>
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USA

Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372: Cyanide compounds

Chemical Name
Malononitrile (CAS #: 109-77-3)

SARA 311/312 Hazardous Categorization
- Acute Health Hazard: Yes
- Chronic Health Hazard: Yes
- Fire Hazard: No
- Sudden Release of Pressure Hazard: No
- Reactive Hazard: No

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product does not contain any HAPs.

Chemical Name EPA: CERCLA RQ
Malononitrile = 1000 lb final RQ
= 454 kg final RQ

Chemical Name TSCA Listing
Malononitrile 40 CFR 799.5055

State Regulations

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

State Right-to-Know

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
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<tbody>
<tr>
<td>Malononitrile</td>
<td>Extraordinarily hazardous</td>
<td>sn 1153</td>
<td>Environmental hazard</td>
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Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class
Not determined

16. OTHER INFORMATION
Prepared By: Environmental Health and Safety, Regulatory Affairs
Preparation Date: 29-Mar-2007
Revision Date: 29-Mar-2007
Revision Summary: Not available

Disclaimer
The information provided on this MSDS 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

End of MSDS