SAFETY DATA SHEET

Ethyl malonyl chloride

MATERIAL IDENTIFICATION

NAME: Ethyl malonyl chloride
CAS#: [36239-09-5]
CAT#: 069285
For R&D use only.

HAZARDS IDENTIFICATION

GHS Classification
Flammable liquids (Category 4)
Skin corrosion/irritation (Category 1B)
Serious eye damage/eye irritation (Category 1)

GHS Label elements, including precautionary statements

Pictograms

Signal Word Danger

Hazard Statement(s)
H227 Combustible liquid
H314 Causes severe skin burns and eye damage
H318 Causes serious eye damage
EUH014 Reacts violently with water

Precautionary Statement(s)
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302 + P352 IF ON SKIN: wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove victim to fresh air and Keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Ethyl (chloroformyl)acetate, Carbethoxyacetyl chloride, Ethyl 3-chloro-3-oxopropionate, Ethyl 2-(chlorocarbonyl)acetate
Formula : C5H7ClO3
Molecular Weight : 150.56 g/mol

<table>
<thead>
<tr>
<th>CAS</th>
<th>Description</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>36239-09-5</td>
<td>Ethyl malonyl chloride</td>
<td>95%</td>
</tr>
</tbody>
</table>

FIRST AID MEASURES

In case of eye contact
Immediately flush eyes with running water for at least 15 minutes while keeping eyes open. Seek medical attention.

In case of skin contact
Wash thoroughly with soap and plenty of water. Seek medical attention.

If inhaled
Remove victim from source of exposure to fresh air. If breathing is difficult, administer oxygen. Seek medical attention.

If swallowed
Do not induce vomiting. Give water to victim to drink. Seek medical attention.

FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use carbon dioxide, dry chemical powder, alcohol-resistant or polymer foam.

Special protective equipment for fire-fighters
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Unusual fire and explosion hazards/decomposition of product
emits toxic fumes under fire conditions.

ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid breathing fumes, vapors, mists or gas. Ventilate area. Remove all sources of ignition. Evacuate personnel.

Environmental precautions
Prevent further leakage if safe to do so.

Methods and materials for containment and clean up
Absorb spills on sand or vermiculite and place in closed container for disposal.
HANDLING AND STORAGE

Precautions for safe handling
Avoid prolonged use. Avoid all direct contact with material. Do not breathe dust or vapor. Wash thoroughly after handling.
Reacts violently with water.

Precautions for safe storage
Keep container tightly closed. Store in a cool, dry, well-ventilated area.
Moisture sensitive.
Keep cold.

EXPOSURE CONTROL/PERSOAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Eye/face protection
Wear protective safety goggles or face shields tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Hand/skin protection
Avoid all direct contact with product.
Wear chemical-resistant gloves.
Wear protective clothing and boots.
After contact with skin, wash immediately.

Respiratory protection
Ensure adequate ventilation during use. Approved respiratory equipment must be used when airborne concentrations are unknown or exceed the exposure limits.

PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>clear light yellow liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>no data available</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>no data available</td>
</tr>
<tr>
<td>Melting point/Freezing Point</td>
<td>no data available</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>79-80°C/25mm Hg</td>
</tr>
<tr>
<td>Flash Point</td>
<td>64°C-closed cup</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>no data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>no data available</td>
</tr>
<tr>
<td>Upper/Lower Flammability or Explosive limits</td>
<td>no data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>no data available</td>
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<tr>
<td>Relative Density</td>
<td>1.176</td>
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<tr>
<td>Solubility(ies)</td>
<td>no data available</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>no data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>no data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>no data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>no data available</td>
</tr>
<tr>
<td>Refractive Index</td>
<td>no data available</td>
</tr>
</tbody>
</table>
STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
Reacts violently with water

Conditions to avoid
Moisture.

Incompatible materials
Strong oxidizing agents, alcohols, and water.

Hazardous decomposition products
May evolve carbon monoxide, carbon dioxide, and hydrogen chloride.

TOXICOLOGICAL INFORMATION

Acute toxicity
no data available

Skin corrosion/irritation
Causes severe skin burns and eye damage

Serious eye damage/eye irritation
Causes serious eye damage

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity
no data available

Reproductive toxicity
no data available

STOT-single exposure
no data available

STOT-repeated exposure
no data available

Aspiration hazard
no data available

Exposure Routes
Causes burns.
May have harmful effects if inhaled or swallowed.

To the best of our knowledge, the health hazards of this material have not been fully investigated.
ECOLOGICAL INFORMATION

Toxicity
no data available

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
no data available

DISPOSAL CONSIDERATIONS

Dissolve in or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all Federal, State and local laws.

TRANSPORT INFORMATION

**DOT**
Corrosive liquid, acidic, organic, n.o.s.
8
UN3265  III

**IMDG**
Corrosive liquid, acidic, organic, n.o.s.
8
UN3265  III
EMS-No: F-A, S-B
Marine Pollutant: No

**IATA**
Corrosive liquid, acidic, organic, n.o.s.
8
UN3265  III

REGULATORY INFORMATION

**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: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 313.
New Jersey Right to Know Components
This product may contain a chemical on the New Jersey Right to Know Components List.

Ethyl malonyl chloride

California Prop. 65 Components
This product does not contain a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm.

OTHER INFORMATION

Version : 1.4
Revision Date : 3/26/2018

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. Oakwood shall not be held liable for any damage resulting from handling or from contact with the above product.