1. Product Identification

**Synonyms:** Butanoic acid, 3-oxo-, Ethyl ester; ethyl acetyl acetate; Acetoacetic acid, ethyl ester; Diacetic Ether; Ethyl 3-oxobutanoate

**CAS No.:** 141-97-9

**Molecular Weight:** 130.14

**Chemical Formula:** C₈H₁₂O₄

**Product Codes:** 2424

2. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No</th>
<th>Percent</th>
<th>Hazardous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Acetoacetate</td>
<td>141-97-9</td>
<td>90 - 100%</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3. Hazards Identification

**Emergency Overview**

**WARNING:** FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**SAF-T-DATA™** Ratings (Provided here for your convenience)

- **Health Rating:** 1 - Slight
- **Flammability Rating:** 2 - Moderate
- **Reactivity Rating:** 1 - Slight
- **Contact Rating:** 2 - Moderate
- **Lab Protective Equip:** GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER
- **Storage Color Code:** Red (Flammable)

**Potential Health Effects**

- **Inhalation:**
  - Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.
- **Ingestion:**
  - Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.
- **Skin Contact:**
  - Causes irritation to skin. Symptoms include redness, itching, and pain.
- **Eye Contact:**
  - Causes irritation, redness, and pain.
- **Chronic Exposure:**
  - No information found.
- **Aggravation of Pre-existing Conditions:**
  - No information found.

4. First Aid Measures

- **Inhalation:**
  - Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
- **Ingestion:**
  - If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- **Skin Contact:**
  - Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
- **Eye Contact:**
  - Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.
5. Fire Fighting Measures

Fire:
Flash point: 57°C (135°F) CC
Autoignition temperature: 295°C (563°F)
Flammable limits in air: 9.5% by volume.
lel: 1.4; uel: 9.5
Flammable.
(lel: 93°C; uel: 176°C)

Explosion:
Above flash point, vapor-air mixtures are explosive within flammable limits noted above.
Sensitive to static discharge.

Fire Extinguishing Media:
Dry chemical, alcohol foam or carbon dioxide. Water spray may be used to keep fire
exposed containers cool, dilute spills to nonflammable mixtures, protect personnel
attempting to stop leak and disperse vapors.

Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained
breathing apparatus with full facepiece operated in the pressure demand or other positive
pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal
protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and
unprotected personnel from entering. Collect and recover liquid when possible. Use non-
sparking tools and equipment. Collect liquid in an appropriate container or absorb with an
inert material (e.g., vermiculite, dry sand, earth), and place in a chemical waste container.
Do not use combustible materials, such as saw dust. Do not flash to sewer! If a leak or spill
has not ignited, use water spray to disperse the vapors, to protect personnel attempting to
stop leak, and to flush spills away from exposures.

7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from
any area where the fire hazard may be acute. Outside or detached storage is preferred.
Separate from incompatibles. Containers should be bonded and grounded for transfers to
avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking
type tools and equipment, including explosion proof ventilation. Containers of this material
may be hazardous when empty since they retain product residues (vapors, liquid); observe
all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
None established.
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures as
low as possible. Local exhaust ventilation is generally preferred because it can control the
emissions of the contaminant at its source, preventing dispersal of it into the general work
area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of
Recommended Practices, most recent edition, for details.
Personal Respirators (NIOSH Approved):
For conditions of use where exposure to the substance is apparent and engineering controls
are not feasible, consult an industrial hygienist. For emergencies, or instances where the
exposure levels are not known, use a full-facepiece positive-pressure, air-supplied
respirator. WARNING: Air purifying respirators do not protect workers in oxygen-
deficient atmospheres.
Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls,
as appropriate, to prevent skin contact.
Eye Protection:
Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain
eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
Clear, colorless liquid.
Odor:
Fruity odor.
Solubility:
Soluble in about 35 parts water.
Specific Gravity:
1.03 @ 20°C/4°C
pH:
No information found.
% Volatiles by volume @ 21°C (70°F):
100
Boiling Point:
10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:
Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:
Will not occur.

Incompatibilities:
Acids, bases, oxides and reducing agents. Reacts with strong oxidizers.

Conditions to Avoid:
Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Oral rat LD50: 3980 mg/Kg; Investigated as a mutagen.

\begin{tabular}{|l|c|c|c|}
\hline
Ingredient & NTP Carcinogen & IARC Category \\
\hline
Ethyl Acetoacetate (141-97-9) & No & No & None \\
\hline
\end{tabular}

12. Ecological Information

Environmental Fate:
No information found.

Environmental Toxicity:
No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

**Domestic (Land, D.O.T.)**

Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S. (ETHYL ACETOACETATE)
Hazard Class: 3
UN/NA: UN1993
Packing Group: III
Information reported for product/size: 3KG

**International (Water, L.M.O.)**

Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S. (ETHYL ACETOACETATE)
Hazard Class: 3
UN/NA: UN1993
Packing Group: III
Information reported for product/size: 3KG

**International (Air, I.C.A.O.)**

Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S. (ETHYL ACETOACETATE)
Hazard Class: 3
UN/NA: UN1993
Packing Group: III
Information reported for product/size: 3KG

15. Regulatory Information
16. Other Information

NFPA Ratings: Health: 2 Flammability: 2 Reactivity: 0

Label Hazard Warning:
WARNING! FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

Label Precautions:
Keep away from heat, sparks and flame.
Avoid contact with eyes, skin and clothing.
Use only with adequate ventilation.
Wash thoroughly after handling.
Keep container closed.
Avoid breathing vapor.

Label First Aid:
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases, get medical attention.

Product Use:
Laboratory Reagent.

Revision Information:
MSDS Section(s) changed since last revision of document include: 3, 14.

Disclaimer:
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