UNIVERSITY OF MALTA
FACULTY OF MEDICINE & SURGERY
PHARMACY DEPARTMENT

MATERIAL SAFETY
DATA SHEET

ETHYL ACETATE

Ref. No.
MSDS /PD/15_01

Valid for:
2 years from approval

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Written by: Signature/Date: 

Reviewed by: Signature/Date: 

Approved by: Signature/Date: 

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1. Chemical Product

Product Name: Ethyl acetate

Chemical name: Ethyl Acetate

Synonyms: Acetic Acid, Ethyl Ester Acetic Ether

Chemical Formula: C₄H₈O₂

2. Composition and Information on Ingredients

Composition: 100% ethyl acetate by weight

Toxicological Data on Ingredients: Ethyl acetate: ORAL (LD₅₀): Acute: 5620 mg/kg [Rat]. 4100 mg/kg [Mouse]. 4935 mg/kg [Rabbit]. VAPOR (LC₅₀): Acute: 45000 mg/m³ 3 hours [Mouse]. 16000 ppm 6 hours [Rat].

3. Hazards Identification

Potential Acute Health Effects: Hazardous in case of ingestion, of inhalation, and slightly hazardous in case of skin contact (irritant, permeator) and eye contact (irritant).

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: A4 (Not classifiable in human and animals)
MUTAGENIC EFFECTS: N/A
TERATOGENIC EFFECTS: N/A
DEVELOPMENTAL TOXICITY: N/A. The substance is toxic to mucous membranes, upper respiratory tract. The substance may be toxic to blood, kidneys, liver, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.
### 4. First Aid Measures

**General measures:** N/A

**Skin contact:** Wash with soap and water and cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.

**Serious skin contact:** N/A

**Eye contact:** Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Seek medical attention.

**Ingestion:** Do NOT induce vomiting unless directed to do so by medical personnel and never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband and seek medical attention if symptoms appear.

**Serious indigestion:** N/A

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

**Serious inhalation:** Evacuate the victim to a safe area as soon as possible, loosening tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.
## 5. Fire and Explosion Data

### Flammability of the Product:
Flammable

### Auto-Ignition Temperature:
426.67°C (800°F)

### Flash points:
- CLOSED CUP: -4.4°C (24.1°F) (TAG)
- OPEN CUP: 7.2°C (45°F)

### Flammable limits:
- LOWER: 2.2%
- UPPER: 9%

### Products of Combustion:
These products are carbon oxides (CO, CO2).

### Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Slightly flammable to flammable in presence of oxidizing materials, of acids, of alkalis. Non-flammable in presence of shocks.

### Explosion Hazards in Presence of Various Substances:
- Risks of explosion of the product in presence of static discharge: N/A
- Slightly explosive in presence of heat. Not explosive in presence of shocks.

### Fire fighting media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

### Special Remarks on Fire Hazards:
Vapour may travel considerable distance to source of ignition and flash back. When heated to decomposition it emits acrid smoke and irritating fumes.

### Special Remarks on Explosion Hazards:
The liquid produces a vapour that forms explosive mixtures with air at normal temperatures. Explosive reaction with lithium tetrahydroaluminate.
6. Accidental Release Measures

NB: Wear appropriate protective equipment/clothing including gloves before removing any spills.

Small spill: Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large spill: It is a flammable liquid and therefore keep away from heat and sources of ignition. Stop leak if without risk, absorb with DRY earth, sand or other non-combustible material and do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

7. Handling and Storage

Precautions: Keep away from heat and sources of ignition. Ground all equipment containing material. Do not ingest or breathe gas/fumes/vapour/spray, and wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, alkalis.

Storage: Store in a segregated and approved area, keeping the container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use and avoid all possible sources of ignition (spark or flame). It is moisture sensitive.
8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**
- TWA: 400 (ppm) from OSHA (PEL) [United States]
- TWA: 400 from ACGIH (TLV) [United States]
- TWA: 1400 (mg/m³) from NIOSH [United States]
- TWA: 400 (ppm) from NIOSH [United States]
- TWA: 400 (ppm) [Canada]
- TWA: 1440 (mg/m³) [Canada]
- TWA: 1400 (mg/m³) from OSHA (PEL) [United States]

Consult local authorities for acceptable exposure limits.

**Engineering Controls:** Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection:** Safety glasses, lab coat, gloves, vapour respirator, making sure to use an approved/certified respirator or equivalent.
9. **Physical and Chemical Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Colourless liquid.</td>
</tr>
<tr>
<td>Odour</td>
<td>Ethereal, Fruity (Slight)</td>
</tr>
<tr>
<td>Taste</td>
<td>Bittersweet, wine-like burning taste</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>88.11 g/mole</td>
</tr>
<tr>
<td>pH (1% solution/water)</td>
<td>N/A</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>77°C (170.6°F)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>-83°C (-117.4°F)</td>
</tr>
<tr>
<td>Critical Temperature</td>
<td>250°C (482°F)</td>
</tr>
<tr>
<td>Specific Gravity (Water = 1)</td>
<td>0.902</td>
</tr>
<tr>
<td>Vapour Pressure (mmHg)</td>
<td>12.4 kPa (@ 20°C)</td>
</tr>
<tr>
<td>Vapour Density</td>
<td>3.04 (Air = 1)</td>
</tr>
<tr>
<td>Volatility</td>
<td>N/A</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>3.9 ppm</td>
</tr>
<tr>
<td>Water/Oil Distribution Coefficient</td>
<td>The product is more soluble in oil; log(oil/water) = 0.7</td>
</tr>
<tr>
<td>Ionicity (in Water)</td>
<td>N/A</td>
</tr>
<tr>
<td>Dispersion Properties</td>
<td>See solubility in water, diethyl ether, acetone.</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in cold water, hot water, diethyl ether, acetone, alcohol, benzene.</td>
</tr>
</tbody>
</table>

10. **Stability and Reactivity Data**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>The product is stable.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Non-corrosive in presence of glass.</td>
</tr>
<tr>
<td>Instability temperature</td>
<td>N/A</td>
</tr>
<tr>
<td>Conditions of Instability</td>
<td>Heat, ignition sources (flames, sparks, static), incompatible materials.</td>
</tr>
<tr>
<td>Incompatibles</td>
<td>Reactive with oxidizing agents, acids, alkalis. Also incompatible with nitrates, chlorosulfonic acid, oleum, potassium-tert-butoxide, and lithium tetrahydroaluminate. It is moisture sensitive and is slowly decomposed by water on storage.</td>
</tr>
<tr>
<td>Polymerization</td>
<td>Will not occur.</td>
</tr>
</tbody>
</table>
11. Toxicological Information

Toxicity to animals: WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 4100 mg/kg [Mouse]. Acute toxicity of the vapor (LC50): 45000 mg/m3 3 hours [Mouse]. LD50 [Rabbit] - Route: skin; Dose >20,000 ml/kg

Effects on humans:

Acute potential health effects:
- Skin: May cause skin irritation.
- Eyes: Causes eye irritation. May cause irritation of the conjunctiva.
- Inhalation: May cause respiratory tract and mucous membrane irritation. May affect respiration and may cause acute pulmonary oedema. May affect gastrointestinal tract (nausea, vomiting). May affect behaviour/central nervous system (mild central nervous system depression - exhilaration, talkativeness, boastfulness, belligerency, vertigo, diplopia, drowsiness, slurred speech, slowed reaction time, dizziness, light-headedness, somnolence, ataxia, unconsciousness, irritability, fatigue; sleep disturbances, reduced memory and concentration, stupor, coma), cardiovascular system (peripheral vascular collapse (shock) - rapid pulse, hypotension, cold pale skin, hypothermia). Other symptoms may include: flushing of face and sweating.
- Ingestion: May cause gastrointestinal tract irritation with nausea and vomiting. May affect blood, behaviour/central nervous system (CNS depression - effects may be similar to that of inhalation).

Chronic potential health effects:
- CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. Causes damage to mucous membranes, upper respiratory tract, blood, kidneys, liver and central nervous system (CNS).
- Skin: Repeated or prolonged skin contact may cause drying and cracking of the skin. Ingestion: Prolonged or repeated ingestion may affect the liver.
- Inhalation: Prolonged inhalation may affect behaviour/central nervous system (symptoms similar to those of acute inhalation), and cause liver, kidney, lung, and heart damage. It may also affect metabolism, and blood (anaemia, leukocytosis).

MUTAGENIC EFFECTS: N/A
TERATOGENIC EFFECTS: N/A
DEVELOPMENTAL TOXICITY: N/A
Other information: N/A
12. Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 220 mg/l 96 hours [Fish (Fathead minnow)]. 212.5 ppm 96 hours [Fish (Indian catfish)].

13. Disposal Considerations

Waste Disposal: Waste must be disposed of in accordance with local environmental control regulations.

14. References


15. Appendices

N/A

16. Revision History

<table>
<thead>
<tr>
<th>Version Number</th>
<th>Amendments/ Reasons for change</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Initial Release</td>
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