Material Safety Data Sheet  
Acetyl acetone

**Section 1 - Chemical Product and Company Identification**

**MSDS Name:** Acetyl acetone  
**Synonyms:** 2,4-Pentanedione; Acetylacetone.

**Section 2 - Composition, Information on Ingredients**

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>Percent</th>
<th>EINECS/ELINCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>123-54-6</td>
<td>Pentadione</td>
<td>100</td>
<td>204-634-0</td>
</tr>
</tbody>
</table>

**Section 3 - Hazards Identification**

**EMERGENCY OVERVIEW**

Appearance: colorless or slight yellow liquid. Flash Point: 34 deg C.  
**Warning! Flammable liquid and vapor.** Causes eye, skin, and respiratory tract irritation. Harmful if swallowed or absorbed through the skin. May cause central nervous system depression. May cause fetal effects based upon animal studies.  
**Target Organs:** Central nervous system.

**Potential Health Effects**  
**Eye:** Causes eye irritation. May cause chemical conjunctivitis and corneal damage.  
**Skin:** Causes skin irritation. Harmful if absorbed through the skin. Chronic exposure may cause chelation with iron and other soluble metals leading to deficiencies. Exposure to low concentrations may be cumulative. May cause irritation and dermatitis. May cause cyanosis of the extremities.  
**Ingestion:** Harmful if swallowed. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause effects similar to those for inhalation exposure. Ingestion of large amounts may cause CNS depression.  
**Inhalation:** Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. May cause respiratory tract irritation. Aspiration may lead to pulmonary edema. Vapors may cause dizziness or suffocation. May cause burning sensation in the chest.  
**Chronic:** Animal studies have reported that fetal effects/abnormalities may occur when maternal toxicity is seen. Chronic exposure may cause chelation with iron and other soluble metals leading to deficiencies. Exposure to low concentrations may be cumulative. Laboratory experiments have resulted in mutagenic effects.

**Section 4 - First Aid Measures**
**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

**Ingestion:** Call a poison control center. If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

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**Section 5 - Fire Fighting Measures**

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Flammable liquid and vapor.

**Extinguishing Media:** For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water.

**Flash Point:** 34 deg C (93.20 deg F)

**Autoignition Temperature:** 644 deg F (340.00 deg C)

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 2; Instability: 0

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**Section 6 - Accidental Release Measures**

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

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**Section 7 - Handling and Storage**

**Handling:** Use only in a well-ventilated area. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Do not ingest or inhale. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

**Storage:** Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.
Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

**Exposure Limits**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentadione</td>
<td>none listed</td>
<td>none listed</td>
<td>none listed</td>
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</table>

**Personal Protective Equipment**

**Eyes:** Wear chemical splash goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** colorless or slight yellow

**Odor:** putrid odor

**pH:** Not available.

**Vapor Pressure:** 6 mm Hg @ 20 deg C

**Vapor Density:** 3.5 (Air=1)

**Evaporation Rate:** 0.75 (n-butyl acetate=1)

**Viscosity:** Not available.

**Boiling Point:** 139-141 deg C

**Freezing/Melting Point:** -23 deg C

**Decomposition Temperature:** Not available.

**Solubility:** Soluble.

**Specific Gravity/Density:** 0.973

**Molecular Formula:** C₅H₈O₂

**Molecular Weight:** 100.12

Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Incompatible materials, light, ignition sources, excess heat.

**Incompatibilities with Other Materials:** Oxidizing agents, strong reducing agents, strong bases.

**Hazardous Decomposition Products:** Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

**Hazardous Polymerization:** Has not been reported.

Section 11 - Toxicological Information
RTECS#:  
CAS# 123-54-6: SA1925000  
LD50/LC50:  
CAS# 123-54-6:  
- Draize test, rabbit, eye: 20 mg Severe;  
- Draize test, rabbit, skin: 11.2 mL/6H (Intermittent) Mild;  
- Draize test, rabbit, skin: 33.6 mL/6H (Intermittent) Moderate;  
- Draize test, rabbit, skin: 11.2 mL/2D (Intermittent) Moderate;  
- Oral, mouse: LD50 = 951 mg/kg;  
- Oral, rat: LD50 = 55 mg/kg;  
- Skin, rabbit: LD50 = 810 uL/kg; <BR.  
Carcinogenicity:  
CAS# 123-54-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.  
Epidemiology: No information found.  
Teratogenicity: Inhalation, rat: TCLo = 398 ppm/6H (female 6-15 day(s) after conception) Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus).  
Reproductive Effects: No information found.  
Mutagenicity: Dominant Lethal Test: Inhalation, rat = 694 ppm/6h/5D.; Mutation in Mammalian Somatic Cells: Hamster, Ovary = 80 mg/L.  
Neurotoxicity: No information found.  
Other Studies:  
Section 12 - Ecological Information  
Ecotoxicity: No data available. released to soil, acetyl acetone is expected to leach readily (estimated Koc range of 6 to 28) and volatilize from dry soil surfaces. One screening study suggests that biodegradation may be the predominant fate process in water. Although this study is not specific to soil media, it suggests that biodegradation in soil may be important. If released to water, hydrolysis, aquatic oxidation, adsorption to sediment and bioconcentration in aquatic organisms are not expected to be environmentally important removal processes of acetylacetone.  
Environmental: Volatilization half-lives of 15 and 170 days have been estimated for a model river (one meter deep) and a model environmental pond, respectively. If released to the atmosphere, acetyl acetone is expected to exist in the vapor phase. Vapor-phase acetyl acetone is expected to degrade by reaction with photochemically produced hydroxyl radicals (estimated half-life of 14 days). Based on its high water solubility, removal from air via wet deposition may occur.  
Physical: No information available.  
Other: No information available.  
Section 13 - Disposal Considerations  
Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.  
RCRA P-Series: None listed.  
RCRA U-Series: None listed.
Section 14 - Transport Information

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<td><strong>UN Number:</strong></td>
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<td><strong>Additional Info:</strong></td>
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Section 15 - Regulatory Information

**Hazard Symbols:**
- XN

**Risk Phrases:**
- R 10 Flammable.
- R 22 Harmful if swallowed.

**Safety Phrases:**
- S 21 When using do not smoke.
- S 23 Do not inhale gas/fumes/vapour/spray.
- S 24/25 Avoid contact with skin and eyes.

Section 16 - Additional Information

**MSDS Creation Date:** 6/25/1999  
**Revision #5 Date:** 10/10/2003

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