Material Safety Data Sheet
Adrenaline

Section 1 - Chemical Product and Company Identification

**MSDS Name:** Adrenaline  
**Synonyms:** Epinephrine; Adrenal; 1-Adrenaline; Adrenasol

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>51-43-4</td>
<td>1,2-benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]</td>
<td>100%</td>
<td>200-098-7</td>
</tr>
</tbody>
</table>

Section 3 - Hazards Identification

**EMERGENCY OVERVIEW**

Appearance: white solid.  
**Warning!** Toxic. Harmful if swallowed. May cause eye and skin irritation. May cause respiratory and digestive tract irritation. May cause cardiac disturbances. May cause adverse reproductive effects based upon animal studies.  
**Target Organs:** Heart.

**Potential Health Effects**

**Eye:** May cause eye irritation. No information regarding eye irritation and other potential effects was found.  
**Skin:** May cause skin irritation. No information regarding skin irritation and other potential effects was found.  
**Ingestion:** Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause cardiovascular effects including increased pulse rate, arrhythmias, and heart failure.  
**Inhalation:** May cause respiratory tract irritation. Overexposure may cause dizziness, tremors, restlessness, rapid heart beat, increased blood pressure, hallucinations, acidosis, kidney failure.  
**Chronic:** Not available.

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:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
**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.

**Extinguishing Media:** For small fires, use water spray, dry chemical, carbon dioxide or chemical foam.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

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

**Upper:** Not available.

**NFPA Rating:** Not published.

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### Section 6 - Accidental Release Measures

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

**Spills/Leaks:** Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Avoid generating dusty conditions.

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### Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not get on skin or in eyes. Do not ingest or inhale.

**Storage:** Keep away from heat and flame. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep containers tightly closed.

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### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Use adequate ventilation to keep airborne concentrations low.

**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>1,2-benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]</td>
<td>none listed</td>
<td>none listed</td>
<td>none listed</td>
</tr>
</tbody>
</table>

**Personal Protective Equipment**

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**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:** Solid  
**Appearance:** white  
**Odor:** odorless  
**pH:** Not available.  
**Vapor Pressure:** Not available.  
**Vapor Density:** Not available.  
**Evaporation Rate:** Not available.  
**Viscosity:** Not available.  
**Boiling Point:** Not available.  
**Freezing/Melting Point:** Not available.  
**Decomposition Temperature:** Not available.  
**Solubility:** Not available.  
**Specific Gravity/Density:** Not available.  
**Molecular Formula:** C9H14ClNO3  
**Molecular Weight:** 219.5559

Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.  
**Conditions to Avoid:** Incompatible materials.  
**Incompatibilities with Other Materials:** Strong oxidizers.  
**Hazardous Decomposition Products:** Hydrogen chloride, nitrogen oxides, carbon monoxide, carbon dioxide.  
**Hazardous Polymerization:** Has not been reported.

Section 11 - Toxicological Information

**RTECS#:**  
**CAS# 51-43-4:** DO2625000  
**LD50/LC50:**  
**CAS# 51-43-4:**  
Skin, rat: LD50 = 62 mg/kg;<BR.  

**Carcinogenicity:**  
CAS# 51-43-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.  

**Epidemiology:** No data available.  
**Teratogenicity:** No data available.  
**Reproductive Effects:** Studies are reported in RTECs where injection of adrenaline caused a variety of reproductive effects in animals.  
**Mutagenicity:** Mutagenic studies are reported in RTECs.  
**Neurotoxicity:** No data available.  
**Other Studies:**

Section 12 - Ecological Information

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**: CAS# 51-43-4: waste number P042.
**RCRA U-Series**: None listed.

Section 14 - Transport Information

<table>
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<tr>
<th>IATA</th>
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<tbody>
<tr>
<td>Shipping Name</td>
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<tr>
<td>Hazard Class</td>
</tr>
<tr>
<td>UN Number</td>
</tr>
<tr>
<td>Packing Group</td>
</tr>
</tbody>
</table>

Section 15 - Regulatory Information

**Hazard Symbols**: T

**Risk Phrases**:
- R 23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
- R 33 Danger of cumulative effects.

**Safety Phrases**:
- 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**: 12/12/1997
**Revision #3 Date**: 3/18/2003

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