Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Common Name/Trade Name: Acrolein
Catalog Number(s): AC200
CAS#: 107-02-8
RTECS: AS1050000
TSCA: TSCA 8(b) inventory: Acrolein
CI#: Not applicable.
Manufacturer: SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248
Commercial Name(s): Not available.
Synonym: 2-Propenal; Acraldehyde; Acryaldehyde; Acrylic Aldehyde; Aqualin; Allyl aldehyde; Aqualine; Biocide; Crolean; Ethylene aldehyde; Magnacide; Prop-2-enal
Chemical Name: Acrolein
Chemical Family: Aliphatic aldehyde. (Solvent.)
Chemical Formula: H2C=CHCHO or C3-H4-O
Supplier: SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248

Section 2. Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
<th>CEIL (mg/m³)</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Acrolein</td>
<td>107-02-8</td>
<td>0.23</td>
<td>0.69</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Toxicological Data on Ingredients

Acrolein:
- **ORAL (LD50):** Acute: 26 mg/kg [Rat], 13.9 mg/kg [Mouse], 7 mg/kg [Rabbit].
- **DERMAL (LD50):** Acute: 200 mg/kg [Rabbit].
- **VAPOR (LC50):** Acute: 18 mg/m³ 4 hours [Rat], 66 ppm 6 hours [Mouse].

Section 3. Hazards Identification

Potential Acute Health Effects

Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (permeator). Slightly hazardous in case of skin contact (corrosive), of eye contact (corrosive). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Continued on Next Page
Potential Chronic Health Effects

CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC.
MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.
The substance is toxic to lungs, upper respiratory tract. The substance may be toxic to skin, eyes. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4. First Aid Measures

Eye Contact
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention immediately.

Skin Contact
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact
Wash with a disinfected soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation
Evacuate the victim to a safe area as soon as possible. Loosen 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. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion
If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion
Not available.

Section 5. Fire and Explosion Data

Flammability of the Product Flammable.
Auto-Ignition Temperature 220°C (428°F)
Flash Points CLOSED CUP: -26°C (-14.8°F). OPEN CUP: -18°C (-0.4°F) (Cleveland).
Flammable Limits LOWER: 2.8% UPPER: 31%
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.
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 Vapors may form explosive mixtures with air. Vapor may travel considerable distance to source of ignition and flash back. When heated to decomposition it emits toxic fumes of carbon monoxide, peroxides.
Section 6. Accidental Release Measures

<table>
<thead>
<tr>
<th>Small Spill</th>
<th>Large Spill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.</td>
<td>Flammable liquid. Corrosive liquid. Poisonous liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.</td>
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</table>

Section 7. Handling and Storage

<table>
<thead>
<tr>
<th>Precautions</th>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/ fumes/ vapor/ spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatables such as oxidizing agents, acids, alkalis.</td>
<td>Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Do not store above 8°C (46.4°F). Refrigerate. Sensitive to light.</td>
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</table>

Section 8. Exposure Controls/Personal Protection

<table>
<thead>
<tr>
<th>Engineering Controls</th>
<th>Personal Protection</th>
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<tbody>
<tr>
<td>Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.</td>
<td>Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.</td>
</tr>
<tr>
<td>Personal Protection in Case of a Large Spill</td>
<td>Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.</td>
</tr>
<tr>
<td>Exposure Limits</td>
<td>TWA: 0.1 STEL: 0.3 from ACGIH (TLV) [United States] TWA: 0.23 STEL: 0.69 from ACGIH (TLV) [United States]</td>
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<tr>
<td>Consult local authorities for acceptable exposure limits.</td>
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</table>

Section 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical state and appearance</th>
<th>Odor</th>
<th>Taste</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Weight</td>
<td>56.06 g/mole</td>
<td></td>
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<tr>
<td>pH (1% soln/water)</td>
<td>7 [Neutral.]</td>
<td></td>
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<tr>
<td>Boiling Point</td>
<td>52.5°C (126.5°F)</td>
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<tr>
<td>Melting Point</td>
<td>-88°C (-126.4°F)</td>
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<tr>
<td>Critical Temperature</td>
<td>254°C (489.2°F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.8389 (Water = 1)</td>
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<tr>
<td>Vapor Pressure</td>
<td>28 kPa (@ 20°C)</td>
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<tr>
<td>Vapor Density</td>
<td>1.94 (Air = 1)</td>
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<tr>
<td>Volatility</td>
<td>Not available.</td>
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<tr>
<td>Odor Threshold</td>
<td>0.21 ppm</td>
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<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>The product is equally soluble in oil and water; log(oil/water) = 0</td>
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<tr>
<td>Ionicity (in Water)</td>
<td>Not available.</td>
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Acrolein

Dispersion Properties

See solubility in water, diethyl ether.

Solubility

Soluble in cold water, hot water, diethyl ether.
Soluble in petroleum ether, alcohol, oxygenated solvents.
Miscible with lower alcohols, ketones, benzene.
Solubility in water: 208 g/kg @ 20 deg. C; 212,000 mg/l @ 25 deg. C

Section 10. Stability and Reactivity Data

Stability

The product is stabilized with Hydroquinone. However, it may form unstable peroxides over time.

Instability Temperature

Not available.

Conditions of Instability

Heat, ignition sources, incompatible materials, light.

Incompatibility with various substances

Reactive with oxidizing agents, acids, alkalis.

Corrosivity

Non-corrosive in presence of glass.

Special Remarks on Reactivity

Incompatible with amines. Incompatible with oxygen and peroxides. May polymerize on exposure to light, or in presence of alkali or strong acid forming disacryl. Incompatible with oleum, ethyleneimine, chlorosulfonic acid, ammonium hydroxide, 2-aminoethanol, alkalis, strong acids, mineral acids, oxidizers, ammonia. May form shock sensitive peroxides overtime. Polymerizes readily unless inhibited (stabilized)

Special Remarks on Corrosivity

Non-corrosive to iron and steel at room temperature

Polymerization

Will not occur with the product as is. This product is stabilized with Hydroquinone. However, it will polymerize of not stabilized, or in contact with acids (including sulfur dioxide), alkalis, volatile amines, salts, thiourea, oxidants (air), adn on exposure to light and heat..

Section 11. Toxicological Information

Routes of Entry

Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.
Acute oral toxicity (LD50): 7 mg/kg [Rabbit].
Acute dermal toxicity (LD50): 200 mg/kg [Rabbit].
Acute toxicity of the vapor (LC50): 18 mg/m³ 4 hours [Rat].

Chronic Effects on Humans

CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC.
MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast.
Causes damage to the following organs: lungs, upper respiratory tract.
May cause damage to the following organs: skin, eyes.

Other Toxic Effects on Humans

Very hazardous in case of skin contact (irritant), of ingestion. .
Hazardous in case of skin contact (permeator), of inhalation (lung corrosive).
Slightly hazardous in case of skin contact (corrosive), of eye contact (corrosive).

Special Remarks on Toxicity to Animals

Not available.

Special Remarks on Chronic Effects on Humans

May cause adverse reproductive effects.
May affect genetic material (mutagenic)

Special Remarks on other Toxic Effects on Humans

Acute Potential Health Effects:
Skin: Causes severe irritation. May cause skin burns. May be fatal if absorbed through skin.
Eyes: Causes severe irritation. May cause corneal burns. It is a lacrimating agent.
Inhalation: May be fatal if inhaled. It causes respiratory tract irritation. It is a severe pulmonary irritant.
Symptoms may include difficulty breathing(dyspnea), chest congestion, bronchospasm. Delayed of acute lung injury (acute pulmonary edema, emphysema), permant lung damage may also occur. Nausea, vomiting, and CNS can also occur. Death may result from acute lung injury and/or respiratory failure.
Ingestion: May be fatal if swallowed. May produce severe irritation of the mouth, and gastrointestinal tract. It may also affect behavior/central nervous system (general anesthetic, somolence). Other effects may include increase in blood pressure and heart rate.
Chronic Potential Health Effects:
Acrolein

Prolonged or repeated exposure an cause allergies, including skin rash, hives, and asthma. Prolonge or repeated ingestion or inhalation may also affect the urinary system, liver, metabolism (weight loss), respiratory system (lungs), endocrine system (adrenal gland).

Section 12. Ecological Information

Ecotoxicity
Not available.

BOD5 and COD
Not available.

Products of Biodegradation
 Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation
The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation
Not available.

Section 13. Disposal Considerations

Waste Disposal
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification
CLASS 3: Flammable liquid.
CLASS 6.1: Poisonous material.

Identification
: Acrolein, stabilized UNNA: 1092 PG: I

Special Provisions for Transport
Marine Pollutant.
Inhalation Hazard Zone A

DOT (Pictograms)

Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations
Connecticut hazardous material survey.: Acrolein
Illinois toxic substances disclosure to employee act: Acrolein
Illinois chemical safety act: Acrolein
New York release reporting list: Acrolein
Rhode Island RTK hazardous substances: Acrolein
Pennsylvania RTK: Acrolein
Florida: Acrolein
Minnesota: Acrolein
Massachusetts RTK: Acrolein
Massachusetts spill list: Acrolein
New Jersey: Acrolein
New Jersey spill list: Acrolein
Louisiana RTK reporting list: Acrolein
Louisiana spill reporting: Acrolein
TSCA 8(b) inventory: Acrolein
TSCA 8(a) PAIR: Acrolein
TSCA 8(d) H and S data reporting: Acrolein: Effective date: 9/30/91; Sunset date: 6/30/98
SARA 302/304/311/312 extremely hazardous substances: Acrolein
SARA 313 toxic chemical notification and release reporting: Acrolein
CERCLA: Hazardous substances.: Acrolein: 1 lbs. (0.4536 kg)

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Acrolein

California Proposition 65 Warnings
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.
California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations
EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications
WHMIS (Canada) CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
CLASS D-2A: Material causing other toxic effects (VERY TOXIC).
CLASS E: Corrosive liquid.

DSCL (EEC) R11- Highly flammable.
R24/25- Toxic in contact with skin and if swallowed.
R26- Very toxic by inhalation.
R34- Causes burns.
R50- Very toxic to aquatic organisms.

R26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
R36/37/39- Wear suitable protective clothing, gloves and eye/face protection.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

HMIS (U.S.A.)
Health Hazard 3
Fire Hazard 3
Reactivity 0

National Fire Protection Association (U.S.A.)
Flammability 3
Reactivity 3
Specific hazard

WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)

TDG (Canada) (Pictograms)

ADR (Europe) (Pictograms)

Protective Equipment
Gloves.
Full suit.

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**Section 16. Other Information**

<table>
<thead>
<tr>
<th>MSDS Code</th>
<th>A3220</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>References</strong></td>
<td></td>
</tr>
<tr>
<td>· Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec.</td>
<td></td>
</tr>
<tr>
<td>· The Sigma-Aldrich Library of Chemical Safety Data, Edition II.</td>
<td></td>
</tr>
<tr>
<td>Registry of Toxic Effects of Chemicals (RTECS)</td>
<td></td>
</tr>
<tr>
<td>Hazardous Substance Data Bank (HSDB).</td>
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<tr>
<td>Hazardtext.</td>
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<tr>
<td>Reprotex.</td>
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<tr>
<td>New Jersey Hazardous Substance Fact Sheet</td>
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</tbody>
</table>

**Other Special Considerations**

Not available.

**Validated by Sonia Owen on 8/11/2006.**

**Verified by Sonia Owen.**

**Printed 9/8/2006.**

**CALL (310) 516-8000**

**Notice to Reader**

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.