# Material Safety Data Sheet

## Section 1 - Product and Company Information

**Product Name**
Acrolein, 90%<br>
**Product Number**
CI0021<br>
**Brand**
Aldrich Chemical<br>
**Company**
Sigma-Aldrich<br>
**Address**
3050 Spruce Street<br>
SAINT LOUIS, MO 63103 US<br>
**Technical Phone**
314 771 5765<br>
**Fax**
800 365 0052<br>
**Emergency Phone**
414 273 3850 Ext. 5996

## Section 2 - Composition/Information on Ingredient

<table>
<thead>
<tr>
<th>Substance Name</th>
<th>CAS #</th>
<th>SARA 313</th>
<th>EC No</th>
<th>Annex I Index Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACROLEIN</td>
<td>107-02-8</td>
<td>Yes</td>
<td>203-453-4</td>
<td>605-008-00-3</td>
</tr>
</tbody>
</table>

**Formula**
C3H4O

**Synonyms**
Acrolein, Acroleinhydroperoxide (Italian), Acrolein (Italian), Acrolein (ACGIH/OSHA), Acrolein (Dutch, French), Acrylaide (German), Acrylaldehyde, Acrylic aldehyde, Acrolein (Czech), Acrolein (Polish), Acrylhydro (French), Aldehyde acetate (Ruman), Allyl aldehyde, Aqualin, Aqualin, Alcoh, Ethylene aldehyde, Magnacide B, Magnacide H, NSC 5619, 2-Propanol, Prop-2- en-1-ol, ROH, water number 7003, ethanol

## Section 3 - Hazards Identification

**Emergency Overview**
Flammable (USA) Highly Flammable (EU), Highly Toxic (USA) Very Toxic (EU), Toxic in contact with skin and if swallowed, Very toxic by ingestion. Causes burns.
Severe lachrymatory. Readily absorbed through skin. Target organ(s): Liver, Cardiovascular system, Eyes, Kidneys.

**HMSI**
Health: 6
Flammability: 3
Reactivity: 1

**NFPA**
Health: 4
Flammability: 3
Reactivity: 1

*additional chronic hazards present.

## Section 4 - First Aid Measures

**Oral Exposure**
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

**Inhalation Exposure**
If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

## Section 5 - Fire Fighting Measures

**Flammable Hazards:**
Yes

**Explosion Hazards**
Vapor may travel considerable distance to source of ignition and flash back. Container explosion may occur under fire conditions.

**Flash Point:**
-20.2 °F
-29 °C

**Explosion Limits:**
Lower: 2.8 %
Upper: 31 %

**Autoignition Temp:**
220 °C

**Flammability:**
Yes

**Extinguishing Media**
Suitable:
Carbon dioxide, dry chemical powder, or appropriate foam.

**Unsuitable:**
Water may be effective for cooling, but may not affect extinguishment.

## Section 6 - Accidental Release Measures

**Procedure to be Followed in Case of Leak or Spill**
Evacuate area. Shut off all sources of ignition. Use non-sparking tools.

**Procedure(s) of Personal Protection**
Use self-contained breathing apparatus, protective clothing to prevent contact with skin and eyes.

## Section 7 - Handling and Storage

**Handling**

**User Exposure**
Do not breathe vapor. Do not get in eyes, on skin, or clothing. Avoid prolonged or repeated exposure.
Section 8 - Exposure Controls / PPE

Engineering Controls
Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

Personal Protective Equipment
Respiratory
Government approved respirator.

Hand
Compatible chemical-resistant gloves.

Eye
Chemical safety goggles.

General Hygiene Measures
Remove and wash contaminated clothing promptly. Wash thoroughly after handling.

Exposure Limits

<table>
<thead>
<tr>
<th>Country</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>NDG</td>
<td>0.2 mg/L</td>
</tr>
<tr>
<td>Polish</td>
<td>NDGCh</td>
<td>0.5 mg/L</td>
</tr>
</tbody>
</table>

Exposure Limits, RTECS

<table>
<thead>
<tr>
<th>Country</th>
<th>Source</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>ACGIH</td>
<td>Ceiling concentration</td>
<td>0.1 PPM</td>
</tr>
<tr>
<td>USA</td>
<td>MSHA Standard-air</td>
<td>TWA</td>
<td>0.1 PPM (0.25 mg/L)</td>
</tr>
<tr>
<td>USA</td>
<td>OSHA</td>
<td>PEL</td>
<td>0.1 PPM (0.25 mg/L)</td>
</tr>
<tr>
<td>New Zealand</td>
<td>OEL</td>
<td>TWASTEL</td>
<td>0.1 PPM (0.3 PPM)</td>
</tr>
</tbody>
</table>

Section 9 - Physical/Chemical Properties

Appearance
Physical State
Liquid

Molecular Weight: 55.06 AMU

pH: 6.0

BP/RP Range: 53 °C

MP/RP Range: -87 °C

Freezing Point: N/A

Vapor Pressure: 209.35 mmHg

Vapor Density: 1.54 g/L

Saturated Vapor Conc.: N/A

SG/Density: 0.830 g/cm3

Bulk Density: N/A

Odor Threshold: 0.014 - 9.973 ppm

Aldrich Chemical - 110221
Sigma-Aldrich Corporation
www.sigma-aldrich.com

Section 10 - Stability and Reactivity

Stability
Stable.

Conditions to Avoid
May polymerize on exposure to light. Sensitive to heat. Sensitive to air.

Materials to Avoid
Oxidizing agents, Oxygen, Bases, Strong acids.

Hazardous Decomposition Products
Carbon monoxide, Carbon dioxide.

Hazardous Polymerization
May occur.

Section 11 - Toxicological Information

Route of Exposure
Skin Contact
Causes burns.

Skin Absorption
Toxic if absorbed through skin. Readily absorbed through skin.

Eye Contact
Causes burns. Lachrymatory.

Inhalation
May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Ingestion
Toxic if swallowed.

Target Organ(s) or System(s)
Liver, Cardiovascular System, Lungs, Eyes, Kidneys.

Signs and Symptoms of Exposure
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

Aldrich Chemical - 110221
Sigma-Aldrich Corporation
www.sigma-aldrich.com
RTECS Number: AS1050000

Toxicity Data
Inhalation - Human: 5500 PPB (LC50)
Inhalation - Human: 153 ppm (LC50)
Oral - Rat: 26 mg/kg (LD50)
Inhalation - Rat: 18 mg/m3 (LC50)
Intraperitoneal - Rat: 4 MG/KG (LD50)
Subcutaneous - Rat: 50 MG/KG (LD50)
Remarks: Behavioral/Gastric anesthetic.
Liver: Fatty liver degeneration.
Oral - Mouse: 13.9 mg/kg (LD50)
Remarks: Behavioral/Somatic (general depressed activity).
Skin and Appendages: Other: Hair.
Nutritional and Gross Metabolic: Weight loss or decreased weight gain.
Inhalation - Mouse: 66 ppm (LC50)
Intraperitoneal - Mouse: 9006 MG/KG (LD50)
Subcutaneous - Mouse: 30 MG/KG (LC50)
Remarks: Behavioral/General anesthetic.
Liver: Fatty liver degeneration.
Oral - Rabbit: 7 mg/kg (LD50)
Skin - Rabbit: 200 mg/kg (LD50)

Irritation Data
Eyes - Human: 0.5 ppm 12M
Skin - Rabbit: 5 mg
Remarks: Open irritation test
Skin - Rabbit: 2 mg 24H
Remarks: Severe irritation effect
Eyes - Rabbit: 1 mg
Remarks: Severe irritation effect
Eyes - Rabbit: 0.06 mg 24H
Remarks: Severe irritation effect

Chronic Exposure - Carcinogenic
Result: This product is not classified as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC Carcinogen List
Rating: Group 3

ACGIH Carcinogen List
Rating: A4

Chronic Exposure - Mutagen
Species | Dose | Cell Type | Mutation test
--- | --- | --- | ---
Human | 30 UMOL/L | Other cell types | DNA damage
Human | 100 UMOL/L | lymphoblast | DNA damage
Human | 5 UMOL/L | lymphocyte | Sister chromatid exchange
Human | 200 NMOL/L | fibroblast | Mutation in mammalian somatic cells.
Rat | 30 NMOL/L | Other cell types | DNA damage
Rat | 500 MG/KG | intraperitoneal | DNA inhibition
Rat | 500 MG/KG | intraperitoneal | Other mutation test systems
Hamster | 10 UMOL/L | ovary | Sister chromatid exchange
Hamster | 500 NMOL/L | lung | Mutation in mammalian somatic cells.
Mammal | 68 GMAL | 3H | lymphocyte | DNA inhibition
Mammal | 80 UMOL/L | | |

Chronic Exposure - Reproductive Hazard
Species | Dose | Route of Application | Exposure Time | Result:
--- | --- | --- | --- | ---
Rat | 340 MG/KG | Oral | (MULTIGENERATION) | Effects on Neophobia: Growth statistics (e.g., reduced weight gain).
Rabbit | 6 MG/KG | Intravenous | (90 PREG) | Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Section 12 - Ecological Information
No data available.

Acute Eco toxicity Tests
Test Type | LC50 Algae
--- | ---
Time | Value
--- | ---
24 h | 0.76 - 1.07 mg/l

Test Type | EC50 Daphnia
--- | ---
Species | Daphnia magna
Time | Value
--- | ---
48 h | 0.04 - 0.1 mg/l

Test Type | LC50 Fish
--- | ---
Species | Loriculus idus
Time | Value
--- | ---
48 h | 0.25 - 2.5 mg/l

Test Type | LC100 Fish
--- | ---
Species | Loriculus idus
Time | Value
--- | ---
48 h | 0.3 - 4.2 mg/l

Test Type | LC50 Fish
--- | ---
Species | Lanoptis macrochirus (Blugill)
Time | Value
--- | ---
36 h | 0.08 - 0.12 mg/l

Test Type | LC50 Fish
--- | ---
Species | Ochotorychus myltes (Rainbow trout)
Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation
Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT
Proper Shipping Name: Acrolein, inhibited
UN#: 1092
Class: 6.1
Packing Group: Packing Group I

IATA
Proper Shipping Name: Acrolein, stabilized
IATA UN Number: 1092
Hazard Class: 6.1
Packing Group: I
Not Allowed - Aircraft: Not permitted for air transport.

Section 15 - Regulatory Information

EU Directive Classification
Symbol of Danger: F T= N
Indication of Danger
Highly Flammable. Very toxic. Dangerous for the environment.
Risk Statements: R: 11 24/25 26 34 50
Highly flammable. Toxic in contact with skin and if swallowed. Very toxic by inhalation. Causes burns. Very toxic to aquatic organisms.
Safety Statements: S: 23 26 28 36/37/39 45 61
Do not breathe vapor. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of soap and water. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid release to the environment. Refer to special instructions/safety data sheets.

US Classification and Label Text
Indication of Danger
Risk Statements
Toxic in contact with skin and if swallowed. Very toxic by inhalation. Causes burns.
Safety Statements
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of insufficient ventilation, wear suitable respiratory equipment. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

United States Regulatory Information
SARA Listed: Yes

Summary:
1 %
Notes: This product is subject to SARA section 313 reporting requirements.

TSCA Inventory Item: Yes