Section 1 - Product and Company Information

Product Name: Hydroxylamine hydrochloride, 98%, A.C.S. reagent
Product Number: 255590
Brand: Aldrich Chemical
Company: Sigma-Aldrich
Street Address: 3550 Spruce Street
City, State, Zip, Country: SAINT LOUIS, MO 63103 US
Technical Phone: 314 771 5765
Fax: 600 395 6562
Emergency Phone: 414 273 3850 Ext. 5996

Section 2 - Composition/Information on Ingredient

Substance Name: HYDROXYLAMINE HYDROCHLORIDE
CAS #: 5470-11-1
SARA 313: No

Formula: HNOH.HCl
Synonyms: Hydroxylamine hydrochloride, Hydroxylammonium chloride, Hydroxylamine chloride, Hydroxylamine chloride (1:1), Hydroxylammonium chloride, Oxammonium hydrochloride

Section 3 - Hazards Identification

Emergency Overview
Toxic. Dangerous for the environment.
Toxic If swallowed. May cause sensitization by skin contact. Harmful: danger of serious damage to health by prolonged exposure if swallowed. Very toxic to aquatic organisms. Irritating to eyes and skin.
Target organ(s): Blood.

HMIS Rating
Health: 3
Flammability: 0
Reactivity: 1

NFPA Rating
Health: 3
Flammability: 0
Reactivity: 1

*additional chronic hazards present.
For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

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

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

Dermal Exposure
In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

Section 5 - Fire Fighting Measures

Explosion Hazards
Container explosion may occur under fire conditions.

Autoignition Temp.: N/A

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

Firefighting
Protective Equipment
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s)
Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Procedure(s) to be Followed in Case of Leak or Spill
Evacuate area.

Procedure(s) of Personal Precaution(s)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

Methods for Cleaning Up
Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling
User Exposure
Do not breathe dust. Do not get in eyes, on skin, or clothing. Avoid prolonged or repeated exposure.

Storage
Suitable: Keep tightly closed.

Special Requirements
Air and moisture sensitive.

Section 8 - Exposure Controls / PPE

Engineering Controls
Use only in a chemical fume hood. Safety shower and eye bat.

Personal Protective Equipment
Respiratory
Government approved respirator.
Hand
Compatible chemical-resistant gloves.
Eye
Chemical safety goggles.
**General Hygiene Measures**
Wash contaminated clothing before reuse. Wash thoroughly after handling.

**Section 9 - Physical/Chemical Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Weight</td>
<td>6,949 AMU</td>
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<tr>
<td>pH</td>
<td>25 - 35</td>
</tr>
<tr>
<td>Bp/Bp Range</td>
<td>N/A</td>
</tr>
<tr>
<td>Mp/Mp Range</td>
<td>155 - 157 °C</td>
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<tr>
<td>Freezing Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>N/A</td>
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<tr>
<td>Vapor Density</td>
<td>N/A</td>
</tr>
<tr>
<td>Saturated Vapor Concent.</td>
<td>N/A</td>
</tr>
<tr>
<td>SG/Density</td>
<td>1.67 g/cm3</td>
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<tr>
<td>Bulk Density</td>
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<tr>
<td>Odor Threshold</td>
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</tr>
<tr>
<td>Volatility</td>
<td>N/A</td>
</tr>
<tr>
<td>VDC Content</td>
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<tr>
<td>Water Content</td>
<td>N/A</td>
</tr>
<tr>
<td>Solvent Content</td>
<td>N/A</td>
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<tr>
<td>Evaporation Rate</td>
<td>N/A</td>
</tr>
<tr>
<td>Viscosity</td>
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<tr>
<td>Partition Coefficient</td>
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<tr>
<td>Decomposition Temp.</td>
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</tr>
<tr>
<td>Flash Point °F</td>
<td>N/A</td>
</tr>
<tr>
<td>Flash Point °C</td>
<td>N/A</td>
</tr>
<tr>
<td>Explosion Limits</td>
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<tr>
<td>Flammability</td>
<td>N/A</td>
</tr>
<tr>
<td>Autoignition Temp</td>
<td>N/A</td>
</tr>
<tr>
<td>Solubility</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Section 10 - Stability and Reactivity**

- **Stability**: Stable.
- **Conditions of Instability**: Air and moisture sensitive.
- **Materials to Avoid**: Strong oxidizing agents.

**Hazardous Decomposition Products**
Nitrogen oxides, Hydrogen chloride gas.

**Section 11 - Toxicological Information**

**Route of Exposure**
- **Skin Contact**: Causes skin irritation.
- **Skin Absorption**: May be harmful if absorbed through the skin.
- **Eye Contact**: Causes eye irritation.
- **Inhalation**: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.
- **Ingestion**: Toxic if swallowed.

**Sensitization**
Skin: May cause allergic skin reaction.

**Target Organ(s) or System(s)**
Blood.

**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 spasm, 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. Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer. May cause convulsions.

**RTECS Number**: NC3075000

**Toxicity Data**
- **Oral - Rat**: 141 mg/kg (LD50)
- **Remarks**: Behavioral/Convolutions or effect on seizure threshold.
- **Oral - Mouse**: 408 mg/kg (LD50)
- **Inhalation - Mouse**: 10 MG/L (LD50)
- **Subcutaneous - Mouse**: 125 MG/L (LD50)

**Chronic Exposure - Mutagen**

<table>
<thead>
<tr>
<th>Species</th>
<th>Dose</th>
<th>Cell Type</th>
<th>Mutation Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human</td>
<td>10 MG/L</td>
<td>Other cell types</td>
<td>Other mutation test systems</td>
</tr>
<tr>
<td>Human</td>
<td>25 MG/L</td>
<td>Leukocyte</td>
<td>Cytogenetic analysis</td>
</tr>
<tr>
<td>Rat</td>
<td>1950</td>
<td>Embryo</td>
<td>Morphological transformation</td>
</tr>
<tr>
<td>Mouse</td>
<td>220 MG/L (+S9)</td>
<td>Lymphocyte</td>
<td>Mutation in microorganisms</td>
</tr>
<tr>
<td>Mouse</td>
<td>72 UMOL/L</td>
<td>Embryo</td>
<td>Cytogenetic analysis</td>
</tr>
<tr>
<td>Mouse</td>
<td>31500 UG/L</td>
<td>Lymphocyte</td>
<td>Mutation in mammalian somatic cells</td>
</tr>
<tr>
<td>Hamster</td>
<td>72 UMOL/L</td>
<td>Other cell types</td>
<td>Cytogenetic analysis</td>
</tr>
<tr>
<td>Hamster</td>
<td>5 MIO/L</td>
<td>Lung</td>
<td>Sister chromatid exchange</td>
</tr>
<tr>
<td>Monkey</td>
<td>50 MG/L</td>
<td>Kidney</td>
<td>Micronucleus test</td>
</tr>
<tr>
<td>Monkey</td>
<td>25 MG/L</td>
<td>Kidney</td>
<td>Cytogenetic analysis</td>
</tr>
<tr>
<td>Mammal</td>
<td>25 MG/L</td>
<td>Lymphocyte</td>
<td>Other mutation test systems</td>
</tr>
<tr>
<td>Mammal</td>
<td>500 MG/L</td>
<td>Lymphocyte</td>
<td>Cytogenetic analysis</td>
</tr>
<tr>
<td>Mammal</td>
<td>25 MG/L</td>
<td>Lymphocyte</td>
<td>Sister chromatid exchange</td>
</tr>
</tbody>
</table>

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Page 3

Aldrich Chemical - 265580  Sigma-Aldrich Corporation  www.sigma-aldrich.com
Page 4
Section 12 - Ecological Information

Acute Ecotoxicity Tests

Test Type
LC50 Fish
Species
Leuciscus idus
Time:     Value:
48.0 h      1 - 10 mg/l

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation
Contact a licensed professional waste disposal service to dispose of this material.
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT
Proper Shipping Name: Toxic solid, inorganic, n.o.s.
UN#: 3288
Class: 6.1
Packing Group: Packing Group III
Hazard Label: Keep away from food
PIR: Not PIR

IATA
Proper Shipping Name: Toxic solid, inorganic, n.o.s.
IATA UN Number: 3288
Hazard Class: 6.1
Packing Group: III

Section 15 - Regulatory Information

EU Directives Classification
Symbol of Danger: A4 N
Indication of Danger
Harmful. Dangerous for the environment.
Risk Statements
R: 22 36/38 43 48/22 53
Harmful if swallowed. Irritating to eyes and skin. May cause sensitization by skin contact. Harmful: danger of serious damage to health by prolonged exposure if swallowed. Very toxic to aquatic organisms.
Safety Statements
S: 22 24 37 61
Do not breathe dust. Avoid contact with skin. Wear suitable gloves. Avoid release to the environment. Refer to special instructions/safety data sheets.

US Classification and Label Text
Indication of Danger
Toxic. Dangerous for the environment.
Risk Statements
Toxic if swallowed. May cause sensitization by skin contact. Harmful: danger of serious damage to health by prolonged exposure if swallowed. Very toxic to aquatic organisms. Irritating to eyes and skin.
Safety Statements
Do not breathe dust. Avoid contact with skin. Wear suitable gloves. Avoid release to the environment. Refer to special instructions/safety data sheets.

US Statements
Target organ(s): Blood.

United States Regulatory Information
SARA Listed: No

Section 16 - Other Information

TSCA Inventory Item: Yes

Canada Regulatory Information
WHMIS Classification
This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: Yes
NDSL: No

Disclaimer
For R&D use only. Not for drug, household or other uses.

Warranty
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