# HYDROXYLAMINE HYDROCHLORIDE

**MSDS Number: H5960**

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## 1. Product Identification

**Synonyms:** Oxammonium hydrochloride; hydroxylammonium chloride
**CAS No.:** 5470-11-1
**Molecular Weight:** 69.5
**Chemical Formula:** NH2OH HCl
**Product Codes:**
J.T. Baker: 2195, 2196
Mallinckrodt: 5258

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## 2. Composition/Information on Ingredients

| Ingredient | CAS No | Percent | Hazardous |
|---|---|---|---|
| Hydroxylamine, Hydrochloride | 5470-11-1 | 100% | Yes |

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## 3. Hazards Identification

### Emergency Overview

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**DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED. AFFECTS THE BLOOD. MAY CAUSE METHEMOGLOBINEMIA.**

**J.T. Baker SAF-T-DATA(tm)** Ratings (Provided here for your convenience)

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Health Rating: 3 - Severe (Poison)

Flammability Rating: 2 - Moderate
Reactivity Rating: 2 - Moderate
Contact Rating: 3 - Severe (Corrosive)
Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES
Storage Color Code: White (Corrosive)
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**Potential Health Effects**
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**Inhalation:**
Corrosive. Extremely destructive to tissues of the mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. Inhalation may be fatal as a result of spasm inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema.
**Ingestion:**
May convert hemoglobin to methemoglobin, producing cyanosis. May also cause nausea, vomiting, fall in blood pressure, headache, vertigo, ringing in the ears, shortness of breath, severe blood oxygen deficiency and convulsions. High concentrations cause coma and death from circulatory collapse.
**Skin Contact:**
Irritant and possible sensitizer. May cause burns.
**Eye Contact:**
Corrosive to the eyes. May cause severe irritation and corneal damage.
**Chronic Exposure:**
This substance is a blood toxin, causing hemoglobin to convert to methemoglobin, resulting in cyanosis. Lengthy or repeated exposures may result in decreased appetite, anemia, weight loss, nervous system affects, and kidney, liver and bone marrow damage.
**Aggravation of Pre-existing Conditions:**
Persons with pre-existing disorders of the blood, skin, liver, kidneys or lungs may be at an increased risk from exposure.

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# 4. First Aid Measures

**Inhalation:**
Remove to fresh air. If not breathing, give artificial respiration. If breathing is

difficult, give oxygen. Get medical attention immediately.

**Ingestion:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

**Note to Physician:**

Provide general supportive measures and treat symptomatically. In cases of ingestion, the decision of whether or not to induce vomiting should be made by the attending physician. If burn is present, treat as a thermal burn. Removing adhered product from burned skin may compromise the skin integrity and result in infection and/or more severe scarring.

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## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard. As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

**Explosion:**

Contact with strong oxidizing materials may cause extremely violent combustion. May explode when heated to 140C (284F). Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Water spray may be used to extinguish surrounding fire and cool exposed containers. Water spray will also reduce fume and irritant gases.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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## 6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

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## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Isolate from oxidizing materials. Avoid dust formation and control ignition sources. Employ grounding, venting and explosion relief provisions in accord with accepted engineering practices in any process capable of generating dust and/or static electricity. Empty only into inert or non-flammable atmosphere. Emptying contents into a non-inert atmosphere where flammable vapors may be present could cause a flash fire or explosion due to electrostatic discharge.

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## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**
None established.
**Ventilation System:**
A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
**Personal Respirators (NIOSH Approved):**
For conditions of use where exposure to the dust or mist is apparent, a half-face dust/mist respirator may be worn. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
**Skin Protection:**
Wear impervious protective clothing, including boots, gloves, lab coat, apron or

coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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## 9. Physical and Chemical Properties

**Appearance:**

Hygroscopic, colorless to slightly yellow crystals.

**Odor:**

Odorless.

**Solubility:**

83 g/100 mg water @ 17C (63F); slowly decomposes.

**Density:**

1.67

**pH:**

3.2 (0.2 M solution)

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

305.6C (583F)

**Melting Point:**

155 - 157C (311 - 315F) Decomposes.

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

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

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## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Slowly decomposes when moist.

**Hazardous Decomposition Products:**

Emits toxic fumes of nitrogen oxides and hydrogen chloride when heated to decomposition.

**Hazardous Polymerization:**
Will not occur.
**Incompatibilities:**
Strong oxidizing agents, heat plus sodium acetate or ether, carbonyl compounds, copper sulfate, zinc and phosphorus chlorides.
**Conditions to Avoid:**
Heat, flame, moisture, dusting, sources of ignition and shock, and incompatibles.

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# 11. Toxicological Information

Hydroxylamine hydrochloride: oral mouse LD50: 408 mg/kg; Oral rat LD50: 141 mg/kg; Investigated as a mutagen.

--------\Cancer Lists\----------

| Ingredient | ---NTP Carcinogen--- Known | Anticipated | IARC Category |
|---|---|---|---|
| Hydroxylamine, Hydrochloride (5470-11-1) | No | No | None |

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# 12. Ecological Information

**Environmental Fate:**
No information found.
**Environmental Toxicity:**
No information found.

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# 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

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# 14. Transport Information

**Domestic (Land, D.O.T.)**
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**Proper Shipping Name:** CORROSIVE SOLID,TOXIC, N.O.S. (HYDROXYLAMINE HYDROCHLORIDE)
**Hazard Class:** 8, 6.1
**UN/NA:** UN2923
Packing Group: III
**Information reported for product/size:** 2.5KG

**International (Water, I.M.O.)**
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**Proper Shipping Name:** CORROSIVE SOLID,TOXIC, N.O.S. (HYDROXYLAMINE HYDROCHLORIDE)
**Hazard Class:** 8, 6.1
**UN/NA:** UN2923
Packing Group: III
**Information reported for product/size:** 2.5KG

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# 15. Regulatory Information

--------\Chemical Inventory Status - Part 1\--------

| Ingredient | TSCA | EC | Japan | Australia |
|---|---|---|---|---|
| Hydroxylamine, Hydrochloride (5470-11-1) | Yes | Yes | Yes | Yes |

--------\Chemical Inventory Status - Part 2\--------

| | | --Canada-- | | |
|---|---|---|---|---|
| Ingredient | Korea | DSL | NDSL | Phil. |
| Hydroxylamine, Hydrochloride (5470-11-1) | Yes | Yes | No | Yes |

--------\Federal, State & International Regulations - Part 1\--------

| | -SARA 302- | ------SARA 313------ |
|---|---|---|

| Ingredient | RQ | TPQ | List | Chemical Catg. |
|---|---|---|---|---|
| Hydroxylamine, Hydrochloride (5470-11-1) | No | No | No | No |

\Federal, State & International Regulations - Part 2\

| Ingredient | CERCLA | -RCRA- 261.33 | -TSCA- 8(d) |
|---|---|---|---|
| Hydroxylamine, Hydrochloride (5470-11-1) | No | No | No |

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: Yes (Pure / Solid)

**Australian Hazchem Code:** 2X
**Poison Schedule:** No information found.
**WHMIS:**
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

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# 16. Other Information

**NFPA Ratings:** Health: **3** Flammability: **1** Reactivity: **1**
**Label Hazard Warning:**
DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED. AFFECTS THE BLOOD. MAY CAUSE METHEMOGLOBINEMIA.
**Label Precautions:**
Do not breathe dust.
Wash thoroughly after handling.
Do not get in eyes, on skin, or on clothing.
Keep container closed.
Use only with adequate ventilation.
**Label First Aid:**
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In case of contact,

immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3, 4, 5, 8, 9, 14, 16.

**Disclaimer:**