Section 1 - Chemical Product and Company Identification

MSDS Name:
Hydroxylamine hydrochloride, 3% to 50%

Catalog Numbers:
Q02551, Q03551, Q04551, Q0551

Synonyms:

Company Identification:
Qorpak
1195 Washington Pike
Bridgeville, PA 15017

Company Phone Number:
(412) 257-3100

Emergency Phone Number:
(800) 424-9300

CHEMTREC Phone Number:
(800) 424-9300

Section 2 - Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name:</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>balance</td>
</tr>
<tr>
<td>5470-11-1</td>
<td>Hydroxylamine, hydrochloride</td>
<td>3-50</td>
</tr>
</tbody>
</table>

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless
Warning! May cause severe eye and skin irritation with possible burns. May cause severe respiratory tract irritation with possible burns.
Target Organs: none known.

Potential Health Effects

Eye:
May cause conjunctivitis and corneal inflammation.

Skin:
Dermatitis, irritation, redness and pain can occur to the skin.

Ingestion:
Ingestion symptoms are like inhalation and include methemoglobin formation with anemia and jaundice occurring.
Material Safety Data Sheet
Hydroxylamine hydrochloride, 3% to 50%

Inhalation:
Inhalation may result in cyanosis, headache, dyspnea, dizziness, nausea, vomiting, stupor and convulsions with jaundice, anemia, and painful urination from severe exposure.

Chronic:
Prolonged exposure may result in nervous system, liver, kidney and bone marrow damage. Weight loss, anemia and weakness may occur; dermatitis and conjunctivitis with corneal damage can occur.

Section 4 - First Aid Measures

Eyes:
Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids until no evidence of chemical remains. Get medical aid at once. This may be followed with repeated irrigation using normal saline solution (about 0.85%).

Skin:
Get medical aid. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Remove contaminated clothing and shoes. Cover burns with a dry sterile bandage (secure, not tight).

Ingestion:
Give conscious victim 2-4 cupfuls of milk or water. Get medical aid at once. If vomiting occurs, keep head lower than hips to prevent aspiration.

Inhalation:
Give artificial respiration if necessary. Get medical aid. Keep victim warm, at rest. Move victim to fresh air.

Notes to Physician:
Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information:
Negligible fire and explosion hazard when exposed to heat or flame. Move container if possible, avoid breathing vapors or dust. Avoid toxic fumes from burning or decomposing material.

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

Autoignition Temperature:
No information found.

Flash Point:
No information found.

NFPA Rating:
CAS# 7732-18-5: Not published.
CAS# 5470-11-1: Not published.

Explosion Limits:
Lower:  Upper:

Section 6 - Accidental Release Measures

General Information:
Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks:
Absorb spills with absorbent (vermiculite, sand, fuller's earth) and place in plastic bags for later disposal.

Section 7 - Handling and Storage

Handling:
Wash thoroughly after handling. Avoid breathing dust, vapor, mist, or gas.

Storage:
Store capped at room temperature. Protect from heat and incompatibles.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls:
Provide local exhaust or general dilution ventilation.

Exposure Limits

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>None of the components are on this list.</td>
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</tr>
<tr>
<td>Hydroxylamine, hydrochloride</td>
<td>None of the components are on this list.</td>
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</tr>
</tbody>
</table>

OSHA Vacated PELs

Personal Protective Equipment

Eyes:
Do not wear contact lenses when working with chemicals. An eye wash fountain should be available in the immediate work area. Wear splash-proof safety goggles.

Skin:
Wear appropriate protective gloves to prevent skin exposure.

Clothing:
Wear appropriate protective clothing to prevent skin exposure.

Respirators:
Firefighting-- any self-contained breathing apparatus with full facepiece operated in pressure-demand mode. High levels- supplied-air respirator with full facepiece, helmet, or hood.

Section 9 - Physical and Chemical Properties

Physical State: Clear liquid
Color: colorless
Odor: odorless
pH: acidic
Vapor Pressure: No information found.
Vapor Density: No information found.
Evaporation Rate: No information found.
Viscosity: No information found.
Material Safety Data Sheet
Hydroxylamine hydrochloride, 3% to 50%

Boiling Point: No information found.
Freezing/Melting Point: No information found.
Decomposition Temperature: No information found.
Solubility in water: Soluble.
Specific Gravity/Density: No information found.
Molecular Formula: No information found.
Molecular Weight: No information found.

Section 10 - Stability and Reactivity

Chemical Stability:
Stable under normal temperatures and pressures. Dry hydroxylamine hydrochloride reacts at extreme temperatures, decomposing violently.

Conditions to Avoid:
Incompatible materials, excess heat.

Incompatibilities with Other Materials
No information found.

Hazardous Decomposition Products
Oxides of nitrogen, chlorine, ammonia, hydrochloric acid.

Hazardous Polymerization

Section 11 - Toxicological Information

RTECS:
CAS# 7732-18-5: ZC0110000.
CAS# 5470-11-1: NC3675000.

LD50/LC50:
CAS# 7732-18-5:
Oral, rat: LD50 = >90 mL/kg.
CAS# 5470-11-1:
Oral, mouse: LD50 = 408 mg/kg.

Carcinogenicity:
CAS# 7732-18-5: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.
CAS# 5470-11-1: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.

Epidemiology:
This product is an eye, mucous membrane, and skin irritant. It is also a skin sensitizer.

Teratogenicity:

Reproductive:

Mutagenicity:

Neurotoxicity:

Section 12 - Ecological Information

No information found.
Section 13 - Disposal Considerations

Dispose of in accordance with federal, state, and local regulations.

Section 14 - Transport Information

US DOT

Shipping Name: Not regulated

Hazard Class:
UN Number:
Packing Group:

Section 15 - Regulatory Information

US Federal

TSCA
CAS# 7732-18-5 is listed on the TSCA Inventory.
CAS# 5470-11-1 is listed on the TSCA Inventory.

SARA Reportable Quantities (RQ)
None of the components are on this list.

CERCLA/SARA Section 313
None of the components are on this list.

OSHA - Highly Hazardous
None of the components are on this list.

US State

State Right to Know
California Regulations

European/International Regulations

Canadian DSL/NDSL
CAS# 7732-18-5 is listed on Canada's DSL List.
CAS# 5470-11-1 is listed on Canada's DSL List.

Canada Ingredient Disclosure List
CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.
CAS# 5470-11-1 is not listed on Canada's Ingredient Disclosure List.

Section 16 - Other Information

MSDS Creation Date: May 31, 1998
Revision Date: February 20, 2004
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