1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Hydroxylamine hydrochloride

Cat No.: AC412050000; AC412050025; AC412050050; AC412051000; AC412055000

Synonyms: OXOAMMONIUM HYDROCHLORIDE

Recommended Use: Laboratory chemicals

Company: Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Entity / Business Name: Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number:
For information in the US, call: 001-800-ACROS-01
For information in Europe, call: +32 14 57 52 11
Emergency Number, Europe: +32 14 57 52 99
Emergency Number, US: 001-201-796-7100
CHEMTREC Phone Number, US: 001-800-424-9300
CHEMTREC Phone Number, Europe: 001-703-527-3887

2. HAZARDS IDENTIFICATION

DANGER!

Emergency Overview:
Flammable solid. Harmful in contact with skin and if swallowed. Danger of serious damage to health by prolonged exposure if swallowed. Irritating to eyes and skin. Very toxic to aquatic organisms. Risk of explosion by shock, friction, fire or other sources of ignition.

Appearance: White
Physical State: Solid
odor: odorless

Target Organs: Eyes, Skin, Gastrointestinal tract (GI), spleen, Thyroid, Blood

Potential Health Effects:
Acute Effects
Principle Routes of Exposure

Eyes
Irritating to eyes.

Skin
Harmful in contact with skin. Irritating to skin.

Inhalation
May be harmful if inhaled. May cause irritation.

Ingestion
Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic Effects
Limited evidence of a carcinogenic effect. Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions
No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Haz/Non-haz</th>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hydroxylamine, hydrochloride</td>
<td>5470-11-1</td>
<td>&gt;95</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact
Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation
Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Immediate medical attention is required.

Ingestion
Do not induce vomiting. Call a physician or Poison Control Center immediately.

Notes to Physician
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash Point
Method
No information available.

Autoignition Temperature
No information available.

Explosion Limits
Upper
No data available

Lower
No data available

Suitable Extinguishing Media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.

Unsuitable Extinguishing Media
No information available.

Hazardous Combustion Products
No information available.
Sensitivity to mechanical impact  
No information available.

Sensitivity to static discharge  
No information available.

Specific Hazards Arising from the Chemical  
Containers may explode when heated. Risk of explosion by shock, friction, fire or other sources of ignition.

Protective Equipment and Precautions for Firefighters  
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. ACCIDENTAL RELEASE MEASURES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Personal Precautions**  
Use personal protective equipment. Ensure adequate ventilation. Avoid dust formation. Remove all sources of ignition. Take precautionary measures against static discharges.

**Environmental Precautions**  
Should not be released into the environment. Do not flush into surface water or sanitary sewer system.

**Methods for Containment and Clean Up**  
Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid dust formation. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

7. HANDLING AND STORAGE

**Handling**  
Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Avoid dust formation. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges. Use only non-sparking tools. Avoid shock and friction. Use explosion-proof equipment.

**Storage**  
Keep containers tightly closed in a dry, cool and well-ventilated place. Flammables area. Keep away from heat and sources of ignition.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Measures**  
Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.

**Exposure Guidelines**  
This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

*NIOSH IDLH: Immediately Dangerous to Life or Health*

**Personal Protective Equipment**  
*Eye/face Protection*  
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA’s eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

*Skin and body protection*  
Wear appropriate protective gloves and clothing to prevent skin exposure.

*Respiratory Protection*  
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
9. PHYSICAL AND CHEMICAL PROPERTIES

- **Physical State**: Solid
- **Appearance**: White
- **Odor**: Odorless
- **Odor Threshold**: No information available.
- **pH**: 2.5-3.5 5% aq.sol.
- **Vapor Pressure**: Negligible
- **Vapor Density**: No information available.
- **Viscosity**: No information available.
- **Boiling Point/Range**: No information available.
- **Melting Point/Range**: 155 - 158°C / 311 - 316.4°F
- **Decomposition temperature**: 152 °C
- **Flash Point**: No information available.
- **Evaporation Rate**: No information available.
- **Specific Gravity**: 1.6700
- **Solubility**: No information available.
- **log Pow**: No data available
- **Molecular Weight**: 69.49
- **Molecular Formula**: H₃N₅O₂.HCl

10. STABILITY AND REACTIVITY

- **Stability**: Moisture sensitive. Air sensitive.
- **Conditions to Avoid**: Incompatible products. Excess heat. Avoid dust formation. Keep away from open flames, hot surfaces and sources of ignition. Exposure to air. Exposure to moist air or water.
- **Incompatible Materials**: Strong oxidizing agents, Heavy metals
- **Hazardous Decomposition Products**: Carbon monoxide (CO), Carbon dioxide (CO₂), Hydrogen chloride gas
- **Hazardous Polymerization**: Hazardous polymerization does not occur.
- **Hazardous Reactions**: None under normal processing.

11. TOXICOLOGICAL INFORMATION

- **Acute Toxicity**

<table>
<thead>
<tr>
<th>Component Information</th>
<th>LD₅₀ Oral</th>
<th>LD₅₀ Dermal</th>
<th>LC₅₀ Inhalation (Dust)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroxylamine, hydrochloride</td>
<td>141 mg/kg (Rat)</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

- **Irritation**: Irritating to eyes and skin
- **Toxicologically Synergistic Products**: No information available.
Chronic Toxicity

Carcinogenicity
Limited evidence of a carcinogenic effect.

Sensitization
May cause sensitization by skin contact.

Mutagenic Effects
No information available.

Reproductive Effects
No information available.

Developmental Effects
No information available.

Teratogenicity
No information available.

Other Adverse Effects
See actual entry in RTECS for complete information.

Endocrine Disruptor Information
No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity
Do not empty into drains. Very toxic to aquatic organisms.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroxylamine, hydrochloride</td>
<td>Not listed</td>
<td>LC50= 1-10 mg/L/48h (Leuciscus idus)</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Persistence and Degradability
No information available.

Bioaccumulation/ Accumulation
No information available.

Mobility
No information available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods
Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. TRANSPORT INFORMATION

DOT
UN-No  UN2923
Proper Shipping Name  CORROSIVE SOLID, TOXIC, N.O.S.
Proper technical name  Hydroxylamine, hydrochloride
Hazard Class  8
Subsidiary Hazard Class  6.1
14. TRANSPORT INFORMATION

Packing Group

III

TDG

UN-No: UN2923
Proper Shipping Name: CORROSIVE SOLID, TOXIC, N.O.S.
Hazard Class: 8
Subsidiary Hazard Class: 6.1
Packing Group: III

IATA

UN-No: UN2923
Proper Shipping Name: Corrosive solid, toxic, n.o.s
Hazard Class: 8
Subsidiary Hazard Class: 6.1
Packing Group: III

IMDG/IMO

UN-No: UN2923
Proper Shipping Name: Corrosive solid, toxic, n.o.s
Hazard Class: 8
Subsidiary Hazard Class: 6.1
Packing Group: III

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>CHINA</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroxylamine, hydrochloride</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>226-798-2</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations
TSCA 12(b)  Not applicable

SARA 313  
Not applicable

SARA 311/312 Hazardous Categorization

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Health Hazard</td>
<td>Yes</td>
</tr>
<tr>
<td>Chronic Health Hazard</td>
<td>No</td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>Yes</td>
</tr>
<tr>
<td>Sudden Release of Pressure Hazard</td>
<td>No</td>
</tr>
<tr>
<td>Reactive Hazard</td>
<td>No</td>
</tr>
</tbody>
</table>

Clean Water Act
Not applicable

Clean Air Act
Not applicable

OSHA
Not applicable

CERCLA
Not Applicable

California Proposition 65
This product does not contain any Proposition 65 chemicals.

State Right-to-Know
Not applicable

U.S. Department of Transportation
Reportable Quantity (RQ):  N
DOT Marine Pollutant  N
DOT Severe Marine Pollutant  N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade  No information available

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class
E  Corrosive material
D1B  Toxic materials
D2A  Very toxic materials
16. OTHER INFORMATION

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date
16-Nov-2010

Print Date
18-Oct-2012

Revision Summary
(M)SDS sections updated 2

Disclaimer
The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS