SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form: Substance
Substance name: Hydroxylamine Hydrochloride
CAS No: 5470-11-1
Product code: LC15515
Formula: NH₂OH.HCl
Synonyms: Hydroxylammonium chloride / hydroxylamine chloride / oxammonium, hydrochloride
BIG no: 13937

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture: Catalyst

1.3. Details of the supplier of the safety data sheet

LabChem Inc
Jackson’s Pointe Commerce Park Building 1000, 1010 Jackson’s Pointe Court
Zelienople, PA 16063 - USA
T 412-826-5230 - F 724-473-0647
info@labchem.com - www.labchem.com

1.4. Emergency telephone number

Emergency number: CHEMTREC: 1-800-424-9300 or 011-703-527-3887

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Met. Corr. 1 H290
Acute Tox. 4 (Oral) H302
Acute Tox. 4 (Dermal) H312
Skin Irrit. 2 H315
Eye Irrit. 2A H319
Skin Sens. 1 H317
Carc. 2 H351
STOT RE 2 H373
Aquatic Acute 1 H400

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US):

GHS05  GHS07  GHS08  GHS09

Signal word (GHS-US): Warning

Hazard statements (GHS-US):

H290 - May be corrosive to metals
H302+H312 - Harmful if swallowed or in contact with skin
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H319 - Causes serious eye irritation
H351 - Suspected of causing cancer
H373 - May cause damage to organs (blood) through prolonged or repeated exposure
H400 - Very toxic to aquatic life

Precautionary statements (GHS-US):

P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P234 - Keep only in original container
P260 - Do not breathe dust
P264 - Wash exposed skin thoroughly after handling
P270 - Do no eat, drink or smoke when using this product
P272 - Contaminated work clothing should not be allowed out of the workplace
P273 - Avoid release to the environment
P280 - Wear protective gloves, protective clothing, eye protection, face protection
P301+P312 - IF SWALLOWED: call a POISON CENTER or doctor/physician if you feel unwell
P302+P352 - IF ON SKIN: Wash with plenty of soap and water
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
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2.3. Other hazards
Other hazards not contributing to the classification: None.

2.4. Unknown acute toxicity (GHS-US)
No data available

SECTION 3: Composition/information on ingredients

3.1. Substances
Substance type: Mono-constituent

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroxylamine Hydrochloride</td>
<td>(CAS No) 5470-11-1</td>
<td>100</td>
<td>Met. Corr. 1, H290</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 4 (Oral), H302</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 4 (Dermal), H312</td>
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<td>Skin Irrit. 2, H315</td>
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<td>Eye Irrit. 2A, H319</td>
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<td></td>
<td>Carc. 2, H351</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STOT RE 2, H373</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Aquatic Acute 1, H400</td>
</tr>
</tbody>
</table>

Full text of H-phrases: see section 16

3.2. Mixture
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures
First-aid measures general:

First-aid measures after inhalation:
Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact:
Wash immediately with lots of water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists.

First-aid measures after eye contact:
Rinse immediately with plenty of water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

First-aid measures after ingestion:
Rinse mouth with water. Call Poison Information Centre (www.big.be/antigif.htm). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital.

4.2. Most important symptoms and effects, both acute and delayed
Symptoms/injuries after inhalation:

Symptoms/injuries after skin contact:
Tingling/irritation of the skin.

Symptoms/injuries after eye contact:
Irritation of the eye tissue. ON CONTINUOUS EXPOSURE/CONTACT: Corrosion of the eye tissue. Permanent eye damage.

Symptoms/injuries after ingestion:

Chronic symptoms:
ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Skin rash/inflammation. Methemoglobinemia. Symptoms similar to those listed under acute toxicity.

4.3. Indication of any immediate medical attention and special treatment needed
No additional information available
**SECTION 5: Firefighting measures**

5.1. **Extinguishing media**
- Suitable extinguishing media: Quantities of water.
- Unsuitable extinguishing media: No unsuitable extinguishing media known.

5.2. **Special hazards arising from the substance or mixture**
- **Fire hazard**: INDIRECT FIRE HAZARD. Fire/heat: explosive hazard bigger than fire hazard. Reactions involving a fire hazard: see "Reactivity Hazard".
- **Explosion hazard**: DIRECT EXPLOSION HAZARD. Risk of explosion by heating. Risk of explosion by sparks. Risk of explosion by shock or friction. Its dust is explosive with air. INDIRECT EXPLOSION HAZARD. may be ignited by sparks. Reactions with explosion hazards: see "Reactivity Hazard".

5.3. **Advice for firefighters**
- **Precautionary measures fire**: Exposure to fire/heat: keep upwind. Exposure to fire/heat: have neighbourhood close doors and windows.
- **Firefighting instructions**: Cool tanks/drums with water spray/remove them into safety. Extinguish/cool from behind cover/unmanned monitors. Do not move the load if exposed to heat. Depending on nature/size of load: consider extinguishment. Dilute toxic gases with water spray. Take account of environmentally hazardous firefighting water.
- **Protection during firefighting**: Heat/fire exposure: compressed air/oxygen apparatus.

**SECTION 6: Accidental release measures**

6.1. **Personal precautions, protective equipment and emergency procedures**

6.1.1. **For non-emergency personnel**
- **Measures in case of dust release**: In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows.

6.1.2. **For emergency responders**
- **Protective equipment**: Equip cleanup crew with proper protection. Do not breathe dust.
- **Emergency procedures**: If a major spill occurs, all personnel should be immediately evacuated and the area ventilated.

6.2. **Environmental precautions**
- Prevent soil and water pollution. Prevent spreading in sewers.

6.3. **Methods and material for containment and cleaning up**
- **For containment**: Contain released substance, pump into suitable containers. Plug the leak, cut off the supply. Dam up the solid spill. Cover with a water blanket. Knock down/dilute dust cloud with water spray. Provide equipment/receptacles with earthing. Do not use compressed air for pumping over spills.
- **Methods for cleaning up**: Start with disposal only in the presence of experts. Wet with an excess of water. Scoop solid spill into closing containers. Carefully collect the spill/leftovers. Do not use compressed air for pumping over spills. Store under water in containers. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. **Reference to other sections**
- No additional information available

**SECTION 7: Handling and storage**

7.1. **Precautions for safe handling**
- **Precautions for safe handling**: Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Handle and open the container with care. Avoid shock and friction. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Do not use compressed air for pumping over. Avoid raising dust. Use spark/explosionproof appliances and lightning system. Use earthed equipment. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Observe very strict hygiene - avoid contact. Keep container tightly closed. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.
- **Hygiene measures**: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Contaminated work clothing should not be allowed out of the workplace. Do no eat, drink or smoke when using this product.
### 7.2. Conditions for safe storage, including any incompatibilities

- **Incompatible products**: Strong oxidizers.
- **Incompatible materials**: Moisture.
- **Heat and ignition sources**: KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.
- **Prohibitions on mixed storage**: KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) bases. metals. water/moisture.
- **Storage area**: Store in a cool area. Store in a dry area. Fireproof storeroom. Keep locked up. Unauthorized persons are not admitted. Provide the tank with earthing. Meet the legal requirements.
- **Special rules on packaging**: SPECIAL REQUIREMENTS: watertight. hermetical. dry. clean. shock-absorbing. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
- **Packaging materials**: SUITABLE MATERIAL: No data available. MATERIAL TO AVOID: steel. aluminium.

### 7.3. Specific end use(s)

No additional information available

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

### 8.2. Exposure controls

- **Appropriate engineering controls**: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Provide adequate general and local exhaust ventilation.
- **Materials for protective clothing**: GIVE EXCELLENT RESISTANCE: No data available. GIVE GOOD RESISTANCE: No data available. GIVE LESS RESISTANCE: No data available. GIVE POOR RESISTANCE: No data available.

#### Hand protection
- Gloves.

#### Eye protection
- Face shield. In case of dust production: protective goggles.

#### Skin and body protection

#### Respiratory protection
- Dust production: dust mask with filter type P2.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

- **Physical state**: Solid
- **Appearance**: Crystalline solid. Crystalline powder.
- **Molecular mass**: 69.49 g/mol
- **Colour**: White.
- **Odour**: Odourless.
- **Odour threshold**: No data available
- **pH**: 3.2 (1.4 %)
- **pH solution**: 1.4 %
- **Relative evaporation rate (butylacetate=1)**: No data available
- **Melting point**: 152 °C
- **Freezing point**: No data available
- **Boiling point**: Not applicable
- **Flash point**: No data available
- **Self ignition temperature**: No data available
- **Decomposition temperature**: 152 °C
- **Flammability (solid, gas)**: No data available
- **Vapour pressure**: No data available
- **Relative vapour density at 20 °C**: No data available
- **Relative density**: 1.7 (17 °C)
- **Density**: 1670 kg/m³ (17 °C)
- **Solubility**: Soluble in water. Soluble in ethanol. Soluble in methanol. Soluble in glycerol. Soluble in propyleneglycol. Water: 95 g/100ml. Ethanol: 437 g/100ml
- **Log Pow**: No data available
- **Log Kow**: No data available
- **Viscosity, kinematic**: No data available
- **Viscosity, dynamic**: No data available
- **Explosive properties**: No data available
- **Oxidising properties**: No data available
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Explosive limits : No data available

9.2. Other information  
VOC content : Not applicable  
Other properties : Hygroscopic. Substance has acid reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity  

10.2. Chemical stability  
Unstable on exposure to moisture.

10.3. Possibility of hazardous reactions  
Not established.

10.4. Conditions to avoid  
Moisture.

10.5. Incompatible materials  
Strong oxidizers.

10.6. Hazardous decomposition products  
Gaseous ammonia. Hydrogen chloride.

SECTION 11: Toxicological information

11.1. Information on toxicological effects  
Hydroxylamine Hydrochloride (if) 5470-11-1

Acute toxicity : Harmful if swallowed. Harmful in contact with skin.

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>200 - 2000 mg/kg (Rat)</td>
</tr>
<tr>
<td>LD50 dermal rabbit</td>
<td>400 - 2000 mg/kg (Rabbit)</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation : Causes skin irritation.

Serious eye damage/irritation : Causes serious eye irritation.

Respiratory or skin sensitisation : May cause an allergic skin reaction.

Germ cell mutagenicity : Not classified

Carcinogenicity : Suspected of causing cancer.

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : May cause damage to organs (blood) through prolonged or repeated exposure.

Aspiration hazard : Not classified


Symptoms/injuries after skin contact : Tingling/irritation of the skin.

Symptoms/injuries after eye contact : Irritation of the eye tissue. ON CONTINUOUS EXPOSURE/CONTACT: Corrosion of the eye tissue. Permanent eye damage.


Chronic symptoms : ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Skin rash/inflammation. Methemoglobinemia. Symptoms similar to those listed under acute toxicity.

SECTION 12: Ecological information

12.1. Toxicity  
Ecology - general : Dangerous for the environment.

Ecology - water : Severe water pollutant (surface water). Ground water pollutant. Maximum concentration in drinking water: 0.50 mg/l (ammonium) (Directive 98/83/EC); 250 mg/l (chloride) (Directive 98/83/EC). Highly toxic to aquatic organisms. pH shift. Inhibition of activated sludge.
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<table>
<thead>
<tr>
<th>Hydroxylamine Hydrochloride (5470-11-1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fishes 1</td>
<td>7.2 mg/l (96 h; Pimephales promelas; Estimated value)</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
<td>1.62 mg/l (48 h; Daphnia magna; Estimated value)</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Hydroxylamine Hydrochloride (5470-11-1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
<td>Biodegradability: not applicable.</td>
</tr>
<tr>
<td>Biochemical oxygen demand (BOD)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Chemical oxygen demand (COD)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>ThOD</td>
<td>Not applicable</td>
</tr>
<tr>
<td>BOD (% of ThOD)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Hydroxylamine Hydrochloride (5470-11-1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioaccumulative potential</td>
<td>Not bioaccumulative.</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Remove waste in accordance with local and/or national regulations. Specific incineration with energy recovery. Do not discharge to wastewater treatment installation.

Additional information : LWCA (the Netherlands): KGA category 06. Hazardous waste according to Directive 2008/98/EC.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with DOT

14.1. UN number

UN-No.(DOT) : 2923
DOT NA no. : UN2923

14.2. UN proper shipping name

DOT Proper Shipping Name : Corrosive solids, toxic, n.o.s.
Hydroxylamine Hydrochloride

Department of Transportation (DOT) Hazard Classes : 8 - Class 8 - Corrosive material 49 CFR 173.136

Hazard labels (DOT) : 8 - Corrosive substances
6.1 - Toxic substances

DOT Symbols : G - Identifies PSN requiring a technical name

Packing group (DOT) : III - Minor Danger
**Hydroxylamine Hydrochloride**  
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**DOT Special Provisions (49 CFR 172.102)**

- IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2).
- IP2 - When IBCs other than metal or rigid plastics IBCs are used, they must be offered for transportation in a closed freight container or a closed transport vehicle.
- IP4 - Flexible, fiberboard or wooden IBCs must be sift-proof and water-resistant or be fitted with a sift-proof and water-resistant liner.

**DOT Packaging Exceptions (49 CFR 173.xxx)**

- 154

**DOT Packaging Non Bulk (49 CFR 173.xxx)**

- 212

**DOT Packaging Bulk (49 CFR 173.xxx)**

- 240

Marine pollutant: **P**

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### 14.3. Additional information

- Other information: No supplementary information available.
- State during transport (ADR-RID): as solid. Substance assigned to class 8 for its corrosion to metals.

**Overland transport**

- Packing group (ADR): III
- Class (ADR): 8 - Corrosive substances
- Hazard identification number (Kemler No.): 80
- Classification code (ADR): C2
- Danger labels (ADR): 8 - Corrosive substances

**Orange plates**

- **80**
- **3260**

**Tunnel restriction code**: E

**Transport by sea**

- DOT Vessel Stowage Location: B - (i) The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) “On deck only” on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.
- DOT Vessel Stowage Other: 40 - Stow “clear of living quarters”
- EmS-No. (1): F-A
- EmS-No. (2): S-B

**Air transport**

- DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27): 15 kg
- DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75): 50 kg

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SECTION 15: Regulatory information

15.1. US Federal regulations
Hydroxylamine Hydrochloride (5470-11-1)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
SARA Section 311/312 Hazard Classes
Immediate (acute) health hazard
Delayed (chronic) health hazard

15.2. International regulations
CA
Hydroxylamine Hydrochloride (5470-11-1)
Listed on the Canadian DSL (Domestic Substances List) inventory.
WHMIS Classification
Class D Division 2 Subdivision A - Very toxic material causing other toxic effects
Class D Division 2 Subdivision B - Toxic material causing other toxic effects
Class E - Corrosive Material

EU-Regulations
No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Met. Corr. 1 H290
Carc. 2 H351
Acute Tox. 4 (Dermal) H312
Acute Tox. 4 (Oral) H302
STOT RE 2 H373
Eye Irrit. 2 H319
Skin Irrit. 2 H315
Skin Sens. 1 H317
Aquatic Acute 1 H400
Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC
E; R2
Carc.Cat.3; R40
Xn; R21/22
Xn; R48/22
Xi; R36/38
Xi; R43
N; R50
Full text of R-phrases: see section 16

15.2.2. National regulations
Hydroxylamine Hydrochloride (5470-11-1)
Not listed on the Canadian Ingredient Disclosure List

15.3. US State regulations
No additional information available

SECTION 16: Other information
Full text of H-phrases: see section 16:

 Acute Tox. 4 (Dermal) Acute toxicity (dermal), Category 4
 Acute Tox. 4 (Oral) Acute toxicity (oral), Category 4
 Aquatic Acute 1 Hazardous to the aquatic environment — AcuteHazard, Category 1
 Carc. 2 Carcinogenicity, Category 2
 Eye Irrit. 2A Serious eye damage/eye irritation, Category 2A
 Met. Corr. 1 Corrosive to metals, Category 1
 Skin Irrit. 2 Skin corrosion/irritation, Category 2
 Skin Sens. 1 Sensitisation — Skin, category 1
 STOT RE 2 Specific target organ toxicity — Repeated exposure, Category 2
 H290 May be corrosive to metals
### Hydroxylamine Hydrochloride

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<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H302</td>
<td>Harmful if swallowed</td>
</tr>
<tr>
<td>H312</td>
<td>Harmful in contact with skin</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H317</td>
<td>May cause an allergic skin reaction</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H331</td>
<td>Suspected of causing cancer</td>
</tr>
<tr>
<td>H373</td>
<td>May cause damage to organs through prolonged or repeated exposure</td>
</tr>
<tr>
<td>H400</td>
<td>Very toxic to aquatic life</td>
</tr>
</tbody>
</table>

**NFPA health hazard**: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

**NFPA fire hazard**: 0 - Materials that will not burn.

**NFPA reactivity**: 1 - Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.

**HMIS III Rating**

- **Health**: 2 Moderate Hazard - Temporary or minor injury may occur
- **Flammability**: 0 Minimal Hazard
- **Physical**: 1 Slight Hazard
- **Personal Protection**: F

**SDS US (GHS HazCom 2012)**

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