MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

   Product Name:  Selenous acid

   Sarchem Laboratories, Inc.
   5012 Industrial Road
   Farmingdale, NJ 07727
   Emergency Phone No: 800-255-3924
   International: +1-813-248-0585
   ChemTel Inc

2. COMPOSITION/INFORMATION ON INGREDIENTS

   Component | CAS    | EC:No  | Molecular Weight
   Selenous acid | 7783-00-8 | 231-974-7 | 128.97 g/mol

   Synonyms: : Selenious acid
   Formula:  H2SeO3

3. HAZARDS INFORMATION:

   OSHA Hazards
   Target Organ Effect, Toxic by inhalation., Toxic by ingestion

   Target Organs
   Liver, Kidney, Heart

   GHS Classification
   Acute toxicity, Oral (Category 3)
   Acute toxicity, Inhalation (Category 3)
   Specific target organ toxicity - repeated exposure (Category 2)
   Acute aquatic toxicity (Category 1)
   Chronic aquatic toxicity (Category 1)

   HMIS Classification
   Health Hazard:  3
   Flammability:  0
   Physical hazards:  0

   NFPA Rating
   Health Hazard:  3
   Flammability:  0
   Physical hazards:  0
Potential Health Effects:

- **Inhalation**: Toxic if inhaled. May cause respiratory tract irritation.
- **Skin**: May be harmful if absorbed through skin. May cause skin irritation.
- **Eyes**: May cause eye irritation.
- **Ingestion**: Toxic if swallowed.

4. FIRST AID MEASURES:

**General Advice**
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangers area.

**If inhaled**
If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

**In case of skin contact**
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**
Flush eyes with water as a precaution.

**If swallowed**
Do NOT induce vomiting. Rinse mouth with water. Consult a physician.

5. FIRE FIGHTING MEASURES

**Conditions of flammability**
Not flammable or combustible.

**Suitable extinguishing media**
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**Special protective equipment for fire-fighters**
Wear self contained breathing apparatus for fire fighting if necessary.

**Hazardous combustion products**
Hazardous decomposition products formed under fire conditions. - Selenium/selenium oxides

6. Accidental Release Measures

**Personal precautions**
Avoid dust formation. Avoid breathing vapors, mist or gas.

**Environmental precautions**
Do not let product enter drains

**Methods for cleaning up**
Sweep up and shovel. Keep in suitable, closed containers for disposal.

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**7. Handling and Storage**

**Handling**
Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

**Conditions for safe storage**
Keep container tightly closed in a dry and well-ventilated place.

Hygroscopic.

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**8. Exposure Controls / Personal Protection**

**Personal protective equipment**

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Hand protection**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Eye protection**
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin and body protection**
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Hygiene measures
Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES:

Appearance

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<thead>
<tr>
<th>Form</th>
<th>solid</th>
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<tbody>
<tr>
<td>Color</td>
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Safety data

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
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</tr>
<tr>
<td>Melting Point</td>
<td>Melting point/range: 70 °C (158 °F)</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>no data available</td>
</tr>
<tr>
<td>Flash Point</td>
<td>no data available</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>no data available</td>
</tr>
<tr>
<td>Lower exposure limit</td>
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</tr>
<tr>
<td>Upper exposure limit</td>
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</tr>
<tr>
<td>Vapor pressure</td>
<td>no data available</td>
</tr>
<tr>
<td>Water solubility</td>
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</tr>
<tr>
<td>Density</td>
<td>3.004 g/cm³ at 25 °C (77 °F)</td>
</tr>
</tbody>
</table>

10. Stability and Reactivity

Storage stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available

Conditions to avoid
no data available

Materials to avoid
Strong reducing agents, Organic materials, Powdered metals

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Selenium/selenium oxides
Other decomposition products - no data available

11. Toxicological Information

Acute toxicity
no data available

**Skin corrosion/irritation**
no data available

**Serious eye damage/eye irritation**
no data available

**Respiratory or skin sensitization**
no data available

**Germ cell mutagenicity**
Genotoxicity in vivo - mouse - Intraperitoneal
Micronucleus test

**Carcinogenicity**

**IARC:** 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Selenious acid)

**ACGIH:** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**NTP:** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**OSHA:** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**
no data available

**Specific target organ toxicity - single exposure (Globally Harmonized System)**
no data available

**Specific target organ toxicity - repeated exposure (Globally Harmonized System)**
May cause damage to organs through prolonged or repeated exposure.
no data available

**Potential health effects**

**Inhalation** Toxic if inhaled. May cause respiratory tract irritation.

**Ingestion** Toxic if swallowed.

**Skin** May be harmful if absorbed through skin. May cause skin irritation.

**Eyes** May cause eye irritation.
Signs and Symptoms of Exposure
Selenious acid is the most toxic form of selenium, ingestion is almost invariably fatal. Stupor, respiratory depression, hypotension, and death can result several hours post ingestion. Severe hypotension develops secondary both to decreased contractility from a toxic cardiomyopathy and to inappropriately low peripheral vascular resistance. Laboratory abnormalities include thrombocytopenia, moderate hepatorenal dysfunction, and elevated serum kinase levels. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. Ecological Information

Elimination information (persistence and degradability)
No data available

Ecotoxicity effects
No data available

Further information on ecology
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life with long lasting effects.

13. Disposal Considerations

Product
Observe all federal, state, and local environmental regulations. 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.

14. Transportation Information

DOT (US)
UN number: 3283 Class: 6.1 Packing group: II
Proper shipping name: Selenium compound, solid, n.o.s. (Selenious acid)
Reportable Quantity (RQ): 10 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN number: 3283 Class: 6.1 Packing group: II EMS-No: F-A, S-A
Proper shipping name: SELENIUM COMPOUND, SOLID, N.O.S. (Selenious acid)
Marine pollutant: No
IATA
UN number: 3283 Class: 6.1 Packing group: II
Proper shipping name: Selenium compound, solid, n.o.s. (Selenious acid)

15. Regulatory Information

OSHA Hazards
Target Organ Effect, Toxic by inhalation., Toxic by ingestion

DSL Status
All components of this product are on the Canadian DSL list.

SARA 302 Components
The following components are subject to reporting levels established by SARA Title III, Section 302:

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<thead>
<tr>
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Selenious acid

SARA 313 Components
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Selenious acid

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

16. OTHER INFORMATION:

Further Information
Copyright 2011 Sarchem Laboratories, Inc. License granted to make unlimited paper copies for internal use only. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sarchem Laboratories, Inc. shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.