

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 05/01/2009

Reviewed on 01/18/2007

**1 Identification of substance:****Product details:****Product name:** Selenous acid**Stock number:** 12574**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company  
 Johnson Matthey Catalog Company, Inc.  
 30 Bond Street  
 Ward Hill, MA 01835-8099  
 Emergency Phone: (978) 521-6300  
 CHEMTREC: (800) 424-9300  
 Web Site: www.alfa.com

**Information Department:** Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

**2 Composition/Data on components:****Chemical characterization:****Description: (CAS#)**

Selenous acid (CAS# 7783-00-8), 100%

**Identification number(s):****EINECS Number:** 231-974-7**Index number:** 034-002-00-8**3 Hazards identification****Hazard description:**

T Toxic

N Dangerous for the environment

**Information pertaining to particular dangers for man and environment**

R 23/25 Toxic by inhalation and if swallowed.

R 33 Danger of cumulative effects.

R 34 Causes burns.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

**Classification system****HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	2
FIRE	0
REACTIVITY	1

Health (acute effects) = 2

Flammability = 0

Reactivity = 1

**GHS label elements****Danger**

3.1/2 - Fatal if swallowed.

3.1/2 - Fatal if inhaled.

**Danger**

3.2/1B - Causes severe skin burns and eye damage.

**Warning**

4.1/1 - Very toxic to aquatic life with long lasting effects.

**Prevention:**

Do not breathe dust/fume/gas/mist/vapours/spray.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use only outdoors or in a well-ventilated area.

Avoid release to the environment.

(Contd. on page 2)

USA

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 05/01/2009

Reviewed on 01/18/2007

**Product name: Selenous acid**

(Contd. of page 1)

Wear protective gloves/protective clothing/eye protection/face protection.  
Wear respiratory protection.

**Response:**

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Immediately call a POISON CENTER or doctor/physician.

Specific treatment is urgent (see label).

Specific treatment (see label).

Rinse mouth.

Wash contaminated clothing before reuse.

Collect spillage.

**Storage:**

Store in a well-ventilated place. Keep container tightly closed.

Store locked up.

**Disposal:**

Dispose of contents/container in accordance with local/regional/national/international regulations.

**4 First aid measures****General information**

Immediately remove any clothing soiled by the product.

Remove breathing apparatus only after contaminated clothing has been completely removed.

In case of irregular breathing or respiratory arrest provide artificial respiration.

**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

**After skin contact**

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

**After eye contact**

Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing**

Do not induce vomiting; immediately call for medical help.

Seek immediate medical advice.

**5 Fire fighting measures****Suitable extinguishing agents**

CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray.

**Special hazards caused by the material, its products of combustion or resulting gases:**

In case of fire, the following can be released:

Toxic metal oxide fume

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

**6 Accidental release measures****Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

**Measures for cleaning/collecting:**

Use neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

**Additional information:**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

USA

(Contd. on page 3)

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 05/01/2009

Reviewed on 01/18/2007

Product name: Selenous acid

(Contd. of page 2)

**7 Handling and storage****Handling****Information for safe handling:**

Keep container tightly sealed.  
 Store in cool, dry place in tightly closed containers.  
 Ensure good ventilation at the workplace.  
 Open and handle container with care.

**Information about protection against explosions and fires:** No special measures required.

**Storage**

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:**

Store away from water/moisture.  
 Do not store together with oxidizing and acidic materials.  
 Store away from halogens.

**Further information about storage conditions:**

This product is hygroscopic.  
 Protect from humidity and water.  
 Store under dry inert gas.  
 Keep container tightly sealed.  
 Store in cool, dry conditions in well sealed containers.

**8 Exposure controls and personal protection****Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**Components with limit values that require monitoring at the workplace:**

Selenium and selenium compounds (as Se)

	mg/m3
ACGIH TLV	0.2
Austria MAK	0.1
Belgium TWA	0.2
Denmark TWA	0.1
Finland TWA	0.1; 0.3-STEEL
Germany MAK	0.1
Hungary	0.1-STEEL
Ireland TLV	0.1
Japan OEL	0.1
Korea TLV	0.2
Netherlands MAC-TGG	0.1
Poland TWA	0.1; 0.3-STEEL
Sweden NGV	0.1
Switzerland MAK-W	0.1
United Kingdom TWA	0.1
USA PEL	0.2

**Additional information:** No data

**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.  
 Keep away from foodstuffs, beverages and feed.  
 Remove all soiled and contaminated clothing immediately.  
 Wash hands before breaks and at the end of work.  
 Store protective clothing separately.  
 Avoid contact with the eyes and skin.

**Breathing equipment:** Use suitable respirator when high concentrations are present.

**Protection of hands:** Impervious gloves

**Eye protection:**

Safety glasses  
 Tightly sealed goggles  
 Full face protection

**Body protection:** Protective work clothing.

**9 Physical and chemical properties:****General Information**

**Form:** Crystalline

(Contd. on page 4)

- USA

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 05/01/2009

Reviewed on 01/18/2007

**Product name: Selenous acid**

(Contd. of page 3)

<b>Color:</b>	Colorless White
<b>Odor:</b>	Odorless
<b>Change in condition</b>	
<b>Melting point/Melting range:</b>	70°C (158°F)
<b>Boiling point/Boiling range:</b>	Not determined
<b>Sublimation temperature / start:</b>	Not determined
<b>Flash point:</b>	Not applicable
<b>Ignition temperature:</b>	Not determined
<b>Decomposition temperature:</b>	Not determined
<b>Danger of explosion:</b>	Product does not present an explosion hazard.
<b>Explosion limits:</b>	
<b>Lower:</b>	Not determined
<b>Upper:</b>	Not determined
<b>Vapor pressure:</b>	Not determined
<b>Density at 20°C (68°F):</b>	3.004 g/cm <sup>3</sup>
<b>Solubility in / Miscibility with</b>	
<b>Water at 20°C (68°F):</b>	1670 g/l

**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

**Materials to be avoided:**

Water/moisture

Acids

Oxidizing agents

Chlorine

**Dangerous reactions** No dangerous reactions known**Dangerous products of decomposition:** Toxic metal oxide fume**11 Toxicological information****Acute toxicity:****Primary irritant effect:****on the skin:**

Corrosive effect on skin and mucous membranes.

Irritant to skin and mucous membranes.

**on the eye:**

Strong corrosive effect.

Irritating effect.

**Sensitization:** No sensitizing effects known.**Subacute to chronic toxicity:**

Selenium may cause amyotrophic lateral sclerosis, bronchial irritation, gastrointestinal distress, vasopharyngeal irritation, garlic odor on breath and sweat, metallic taste, pallor, irritability, excessive fatigue, loss of fingernails and hair, pulmonary edema, anemia and weight loss.

**Subacute to chronic toxicity:**

Corrosive materials are acutely destructive to the respiratory tract, eyes, skin and digestive tract. Eye contact may result in permanent damage and complete vision loss.

Inhalation may result in respiratory effects such as inflammation, edema, and chemical pneumonitis. May cause coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. Ingestion may cause damage to the mouth, throat and esophagus. May cause skin burns or irritation depending on the severity of the exposure.

**Additional toxicological information:**

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

EPA-D: Not classifiable as to human carcinogenicity: inadequate human and animal evidence of carcinogenicity or no data are available.

IARC-3: Not classifiable as to carcinogenicity to humans.

NTP-2: Reasonably anticipated to be a carcinogen: limited evidence from studies in humans or sufficient evidence from studies in experimental animals.

USA

(Contd. on page 5)

# Material Safety Data Sheet

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Product name: Selenous acid

(Contd. of page 4)

## 12 Ecological information:

**Ecotoxicological effects:**
**Remark:** Very toxic for fish

**General notes:**

Do not allow product to reach ground water, water course or sewage system, even in small quantities.

Danger to drinking water if even extremely small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

Do not allow material to be released to the environment without proper governmental permits.

Very toxic for aquatic organisms

## 13 Disposal considerations

**Product:**
**Recommendation** Consult state, local or national regulations to ensure proper disposal.

**Uncleaned packagings:**
**Recommendation:** Disposal must be made according to official regulations.

## 14 Transport information

**DOT regulations:**


<b>Hazard class:</b>	6.1
<b>Identification number:</b>	UN3290
<b>Packing group:</b>	II
<b>Proper shipping name (technical name):</b>	TOXIC SOLID, CORROSIVE, INORGANIC, N.O.S. (selenous acid)
<b>Label</b>	6.1+8

**Land transport ADR/RID (cross-border)**


<b>ADR/RID class:</b>	6.1 (TC4) Toxic substances
<b>Danger code (Kemler):</b>	68
<b>UN-Number:</b>	3290
<b>Packaging group:</b>	II
<b>Description of goods:</b>	3290 TOXIC SOLID, CORROSIVE, INORGANIC, N.O.S. (selenous acid)

**Maritime transport IMDG:**


<b>IMDG Class:</b>	6.1
<b>UN Number:</b>	3290
<b>Label</b>	6.1+8
<b>Packaging group:</b>	II
<b>Proper shipping name:</b>	TOXIC SOLID, CORROSIVE, INORGANIC, N.O.S. (selenous acid)

**Air transport ICAO-TI and IATA-DGR:**


<b>ICAO/IATA Class:</b>	6.1
<b>UN/ID Number:</b>	3290
<b>Label</b>	6.1+8

(Contd. on page 6)

- USA

**Material Safety Data Sheet**

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**Product name:** Selenous acid

(Contd. of page 5)

<b>Packaging group:</b>	II
<b>Proper shipping name:</b>	TOXIC SOLID, CORROSIVE, INORGANIC, N.O.S. (selenous acid)

**UN "Model Regulation":** UN3290, TOXIC SOLID, CORROSIVE, INORGANIC, N.O.S., 6.1 (8), II**Environmental hazards:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID**15 Regulations****Product related hazard informations:****Hazard symbols:**

T Toxic

N Dangerous for the environment

**Risk phrases:**

23/25 Toxic by inhalation and if swallowed.

33 Danger of cumulative effects.

34 Causes burns.

50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

**Safety phrases:**

20/21 When using do not eat, drink or smoke.

28 After contact with skin, wash immediately with plenty of water

45 In case of accident or if you feel unwell, seek medical advice immediately.

60 This material and its container must be disposed of as hazardous waste.

61 Avoid release to the environment. Refer to special instructions/Safety data sheets

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

**Information about limitation of use:**

For use only by technically qualified individuals.

This product contains selenium and is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

**16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing MSDS:** Health, Safety and Environmental Department.**Contact:** Zachariah Holt**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

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