

AERCHEM INC.
320 North Walnut
Bloomington, IN 47408

Tel: 812.334.9996 Fax: 812.334.1960 Emergency: 800.424.9300

SECTION

1: IDENTIFICATION

Effective Date: 4/30/97
Product Name: **VANADIUM SULFATE**
Synonyms: vanadyl sulfate; vanadic sulfate; C.I. 77940; vanadium oxoosulfate; vanadium oxysulfate; vanadium sulfate dihydrate; STCC 4963384; NA 9152; V-8
Molecular Formula: VSO5
CAS No.:

SECTION

2: HAZARDOUS INGREDIENTS:

NFPA rating (scale 0-4): health = 2 fire = 0 reactivity = 0

Major health hazards: respiratory tract irritation, skin irritation, eye irritation

Inhalation: short term: irritation, nausea, difficulty breathing, asthma, headache, dizziness, blindness, lung congestion, lung damage; Acute exposure: May cause respiratory tract irritation, serious or hemorrhagic rhinitis, sore

throat, cough, sneezing, tracheitis, bronchitis, pneumonitis, hemoptysis, and bronchiectasis. More severe exposure may result in pulmonary edema and pneumonia which may be fatal. If victim survives, there may be persistent asthma-type bronchitis, bouts of dyspnea, paroxysmal cough, emphysema. Pallor, altered taste, green tongue, blackening of teeth, headache, nausea, insomnia, anorexia, weight loss, nervousness, dizziness, kidney malfunction, tremor of the distal extremities, psychic disturbances, and blindness are also possible. Symptoms may be delayed several days up to a week.

long term: same as short term plus wheezing, kidney damage, liver damage. Chronic exposure: May cause symptoms as with acute inhalation, especially inflammatory action on the tracheobronchial tree, nose and throat irritation, violent coughing, wheezing, bronchitis, bronchial rales, rhinitis, and dyspnea. There may also be blood changes, liver and kidney damage, and an increase in susceptibility to respiratory changes.

Skin contact: short term: irritation, itching. Acute exposure: May cause irritation and eczema like eczema with intense itching, and possibly generalized urticaria.

long term: no information on significant adverse effects. Chronic exposure: May cause dermatitis

Eye contact: short term: irritation, tearing; Acute exposure: May cause irritation, intense lacrimation, a burning sensation of the conjunctiva, and conjunctivitis.

long term: no information on significant adverse effects; Chronic exposure: May cause conjunctivitis

Ingestion: short term: metallic taste, nausea, vomiting, diarrhea, stomach pain, difficulty breathing, convulsions; Acute

exposure: May cause metallic taste, hemorrhagic rhinitis, nausea, vomiting, diarrhea, abdominal pain and spasm, tremor, dyspnea, convulsions, and possible damage to the liver, kidneys, lungs, gastrointestinal tract, adrenal cortex, brain, spinal cord, and bone marrow.

long term: no information on significant adverse effects; Chronic exposure: May produce same symptoms as for acute exposure.

SECTION

3: PHYSICAL DATA

Odor:	n/a
Appearance:	blue crystalline powder
Melting point.:	decomposes
Boiling point:	n/a
Decomposition temperature:	see melting point
pH (depends on quality):	n/a
Solubility in water:	soluble
Specific gravity (water = 1)	3.0
Vapor density:	n/a
Vapor pressure:	n/a

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SECTION 4: FIRE AND EXPLOSION DATA

Flash point:	not flammable
Extinguishing media:	regular dry chemical, regular foam, water; for large fires, use regular foam or flood with fine water spray.
Fire fighting procedures:	Move container from fire area if it can be done without risk.
Fight	large fires from a protected location or safe distance. Stay away from the ends of tanks. Dike for later disposal. Don not scatter spilled material with high-pressure water streams.
Fire fighting protective gear:	Full firefighting turn-out gear (bunker gear). Any supplied air respirator with full facepiece and operated in a pressure-demand
or	other positive-pressure mode in combination with a separate
escape	supply. Any self-contained breathing apparatus with a full facepiece.
Unusual fire and explosions hazards:	negligible fire hazard

SECTION 5: REACTIVITY DATA

Stable X Unstable

Decomposition byproducts: oxides of sulfur
Incompatibilities/Condition to Avoid: oxidizing materials, heat, flames, sparks, sources of ignition (containers may erode or explode if exposed to heat)
Hazardous Polymerization: will not polymerize

SECTION 6: HEALTH HAZARD DATA

Toxicity: 140mg/kg subcutaneous rat LDLo; 44988 µg/kg intraperitoneal-mouse LD50; 560 mg/kg subcutaneous-mouse LD50; 4450 mg/kg skin-rabbit LD50; 16 mg/kg intravenous - rabbit LDLo; 31 mg/kg subcutaneous - guinea pig LDLo; 43198 µg/kg/6 weeks intermittent oral - rat TDLo; 864 mg/kg/12 weeks intermittent oral - rat TDLo

Mutagenic data: gene conversion and mitotic recombination - *Saccharomyces cerevisiae* 6 mmol/L; sex chromosome loss and non disjunction - *Saccharomyces cerevisiae* 4 mmol/L; micronucleus test - human lymphocyte 10 µmol/L; sister chromatid exchange - human lymphocyte 40 µmol/L; sex chromosome loss and non disjunction - human lymphocyte 20 µmol/L; micronucleus test - mouse oral 100 mg/kg; sex chromosome loss and non disjunction - mouse oral 100 mg/kg; cytogenetic analysis - hamster ovary 6 mg/L; sister chromatid exchange - hamster ovary 19200 µg/L

Permissible Exposure limits: 0.05 mg (V)/m3 NIOSH recommended ceiling 15 minutes
0.25 mg/m3 DFG MAK peak 30 minute average value 2 times/shift

TWA: 0.05 mg/m3 DFG MAK

SECTION 7: SPILLAGE AND DISPOSAL PROCEDURES

Spillage: Soil release: Dig holding area such as lagoon, pond or pit for containment. Cover with plastic sheet or tarp to minimize spreading and protect from contact with water.
Water release: Add an oxidizing agent. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Collect spilled material using mechanical equipment.
Occupational release: Do not touch spilled material. Stop leak if you can do it without risk. Reduce vapors with water spray. Small spills; absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Small dry spills; move containers away from spill to a safe area. Large spill: dike for later disposal. Keep unnecessary people away, isolate area and deny entry. Ventilate closed spaces before entering.

hazard

Reportable quantity: Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (US SARA Section 304). If release occurs in the US and is reportable under CERCLA Section 103, notify the national Response Center at 800-424-8802 or 202-426-2675

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SECTION 8: FIRST AID PROCEDURES

- Eye Contact:** Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. Get medical attention immediately.
- Skin Contact:** Remove contaminated clothing, jewelry, and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains. (at least 15-20 minutes). Get medical attention, if needed.
- Inhalation:** Remove from exposure immediately. Use a bag valve mask or similar device to perform artificial respiration (rescue breathing) if needed. Get medical attention.
- Ingestion:** Get medical attention immediately. Antidote = calcium disodium edetate/dextrose, intravenous; calcium disodium edetate/procaine, intramuscular. To physician, consider gastric lavage and catharsis. Consider oxygen.

SECTION 9: HANDLING AND STORAGE INFORMATION:

Store and handle in accordance with all current regulations and standards.

SECTION 10: SPECIAL PROTECTION INFORMATION:

- Ventilation:** Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.
- Skin Protection:** Wear appropriate chemical resistant gloves and clothing.
- Eye Protection:** Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.
- Respiratory Protection:** Respiratory equipment must be certified by NIOSH/MSHA. The following respirator and maximum use concentrations are drawn from NIOSH and/or OSHA.
- 0.5 mg/m³ - Any air purifying respirator with a high efficiency particulate filter.
Any supplied air respirator.
- 1.25 mg/m³ - Any powered, air purifying respirator with a high efficiency particulate filter. Any supplied air respirator.
- 2.5 mg/m³ - Any powered, air purifying respirator with a full face piece and a high efficiency particulate filter. Any supplied air respirator with a full facepiece. Any purifying respirator with a full face piece and a high efficiency particulate filter.
Any self contained breathing apparatus with a full facepiece.
- 35 mg/m³ - Any supplied-air respirator with a full facepiece that is operated in a pressure demand or other positive pressure mode.
Escape - Any air purifying respirator with a full face piece and a high efficiency particulate filter. Any appropriate escape type, self contained breathing apparatus.
- Unknown concentrations or immediately dangerous to life or health - Any supplied-air respirator with a full facepiece that is operated in a pressure demand positive pressure mode in combination with a separate escape contained breathing apparatus with a full facepiece.

SECTION 11: TRANSPORT INFORMATION

- DOT Classification:** Class 6.1, Vanadyl Sulfate, UN2931, Packing group II, packing instruction 613 (25 kg max., passenger craft), Y613 (1 kg max. Ltd.Qty), 615 (100 kg max. cargo aircraft)
- DOT label:** Toxic - 6

SECTION 12: ECOLOGICAL INFORMATION

- Fish toxicity:** 4800 ug/L 96 hours LC50 (mortality) fathead minnow (*Pimephales promelas*)
- Invertebrate toxicity:** 1800 ug/L NR days EC50 (locomotor) water flea (*Daphnia magna*)
- Algal toxicity:** 563 ug/L 3-4 weeks (population growth) green algae (*Chlorella vulgaris*)
- Summary:** Toxic to aquatic life