

SAFETY DATA SHEET

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SECTION 1. IDENTIFICATION

Product Identifier: (3N) 99.9% Vanadium Oxysulfate Hydrate

Product Code: VO-SAT-03-P.XHYD

CAS Number: 27774-13-6

Relevant identified uses of the substance: Scientific research and development

Supplier details:

American Elements
10884 Weyburn Ave.
Los Angeles, CA 90024
Tel: +1 310-208-0551
Fax: +1 310-208-0351
Emergency telephone number:
+1 800-424-9300

SECTION 2. HAZARDS IDENTIFICATION

Warning! Causes eye and skin irritation. Causes digestive and respiratory tract irritation. May cause liver and kidney damage.

Target Organs: Kidneys, liver, respiratory system, eyes, skin.

Potential Health Effects

Eye: May cause eye irritation and possible damage.

Skin: Contact with skin causes irritation and possible burns, especially if the skin is wet or moist.

Contact with the skin may cause skin lesions which are characterized by cracking of the skin and the development of slow-healing ulcers.

Ingestion: May cause severe gastrointestinal tract irritation with nausea, vomiting and possible burns.

May cause liver and kidney damage. May cause central nervous system effects and/or neurological effects. May cause greenish-black tongue discoloration due to deposition of vanadium salts. Ingestion of large amounts may cause an increase in blood pressure.

Inhalation: May cause liver and kidney damage. May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema.

Chronic: Chronic inhalation may cause effects similar to those of acute inhalation. May cause liver and kidney damage. May produce scattered allergy-like eczematous skin lesions symptomatic of vanadium toxicity.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS# Chemical Name Percent EINECS/ELINCS
27774-13-6 Vanadyl sulfate 100.0 248-652-7

SECTION 4. FIRST AID MEASURES

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

Skin: Get medical aid immediately. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation.

Notes to Physician: Green coloration of the tongue, resulting from the deposition of vanadium salts is an indicator of exposure; however, may be absent even in prolonged exposure..

Antidote: There exists several chelation agents. The determination of there use should be made only by qualified medical personnel.

SECTION 5. FIREFIGHTING MEASURES

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use extinguishing media appropriate to the surrounding fire. Substance is noncombustible.

Extinguishing Media: Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.

Flash Point: Not available.

Autoignition Temperature: Not available.

Explosion Limits, Lower:Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 2; Flammability: 0; Instability: 0

SECTION 6. ACCIDENTAL RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

SECTION 7. HANDLING AND STORAGE

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Do not get on skin or in eyes. Do not ingest or inhale. Discard contaminated shoes.

Storage: Store in a cool, dry, well-ventilated area away from incompatible substances. Keep

containers tightly closed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name ACGIH NIOSH OSHA - Final PELs

Vanadyl sulfate none listed none listed none listed

OSHA Vacated PELs: Vanadyl sulfate: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: 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: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

Appearance: blue

Odor: none reported

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: N/A

Freezing/Melting Point: Decomposes.

Decomposition Temperature: Not available.

Solubility: Very soluble in water.

Specific Gravity/Density: 3.0

Molecular Formula: VO_2SO_4

Molecular Weight: 162.9985

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.

Conditions to Avoid: Incompatible materials, dust generation, excess heat.

Incompatibilities with Other Materials: Strong oxidizing agents.

Hazardous Decomposition Products: Sulfur oxides (SO_x), including sulfur oxide and sulfur dioxide, vanadium oxide (VO_x) gases.

Hazardous Polymerization: Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

RTECS#:

CAS# 27774-13-6: YW1925000

LD50/LC50:

CAS# 27774-13-6:

Skin, rabbit: LD50 = 4450 mg/kg;

Carcinogenicity:

CAS# 27774-13-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: Mutation data has been reported.

Teratogenicity: No information found

Reproductive Effects: No information found

Mutagenicity: At doses of 0.32 to 4.0 µg V/ml, vanadyl sulfate induced increases in the sister chromatid exchange frequency, in Chinese hamster ovary cells, with or without the addition of rat hepatic S9 mix. It also induced chromosomal aberrations in the cells at doses close to the TC50, 16 µg V/ml.

Neurotoxicity: No information found

Other Studies:

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity: Fish: Bluegill/Sunfish: 6mg/L; 96H; No data available.

Environmental: Vanadium occurs in water in several chemical forms of which the dioxyvanadium cation VO(2+) & the vanadate anion VO(-4) are readily soluble. However, the mobility of those ions in water is probably low because of easy adsorption on clay & precipitation with organic matter.

/Dioxyvanadium cation & vanadate anion.

Physical: No data available.

Other: For more information, see "HANDBOOK OF ENVIRONMENTAL FATE AND EXPOSURE DATA."

SECTION 13. DISPOSAL CONSIDERATIONS

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3.

Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

SECTION 14. TRANSPORT INFORMATION

US DOT Canada TDG

Shipping Name: VANADYL SULFATE No data available.

Hazard Class: 6.1

UN Number: UN2931

Packing Group: II

SECTION 15. REGULATORY INFORMATION

US FEDERAL

TSCA

CAS# 27774-13-6 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 27774-13-6: 1000 lb final RQ; 454 kg final RQ

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 27774-13-6: immediate.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

CAS# 27774-13-6 is listed as a Hazardous Substance under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 27774-13-6 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

XN

Risk Phrases:

R 22 Harmful if swallowed.

R 36/37/38 Irritating to eyes, respiratory system and skin.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

WGK (Water Danger/Protection)

CAS# 27774-13-6: No data available.

Canada - DSL/NDSL

CAS# 27774-13-6 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of D1A, D2B.

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

Canadian Ingredient Disclosure List

CAS# 27774-13-6 is listed on the Canadian Ingredient Disclosure List.

16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). 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. American Elements 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. COPYRIGHT 1997-2019 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.