Vanadium

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

Manufacturer/Supplier:

ESPI Metals

1050 Benson Way, Ashland, OR 97520

Toll Free (800) 638-2581 * Fax (541) 488-8313

E-Mail: sales@espimetals.com

Product Name: Vanadium

Formula: V

CAS Number: 7440-62-2

II. HAZARDOUS INGREDIENTS

Hazardous Component: Vanadium

Percent (%): 0-100

OSHA/PEL: N/E

ACGIH/TLV: N/E

HMIS Ratings (Powder):

Health: 2

Flammability: 3

Reactivity: 2

III. PHYSICAL DATA

Boiling Point: 3380 ºC

Melting/Freezing Point: 1880 to 1900 ºC

Specific Gravity: 5.96 gm/cc

Solubility in H_2O: Insoluble

Appearance and Odor: Silver gray powder or solid, no odor.

IV. FIRE AND EXPLOSION HAZARDS DATA

Flash Point: N/A

Flammability: Powder is highly flammable

Autoignition Temperature (Powder): 923 ºC

Explosive Limits: **Lower**: N/E **Upper**: N/E

Extinguishing Media: For fires involving metal powders: Use Class D or other metal extinguishing agent. For fires involving solid forms of the material: Use suitable extinguishing agent for surrounding materials and type of fire.

Special Fire Fighting Procedures: Firefighters must wear full face, self contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

Unusual Fire and Explosion Hazards: Dust or powder is flammable when exposed to heat, flame or sparks. When heated to decomposition, vanadium may emit toxic metal oxide fumes. May react violently with BrF_3, Cl_2, Li, nitryl fluoride and oxidants.

V. HEALTH HAZARD INFORMATION

Health Hazards:

Vanadium compounds are considered to have variable toxicity. Vanadium compounds act chiefly as an irritant to the conjunctiva and respiratory tract. Acute and chronic exposure can give rise to conjunctivitis, rhinitis, reversible irritation of the respiratory tract, and to bronchitis, broncho spasms, and asthma-like diseases in more severe cases. Industrial exposure are mostly acute, seldom chronic. Human vanadium poisoning symptoms are for the most part restricted to the conjunctiva and respiratory system, no evidence being found of disturbances of the gastrointestinal tract, kidneys, blood or central nervous system. Acute poisoning in animals by ingestion of vanadium compounds causes nervous disturbances, paralysis of legs, respiratory failure, convulsions, bloody diarrhea and death. Poisoning by inhalation causes bleeding of the nose and acute bronchitis (Sax, Dangerous

Properties of Industrial Materials).

Acute Effects:

Inhalation: May cause irritation of the respiratory tract. Vanadium compounds may cause bleeding and acute bronchitis. May cause vanadium toxicity.

Ingestion: None recorded.

Skin: May cause irritation.

Eyes: May cause irritation.

Chronic Effects:

Inhalation: Vanadium compounds may cause pneumonia and other pathologic symptoms (chronic symptoms of vanadium toxicity.)

Ingestion: None recorded.

Skin: May cause dermatitis.

Eye: May cause conjunctivitis.

Target Organs: May affect the kidneys, respiratory system, skin and eyes.

Medical Conditions Generally Aggravated by Exposure: Pre-existing respiratory disorders.

Carcinogenicity: **NTP**: No **IARC**: No **OSHA**: No

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: Remove from exposure, keep warm and quiet, give oxygen if breathing is difficult and seek medical attention.

INGESTION: If conscious give 1-2 glasses of milk or water and induce vomiting. Never induce vomiting or give

anything by mouth to an unconscious person.

SKIN: Remove contaminated clothing, brush material off skin, wash affected areas with mild soap and water, if irritation persists seek medical attention.

EYES: Flush eyes immediately with large amounts of water, lifting upper and lower eyelids for at least 15 minutes; if irritation persists seek medical attention.

VI. REACTIVITY DATA

Stability: Stable

Conditions to Avoid: None

Incompatibility (Material to Avoid): Oxidizers, strong bases, acids, Cl_2, Li, and nitryl fluoride. Vanadium will react violently with chlorine above 180 ºC, is readily dissolved by nitric acid and slowly oxidizes if the surface is moist.

Hazardous Decomposition Products: Oxides of vanadium

Hazardous Polymerization: Will not occur.

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled: Wear appropriate respiratory and protective equipment specified in section VIII. Isolate spill and provide ventilation. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust. Use non-sparking tools.

Waste Disposal Method: Dispose of in accordance with Federal, State and Local regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection: For operations such as grinding or polishing, which will produce dusts of metal powder or oxide above 0.5 mg/m^3, use NIOSH approved dust-mist-fume respirator.

Ventilation: Use local exhaust to maintain concentration at low exposure levels. General exhaust is recommended.

Protective Gloves: Rubber

Eye Protection: Safety Glasses

Other Protective Clothing or Equipment: Protective gear suitable to prevent contamination.

IX. SPECIAL PRECAUTIONS

Precautions to Be Taken in Handling and Storing: Store in a cool dry area in a tightly sealed container. Store away from incompatible material. Wash thoroughly after handling. Take care when machining or performing operations that produce dusts not to breathe dusts.

Work Practices: Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air. Maintain eyewash capable of sustained flushing, safety drench shower and facilities for washing.

DOT Regulations:

Solid Forms:

Hazard Class: None

Powders:

Hazard Class: 4.1

Identification Number: 3089

Packing Group: II

Proper Shipping Name: Metal powder, flammable, n.o.s. (vanadium)

The above information is believed to be correct, but does not purport to be all inclusive and shall be used only as a guide. ESPI shall not be held liable for any damage resulting from handling or from contact with the above product.

Issued by: S. Dierks

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