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MATERIAL SAFETY DATA SHEET (MSDS)**VANADIUM PENTOXIDE AR****1. Product Identification**

Synonyms: Vanadium (V) Oxide; Vanadic Anhydride
CAS No.: 1314-62-1

Product Coad: V0215500100

Molecular Weight: 181.88
Chemical Formula: V2O5

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Vanadium Pentoxide	1314-62-1	90 - 100%	Yes

3. Hazards Identification**Emergency Overview**

POISON! DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

Health Rating: 3 - Severe (Life)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Blue (Health)

Potential Health Effects

Inhalation: Highly Toxic fume, mist, dust. Exposure can injure the lungs and bronchial airways. Symptoms include irritation and inflammation of the mucous membranes, nasal passages and pharynx, a greenish-black discoloration of the tongue, persistent cough, shortness of breath, bronchiolar constriction, tightness in the chest. An asthma-like condition may occur. May result in pulmonary edema/pneumonia. May be fatal.

Ingestion: Highly toxic. Ingestion may be fatal. Symptoms may include nausea, headache, and vomiting. Anemia may occur.

Skin Contact: Causes irritation to skin. Symptoms include redness, itching, and pain. May develop skin rash or lesions with intense itching.

Eye Contact: Vapor, mist and dust cause irritation with sensation of burning, redness, pain, and signs of conjunctivitis.

Chronic Exposure: Repeated or prolonged exposure may cause lung damage, respiratory tract sensitization or skin sensitization.

Aggravation of Pre-existing Conditions: Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion: Get medical attention immediately. Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

Skin Contact: Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire: May burn but will not ignite readily.

Explosion: Not considered to be an explosion hazard.

Fire Extinguishing Media: Water spray, dry chemical, alcohol foam, or carbon dioxide.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

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Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection**Airborne Exposure Limits:**

OSHA Permissible Exposure Limit (PEL):

Vanadium Respirable Dust, as V₂O₅, 0.5 mg/m³ (Ceiling)

Vanadium Fume, as V₂O₅, 0.1 mg/m³ (Ceiling)

ACGIH Threshold Limit Value (TLV):

Vanadium Pentoxide, as V₂O₅, respirable dust or fume,
0.05 mg/m³ (TWA), A4, Not classifiable as a human carcinogen

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved): If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection: Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance: Yellow-brown crystalline solid.

Odor: Odorless.

Solubility: Slight (0.1-1%)

Specific Gravity: 3.36 @ 18C/4C

pH: No information found.

% Volatiles by volume @ 21C (70F): 0

Boiling Point: 1750C (3182F) Decomposes.

Melting Point: 690C (1274F)

Vapor Density (Air=1): 6.3

Vapor Pressure (mm Hg): 0 @ 20C (68F)

Evaporation Rate (BuAc=1): No information found.

10. Stability and Reactivity

Stability: Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products: Oxides of vanadium.

Hazardous Polymerization: Will not occur.

Incompatibilities: Lithium, peroxyformic acid, and chlorine trifluoride. Mixtures of vanadium pentoxide with calcium + sulfur + water may ignite spontaneously.

Conditions to Avoid: Incompatibles.

11. Toxicological Information**Toxicological Data:**

For Vanadium Pentoxide Dust: Oral rat LD50: 10 mg/kg. Investigated as a mutagen, reproductive effector. For Vanadium Pentoxide Fume: Investigated as a tumorigen.

Reproductive Toxicity:

Has shown teratogenic effects in laboratory animals.

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VANADIUM PENTOXIDE AR

---NTP Carcinogen---

Ingredient	Known	Anticipated	IARC Category
Vanadium Pentoxide (1314-62-1)	No	No	None

12. Ecological Information

Environmental Fate: No information found.
Environmental Toxicity: No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)
Proper Shipping Name: VANADIUM PENTOXIDE
Hazard Class: 6.1
UN/NA: UN2862
Packing Group: III
Information reported for product/size: 500G

International (Water, I.M.O.)
Proper Shipping Name: VANADIUM PENTOXIDE, NON-FUSED FORM
Hazard Class: 6.1
UN/NA: UN2862
Packing Group: III
Information reported for product/size: 500G

International (Air, I.C.A.O.)
Proper Shipping Name: VANADIUM PENTOXIDE, NON-FUSED FORM
Hazard Class: 6.1
UN/NA: UN2862
Packing Group: III
Information reported for product/size: 500G

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Vanadium Pentoxide (1314-62-1)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

--Canada--

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VANADIUM PENTOXIDE AR

Ingredient	Korea DSL NDSL Phil.			
Vanadium Pentoxide (1314-62-1)	Yes	Yes	No	Yes
-----\Federal, State & International Regulations - Part 1\-----				
	-SARA 302-	-----SARA 313-----		
Ingredient	RQ	TPQ	List	Chemical Catg.
Vanadium Pentoxide (1314-62-1)	1000	100*	No	No
-----\Federal, State & International Regulations - Part 2\-----				
	-RCRA-	-TSCA-		
Ingredient	CERCLA	261.33	8(d)	
Vanadium Pentoxide (1314-62-1)	1000	P120	No	
Chemical Weapons Convention: No TSCA 12(b): No CDTA: No				
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No				
Reactivity: No (Pure / Solid)				

Australian Hazchem Code: 1Z

Poison Schedule: None allocated.

WHMIS: This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 3 Flammability: 0 Reactivity: 0

Label Hazard Warning:

POISON! DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

Label Precautions: Do not get in eyes, on skin, or on clothing.

Do not breathe dust, mist or vapor. Keep container closed.

Use only with adequate ventilation. Wash thoroughly after handling.

Label First Aid: If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases get medical attention immediately.

Product Use: Laboratory Reagent.

In accordance with REACH Regulation (CE) N° 1907/2006 and with CLP Regulation (CE) N° 1272/2008

DISCLAIMER:

- **SUVCHEM** Products are to be used as Lab Chemicals for R&D only. Not for drug, medicinal, household or other uses.
- **SUVCHEM** shall not be responsible for any damage resulting from handling or from contact with the above product.
- **SUVCHEM** provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.

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