

Infosafe No™ 1CHKF	Issue Date : November 2021	RE-ISSUED by CHEMSUPP
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Product Name **VANADIUM PENTOXIDE**

Classified as hazardous

1. Identification

GHS Product Identifier	VANADIUM PENTOXIDE	
Company Name	CHEMSUPPLY AUSTRALIA PTY LTD (ABN 19 008 264 211)	
Address	38 - 50 Bedford Street GILLMAN SA 5013 Australia	
Telephone/Fax Number	Tel: (08) 8440-2000	
Emergency phone number	CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)	
E-mail Address	www.chemsupply.com.au	
Recommended use of the chemical and restrictions on use	Catalyst for many organic reactions, catalyst for oxidation of sulfur dioxide in sulfuric acid manufacture (contact process), phthalic anhydride from naphthalene or o-xylene, maleic anhydride from benzene or n-butane/butene, adipic acid from cyclohexanol/cyclohexanone, and acrylic acid from propane; ferrovanadium; chemical intermediate for vanadium alloys and compounds; colouring agent for ceramics and textiles, inhibiting UV transmission in glass, depolarizer, photographic developer, oxidation catalyst in automobile catalytic converters; used in the production of oxalic acid from cellulose and of anthraquinone from anthracene; used to lower the melting point of enamel frits for the coating of aluminium substrates; corrosion inhibitor in the CO2 scrubbing solutions of the Benfield and related processes for the production of hydrogen from hydrocarbons; as cathode in primary and secondary (rechargeable) lithium batteries, in YV04.	
Other Names	Name	Product Code
	VANADIUM PENTOXIDE LR Vanadic acid anhydride	VL002

Other Information

ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

2. Hazard Identification

GHS classification of the substance/mixture	Acute Toxicity - Oral: Category 4 Eye Damage/Irritation: Category 1 Acute Toxicity - Inhalation: Category 4 Specific target organ toxicity - Single Exposure Category 3 (respiratory tract irritation) Germ Cell Mutagenicity: Category 2 Carcinogenicity: Category 2 Toxic to Reproduction: Category 2 Specific target organ toxicity - Repeated Exposure Category 1 Hazardous to the Aquatic Environment - Long-Term Hazard: Category 2
Signal Word (s)	DANGER
Hazard Statement (s)	H302 Harmful if swallowed. H318 Causes serious eye damage. H332 Harmful if inhaled. H335 May cause respiratory irritation. H341 Suspected of causing genetic defects.

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H351 Suspected of causing cancer.
 H361 Suspected of damaging fertility or the unborn child.
 H372 Causes damage to organs through prolonged or repeated exposure.
 H411 Toxic to aquatic life with long lasting effects.

Pictogram (s)



Health hazard, Corrosion, Exclamation mark, Environment

Precautionary statement – Prevention

P201 Obtain special instructions before use.
 P202 Do not handle until all safety precautions have been read and understood.
 P260 Do not breathe dust/fume/gas/mist/vapours/spray.
 P262 Do not get in eyes, on skin, or on clothing.
 P264 Wash thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P271 Use only outdoors or in a well-ventilated area.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P281 Use personal protective equipment as required.
 P273 Avoid release to the environment.

Precautionary statement – Response

P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
 P330 Rinse mouth.
 P302+P350 IF ON SKIN: Gently wash with plenty of soap and water.
 P310 Immediately call a POISON CENTER or doctor/physician.
 P361 Remove/Take off immediately all contaminated clothing.
 P363 Wash contaminated clothing before reuse.
 P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 P311 Call a POISON CENTER or doctor/physician.
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P310 Immediately call a POISON CENTER or doctor/physician.
 P308+P313 IF exposed or concerned: Get medical advice/attention.

Precautionary statement – Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.
 P405 Store locked up.

Precautionary statement – Disposal

P501 Dispose of contents/container to an approved waste disposal plant.

3. Composition/information on ingredients

Ingredients	Name	CAS	Proportion
	Vanadium pentoxide	1314-62-1	100 %

4. First-aid measures

Inhalation	If inhaled, remove from contaminated area to fresh air immediately, avoid becoming a casualty. Make patient comfortable, keep warm and at rest until fully recovered. If breathing is difficult (or develops a bluish skin discolouration), supply oxygen by a qualified person. Apply artificial respiration with a respiratory medical device if not breathing. Do not use mouth to mouth resuscitation. Immediately medical attention is required.
Ingestion	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice.
Skin	Wash affected area thoroughly with soap and water. Remove contaminated clothing and wash before reuse or discard. Seek immediate medical attention.
Eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek medical attention.
First Aid Facilities	Maintain eyewash fountain and safety shower in work area.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of

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Other Information the patient.
For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

5. Fire-fighting measures

Hazards from Combustion Products Oxygen, irritating and toxic fumes and gases, vanadium oxide (VOx) gases.

Specific Methods No limitations to the type of extinguishing media.
Small fire: Use dry chemical, CO2 or water spray.
If safe to do so, move undamaged containers from fire area.
Large fire: Use water spray, fog or foam - Do not use water jets.
Cool containers with flooding quantities of water until well after fire is out. Avoid getting water inside containers.

Specific hazards arising from the chemical Material does not burn. Fire or heat will produce irritating, poisonous and/or corrosive gases. Runoff may pollute waterways.

Hazchem Code 2X

Decomposition Temp. 1750 °C

Precautions in connection with Fire Wear SCBA and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum protection. Structural firefighter's uniform is NOT effective for these materials.

6. Accidental release measures

Personal Precautions Evacuate the area of all non-essential personnel. Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms.

Personal Protection Wear protective clothing specified for normal operations (see Section 8)

Clean-up Methods - Small Spillages Sweep up (avoid generating dust) and using clean non-sparking tools transfer to a clean, suitable, clearly labelled container for disposal in accordance with local regulations.

7. Handling and storage

Precautions for Safe Handling Avoid contact with skin, eyes and clothing. Avoid ingestion or inhalation of dust or fumes. Avoid prolonged or repeated exposure. Keep container closed. Minimise dust accumulation and generation. Operations should be carried out in an efficient fume hood or equivalent system. Use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Chemicals should be used only by those trained in handling potentially hazardous materials. Wear suitable protective clothing. Rubber gloves, eye protection and protective clothing should be worn. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. STRICT HYGIENE! Do not eat, drink, or smoke during work. Under no circumstances eat, drink or smoke while handling this material. Wash hands before eating. Isolate from food and feedstuffs. Isolate from incompatible substances. Protect against physical damage. 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.

Conditions for safe storage, including any incompatibilities Store in tightly closed containers, in a cool, dry, well-ventilated area away from incompatible substances. Keep well closed and protected from direct sunlight and moisture. Protect against physical damage. Separated from food and feedstuffs. Keep containers closed when not in use - check regularly for spills. Store in a safe manner to minimize accidental breakage, spillage, or contact with moisture. 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.

Storage Regulations Refer Australian Standard AS/NZS 4452:1997 'The storage and handling of toxic substances'.

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Storage Temperatures Store at room temperature (15 to 25 °C recommended).

8. Exposure controls/personal protection

Occupational exposure limit values	Name	STEL		TWA		Footnote
		mg/m3	ppm	mg/m3	ppm	
	Vanadium pentoxide			0.05		Vanadium (as V2O5), (respirable dust & fume)
Other Exposure Information	<p>These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.</p> <p>A time weighted average (TWA) has been established for Vanadium (as V2O5), (respirable dust & fume) (Safe Work Australia) of 0.05 mg/m³. The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.</p>					
Appropriate engineering controls	<p>Maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.</p>					
Respiratory Protection	<p>Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.</p>					
Eye Protection	<p>The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.</p>					
Hand Protection	<p>Wear gloves of impervious material conforming to AS/NZS 2161: Occupational protective gloves - Selection, use and maintenance. Final choice of appropriate glove type will vary according to individual circumstances. This can include methods of handling, and engineering controls as determined by appropriate risk assessments. Avoid skin contact when removing gloves from hands, do not touch the gloves outer surface. Dispose of gloves as hazardous waste.</p>					
Personal Protective Equipment	<p>Personal protective equipment should not solely be relied upon to control risk and should only be used when all other reasonably practicable control measures do not eliminate or sufficiently minimise risk. Guidance in selecting personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.</p>					
Footwear	<p>Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.</p>					
Body Protection	<p>Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.</p>					
Hygiene Measures	<p>Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.</p>					

9. Physical and chemical properties

Form Solid

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Appearance	Brownish powder.
Odour	Odourless.
Decomposition Temperature	1750 °C
Melting Point	690 °C
Boiling Point	1750 °C (decomposes)
Solubility in Water	Slightly soluble in water; 0.8 g/100 ml; 1 g/125 ml.
Solubility in Organic Solvents	Soluble in acetone. Insoluble in alcohol.
Specific Gravity	3.35 @ 25 °C
pH	4 (50 g/l slurry)
Vapour Pressure	0 mm Hg (20 °C); 0.0443 hPa (700 °C).
Vapour Density (Air=1)	6.3
Volatile Component	0 %vol @ 21 °C
Flammability	Non combustible material.
Explosion Properties	Dust/air mixture explosive.
Molecular Weight	181.88
Oxidising Properties	May act as an oxidizing agent. Decomposes at high temperatures releasing oxygen which may cause an existing fire to burn more vigorously.
Solubility in other solvents (kg/m3)	Soluble in concentrated acids, alkalies.

10. Stability and reactivity

Chemical Stability	Stable under ordinary conditions of use and storage.
Conditions to Avoid	Incompatible materials, dust generation, combustible substances, reducing agents.
Incompatible Materials	Acids, alkalis, alkali metals, alkaline earth metals/sulfur (in the presence of atmospheric oxygen and/or moisture), lithium + 400 °C, peroxyformic acid, chlorine trifluoride, calcium + sulfur/sodium + water, hydrochloric acid (formation of: chlorine), chlorine, chlorates, interhalogens, halogen-halogen compounds, performic acid, combustible substances, reducing agents.
Hazardous Decomposition Products	Irritating and toxic fumes and gases, vanadium oxide (VO _x) gases, oxygen.
Possibility of hazardous reactions	The reaction of lithium and vanadium pentoxide occurs around 400 °C; the temperature then rises rapidly to 768 °C. Mixtures with calcium, sodium, and water may ignite spontaneously. Vanadium ⁵⁺ is reduced to vanadium ⁴⁺ by relatively mild reducing agents. Reactive with acids, alkalis. Reacts with combustible substances.
Hazardous Polymerization	Will not occur.

11. Toxicological Information

Ingestion	Harmful if swallowed. Symptoms may include excess salivation, nausea, headache, vomiting, diarrhoea and abdominal pain. Anaemia may occur. May cause central nervous system effects. High concentrations may cause drowsiness, convulsions, unconsciousness and central nervous system damage.
Inhalation	Harmful if inhaled. Irritating to mucous membranes of the respiratory tract (airways). May cause effects similar to those described for ingestion. Exposure can injure the lungs and bronchial airways. Symptoms include irritation and inflammation of the mucous membranes, nasal passages and pharynx, a greenish-black discolouration of the tongue, persistent cough,

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	shortness of breath, bronchiolar constriction, tightness in the chest. An asthma-like condition may occur. May result in pulmonary oedema/pneumonia. May be fatal.
Skin	May be irritating to skin. Symptoms include redness, itching, and pain. May develop skin rash or lesions with intense itching.
Eye	Causes serious eye damage, with redness and pain. Vapour, mist and dust cause irritation with sensation of burning, redness, pain, and signs of conjunctivitis.
Respiratory sensitisation	Not classified based on available information.
Skin Sensitisation	Not classified based on available information.
Germ cell mutagenicity	Germ Cell Mutagenicity: Category 2 H341 Suspected of causing genetic defects.
Carcinogenicity	Vanadium pentoxide [1314-62-1] is evaluated in the IARC Monographs (Vol. 86; in preparation) as Group 2B: Possibly carcinogenic to humans. Carcinogenicity: Category 2 H351 Suspected of causing cancer.
Reproductive Toxicity	Toxic to Reproduction: Category 2 H361 Suspected of damaging fertility or the unborn child.
STOT-single exposure	Specific target organ toxicity - Single Exposure Category 3 (respiratory tract irritation) H335 May cause respiratory irritation.
STOT-repeated exposure	Specific target organ toxicity - Repeated Exposure Category 1 H372 Causes damage to organs through prolonged or repeated exposure.
Chronic Effects	Repeated or prolonged exposure may cause lung damage. H341 Suspected of causing genetic defects. H361 Suspected of damaging fertility or the unborn child. H372 Causes damage to organs through prolonged or repeated exposure.
Serious eye damage/irritation	Eye Damage/Irritation: Category 1 H318 Causes serious eye damage.

12. Ecological information

Ecological Information	Hazardous to the Aquatic Environment - Long-Term Hazard: Category 2 H411 Toxic to aquatic life with long lasting effects.
Environmental Protection	Do not allow to enter waters, waste water, or soil!

13. Disposal considerations

Disposal Considerations	Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.
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14. Transport information

Transport Information	Dangerous Goods of Class 6 (Toxic and Infectious Substances) are incompatible in a placard load with any of the following: -Class 1, Class 3, if the Class 3 dangerous goods are nitromethane, Class 8, if the Class 6 dangerous goods are cyanides and the Class 8 dangerous goods are acids; and are incompatible with food and food packaging in any quantity.
U.N. Number	2862
UN proper shipping name	VANADIUM PENTOXIDE
Transport hazard class(es)	6.1
Hazchem Code	2X
Packing Group	III
EPG Number	6A5
IERG Number	34

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Environmental Hazards The following applies to vanadium compounds in general: toxic for aquatic organisms.

15. Regulatory information

Regulatory Information All the constituents of this product are listed on the Australian Inventory of Chemical Substances (AICS), or exempted. Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

Poisons Schedule Not Scheduled

16. Other Information

Literature References 'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia.
National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'.
Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals'.
Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand.
Safe Work Australia, 'Hazardous Chemical Information System'.
Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances'.
Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment'.

Contact Person/Point Paul McCarthy Ph. (08) 8440 2000 **DISCLAIMER STATEMENT:**
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Empirical Formula & Structural Formula V2O5

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