

Infosafe No™ 1CH12	Issue Date : December 2020	RE-ISSUED by CHEMSUPP
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Product Name **AMMONIUM METAVANADATE**

Classified as hazardous

1. Identification

GHS Product Identifier	AMMONIUM METAVANADATE	
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	In dyeing and printing on woollens; staining wood black; manufacturing vanadium black and 'indelible ink'; producing vanadium luster on pottery; as photographic developer; in haematoxylin staining in microscopy; as a reagent in analytical chemistry; used as a substitute catalyst (because readily converted to vanadium pentoxide at elevated temperatures) in the production of, e.g., DENOX catalysts and zirconium vanadium oxide yellow ceramic colourants; and laboratory reagent.	
Other Names	<u>Name</u> AMMONIUM METAVANADATE LR Ammonium vanadate, Vanadic acid, ammonium salt, Ammonium monovanadate, Ammonium trioxovanadate, Ammonium vanadium oxide	<u>Product Code</u> AL072

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 3 Serious eye damage/eye irritation Category 2A Acute toxicity, Inhalation Category 4 Specific target organ toxicity - repeated exposure, Inhalation Category 1, Respiratory Tract Long-term (chronic) aquatic hazard Category 2)
Signal Word (s)	DANGER
Hazard Statement (s)	H301 Toxic if swallowed. H319 Causes serious eye irritation. H332 Harmful if inhaled. H372 Causes damage to organs (Respiratory Tract) through prolonged or repeated exposure if inhaled. H411 Toxic to aquatic life with long lasting effects.
Pictogram (s)	Skull and crossbones, Health hazard, Environment

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Precautionary statement – Prevention

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
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.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statement – Response

P301+ P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P330 Rinse mouth.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTER/doctor if you feel unwell.
P305 + P351 + P338
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/ attention.
P314 Get medical advice/ attention if you feel unwell.
P391 Collect spillage.
P405 Store locked up.

Precautionary statement – Storage

Precautionary statement – Disposal

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

3. Composition/information on ingredients

Ingredients	Name	CAS	Proportion
	Ammonium metavanadate	7803-55-6	100 %

4. First-aid measures

Inhalation	If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Immediately obtain medical aid if cough or other symptoms appear.
Ingestion	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek medical advice if effects persist.
Skin	Wash affected areas with copious quantities of water immediately. Remove contaminated clothing and wash before re-use. If irritation occurs seek medical advice.
Eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. In all cases of eye contamination it is a sensible precaution to seek medical advice.
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 the patient.
Other Information	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	Irritating and toxic fumes and gases, vanadium oxide (VO _x) gases, vanadium pentoxide, vanadium, ammonia, nitric acid, nitrogen oxides (NO, NO ₂ etc.).
Specific Methods	Small fire: Use dry chemical, CO ₂ or water spray. If safe to do so, move undamaged containers from fire area. Large fire: Use dry chemical, CO ₂ , foam or water spray - Do not use water jets.

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Specific hazards arising from the chemical	Cool containers with flooding quantities of water until well after fire is out. Avoid getting water inside containers. Material does not burn. Fire or heat will produce irritating, poisonous and/or corrosive gases. Containers may explode when heated. Some may ignite combustibles (wood, paper, clothing, etc.) Contact with metals may evolve flammable hydrogen gas.
Hazchem Code	2Z
Decomposition Temp.	200 °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.
Environmental Precautions	Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.

7. Handling and storage

Precautions for Safe Handling	Avoid ingestion or inhalation of dust, vapour, mist, or gas. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Minimize dust generation and accumulation. Keep container tightly closed when not in use. Use only in a chemical fume hood. 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. Wear suitable protective clothing. Keep away from incompatibles such as oxidizing agents, acids. Prevent contact with moisture. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Under no circumstances eat, drink or smoke while handling this material. Chemicals should be used only by those trained in handling potentially hazardous materials.
Conditions for safe storage, including any incompatibilities	Stored in a separate locked safety storage cabinet or room. Store in tightly closed containers, in a cool, dry, well-ventilated area, away from incompatible materials. Protect against physical damage. Containers of vanadium shall be kept tightly closed at all times when not in use. Containers shall be stored in a safe manner to minimize accidental breakage, spillage, or contact with moisture. Store away from heat, sparks, flame and sources of ignition. Do not store near combustible materials. Product is hygroscopic. Take precautions to avoid contact with atmospheric moisture. Store protected from moisture. Store away from foodstuffs. Keep protected from direct sunlight. Check regularly for leaks. 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'.
Storage Temperatures	Store at room temperature (15 to 25 °C recommended).

8. Exposure controls/personal protection

Other Exposure Information	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. A time weighted average (TWA) has been established for Vanadium (as V2O5), (respirable dust & fume) (Worksafe Aust) of 0.05 mg/m ³ . The exposure value at
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Appropriate engineering controls	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. 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.
Respiratory Protection	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.
Eye Protection	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.
Hand Protection	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.
Personal Protective Equipment	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.
Body Protection	Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

9. Physical and chemical properties

Form	Solid
Appearance	White or slightly yellow crystals, powdered solid or crystalline powder.
Odour	Odourless.
Decomposition Temperature	200 °C.
Melting Point	200 °C (with decomposition)
Solubility in Water	Slightly soluble (5.2 g/L @ 15 °C.)
Solubility in Organic Solvents	Readily soluble in mono- and diethanolamine; soluble in dilute ammonia; insoluble in alcohol, ether and saturated ammonium chloride solution.
Specific Gravity	2.326
pH	~ 6.5 @ 5g/L, H ₂ O.
Vapour Pressure	Negligible.
Evaporation Rate	Negligible.
Volatile Component	0 %vol @ 21 °C
Flammability	Non combustible material.
Explosion Properties	This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.
Molecular Weight	116.98

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Oxidising Properties May act as an oxidizing agent.

10. Stability and reactivity

Chemical Stability Stable under ordinary conditions of use and storage, under normal temperatures and pressures. Hygroscopic. Loses water and ammonia on heating.

Conditions to Avoid Strong heating, temperatures above 200°C, excessive dust generation, exposure to moist air or water/moisture, excess light and incompatible materials.

Incompatible Materials Strong acids, strong oxidizing agents, bases, lithium and chlorine trifluoride.

Hazardous Decomposition Products Irritating and toxic fumes and gases, vanadium oxide (VOx) gases, vanadium pentoxide, vanadium, ammonia, nitric acid, nitrogen oxides (NO, NO2 etc.).

Possibility of hazardous reactions Reactive with oxidizing agents, acids.
May react with alkalis.

Hazardous Polymerization Will not occur.

11. Toxicological Information

Acute Toxicity - Oral LD50 Oral - Rat - 169 mg/kg (OECD Test Guideline 401)

Acute Toxicity - Dermal LD50 Dermal - Rat - > 2,500 mg/kg (OECD Test Guideline 402)

Acute Toxicity - Inhalation LC50 Inhalation - Rat - 4 h - 2.5 mg/l (OECD Test Guideline 403)

Ingestion Toxic if swallowed. Causes gastrointestinal irritation with nausea, vomiting, abdominal cramping, hypermotility and diarrhoea. May also affect behaviour/central nervous system/nervous system (central nervous system depression, headache, tremors, tinnitus, somnolence, coma, convulsions), urinary system (kidneys -proteinuria, erythrocyturia, leukocyturia), blood (thrombocytopenia, anaemia, neutropenia, basophilic granulation of leukocytes). Vanadium compounds can cause polycythemia (an increase in the total red cell mass of the blood), followed by red blood cell destruction, anaemia, loss of appetite, pallor, emaciation and may affect the cardiovascular system (arythmias, bradycardia, vasospasm/vasoconstriction of the lungs, spleen, kidneys, and intestines. May also cause a greenish-black tongue discolouration due to deposition of vanadium salts.

Inhalation Harmful if inhaled. Exposure can injure the lungs and bronchial airways. Symptoms include irritation and inflammation of the mucous membranes, nasal passages and pharynx, rhinitis, epistaxis, pharyngitis, diffuse pulmonary fibrosis, bronchitis, tracheitis, a greenish-black discolouration of the tongue, metallic taste, dry mouth, sore throat, persistent cough, dyspnoea, bronchiolar constriction, tightness in the chest. An asthma-like condition may occur. May result in pulmonary oedema/pneumonia. May be fatal. Pulmonary oedema may be delayed up to 48 hours. May cause nervous system effects (headache, tremors, nervousness, psychiatric disturbances, vertigo or convulsions).

Skin Symptoms include redness, itching, and pain. May develop skin rash or lesions with intense itching. May cause a greenish discolouration of the skin. May be absorbed by the skin.

Eye Causes serious eye damage. Extensive evidence exists that vanadium dust (usually the pentoxide) is severely irritating to the mucous membranes of the eyes. Contact causes redness, stinging, blurring, tearing and burning pain. May cause conjunctivitis. Risk of serious damage to eyes. Possible risk of irreversible effects.

Respiratory sensitisation Not classified based on available information.

Skin Sensitisation Not classified based on available information.

Germ cell mutagenicity Not classified based on available information.

Carcinogenicity Not classified based on available information.

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Reproductive Toxicity	Not classified based on available information.
STOT-single exposure	Not classified based on available information.
STOT-repeated exposure	Specific target organ toxicity - repeated exposure, Inhalation Category 1, Respiratory Tract H372 Causes damage to organs (Respiratory Tract) through prolonged or repeated exposure if inhaled.
Chronic Effects	Chronic exposure may cause a greenish tongue, metallic taste in the mouth, cough and chronic bronchitis (with or without emphysema). Repeated exposure of the eyes to a low level of dust can produce eye irritation. Prolonged or repeated exposure may cause sensitization dermatitis. May produce scattered allergy-like eczematous skin lesions symptomatic of vanadium toxicity. Material is a potent enzyme inhibitor. Effects may be delayed. Laboratory experiments have resulted in mutagenic effects.
Serious eye damage/irritation	Serious eye damage/eye irritation Category 2A H319 Causes serious eye irritation.
Mutagenicity	Not classified based on available information.

12. Ecological information

Ecotoxicity	Toxic for aquatic organisms. Forms toxic mixtures in water, dilution measures notwithstanding. Long-term (chronic) aquatic 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	2859
UN proper shipping name	AMMONIUM METAVANADATE
Transport hazard class(es)	6.1
Hazchem Code	2Z
Packing Group	II
EPG Number	6A5
IERG Number	37
Environmental Hazards	Forms toxic mixtures in water, dilution measures notwithstanding. Toxic to aquatic organisms.

15. Regulatory information

Regulatory Information	All of the significant ingredients in this formulation are compliant with Australian Industrial Chemicals Introduction Scheme (AICIS) regulations. Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.
Poisons Schedule	Not Scheduled

16. Other Information

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**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**

NH4VO3

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