

Infosafe No™ 1CH5K Issue Date : November 2022 RE-ISSUED by CHEMSUPP

Product Name **POTASSIUM NITRATE**

Classified as hazardous

Section 1 - Identification

Product Identifier POTASSIUM NITRATE

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 Pyrotechnics, explosives, matches, specialty fertiliser, to modify burning properties of tobacco, glass manufacture, tempering steel, curing foods, used in the manufacture of ice cream, toothpastes for sensitive teeth, component of tree stump remover, oxidiser in solid rocket propellants and laboratory reagent.

Other Names	<u>Name</u>	<u>Product Code</u>
	POTASSIUM NITRATE LR	PL011
	POTASSIUM NITRATE AR	PA011
	POTASSIUM NITRATE TG	PT011
	Saltpeter, Niter	

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.

Section 2 - Hazard(s) Identification

GHS Classification of the Substance/Mixture Oxidizing Solids: Category 3

Signal Word WARNING

Hazard Statement (s) H272 May intensify fire; oxidiser.

Pictogram (s) Flame over circle



Precautionary Statement – Prevention P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P220 Keep/Store away from combustible materials.
P221 Take any precaution to avoid mixing with combustibles.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statement – Response P370+P378 In case of fire: Use FLOODING QUANTITIES OF WATER for extinction.

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Precautionary Statement – Disposal P501 Dispose of contents/container according to local, state and federal regulations.

Section 3 - Composition and Information on Ingredients

Ingredients	Name	CAS	Proportion
	Potassium nitrate	7757-79-1	100 %

Section 4 - First Aid Measures

Inhalation	Remove from exposure, rest and keep warm. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.
Ingestion	Rinse mouth thoroughly with water immediately. Give plenty of water to drink. Never give anything by mouth to an unconscious person. If swallowed, do NOT induce vomiting. Seek medical attention immediately.
Skin	Wash affected area thoroughly with copious amounts of running water. Remove contaminated clothing and wash before reuse. Seek medical attention in severe cases, or if irritation develops.
Eye	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek medical advice if effects persist.
First Aid Facilities	Eye wash station, safety shower and normal washroom facilities.
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.

Section 5 - Firefighting Measures

Hazards from Combustion Products	Very toxic or irritating fumes, including nitrogen oxides (NO, NO ₂ , NO _x) and toxic metal fumes, dipotassium oxides (K ₂ O), and oxygen, which increases fire hazard.
Specific Methods	Small fire: USE FLOODING QUANTITIES OF WATER. Do not use dry chemicals, CO ₂ or foam. If safe to do so, move undamaged containers from fire area. Do not move cargo if cargo has been exposed to heat. Large fire: Flood fire area with water from a protected position. Cool containers with flooding quantities of water until well after fire is out - If impossible, withdraw from area and let fire burn. Avoid getting water inside containers: a violent reaction may occur. Dam fire control water for later disposal.
Specific Hazards Arising from the Chemical	Will accelerate burning when involved in a fire. May explode from heating, shock, friction or contamination. Some will react explosively with hydrocarbons (fuels). May ignite combustibles (wood, paper, clothing, etc). Fire may produce irritating, poisonous, and/or corrosive gases. Containers may explode when heated. Runoff may create fire or explosion hazard.
Hazchem Code	1Z
Decomposition Temperature	400 °C; 530 °C (pure).
Precautions in connection with Fire	Wear SCBA and chemical splash suit. Structural firefighter's uniform will provide limited protection.

Section 6 - Accidental Release Measures

Spills & Disposal	Do not contaminate. Keep combustibles (wood, paper, clothing, oil, etc.) away from spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use water spray to knock down vapours or divert vapour clouds. Prevent entry into waterways, drains or confined areas. Prevent exposure to heat. Dry Spill Use clean non-sparking tools to transfer material to a clean, dry plastic container and cover loosely. Move container from spill area. Small Liquid Spill Use a non-combustible material like vermiculite, sand or earth to soak up the product and place in a loosely-covered container for later disposal.
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Personal Precautions	Large Liquid Spill SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL. Avoid inhalation, contact with skin, eyes and clothing.
Personal Protection	Wear protective clothing specified for normal operations (see Section 8)

Section 7 - Handling and Storage

Precautions for Safe Handling	Avoid ingestion and inhalation of dust. Avoid contact with eyes, skin and clothing. When dealing with large quantities, repeated or prolonged exposure without protection should be prevented in order to lessen the possibility of disorders. Minimize dust generation and accumulation. Keep tank covered and containers sealed when not in use. Do not enter these areas without respiratory protection or until the atmosphere has been checked. 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. It is essential that all who come into contact with this material, maintain high standards of personal hygiene ie. washing hands prior to eating, drinking, smoking or using toilet facilities. Wash thoroughly after handling. Do not smoke. Keep away from incompatibles such as reducing agents, combustible materials, organic materials, metals. Keep away from heat and all sources of ignition. Do not use near welding and avoid sparks. DO NOT store or use in confined spaces.
Conditions for safe storage, including any incompatibilities	Store in tightly closed containers, in a cool, dry, well-ventilated area away from incompatibles, combustibles, organic materials, and reducing agents or other readily oxidizable materials, acids, alkalies, sources of ignition, foodstuffs, and clothing. Keep containers closed when not in use and securely sealed and protected against physical damage, direct sunlight and moisture. Avoid storage on wood floors. Hygroscopic. Inspect regularly for deficiencies such as damage or leaks. Have appropriate fire extinguishers available in and near the storage area. 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 4326-1995 'The storage and handling of oxidizing agents'.
Storage Temperatures	Store at room temperature (15 to 25 °C recommended).

Section 8 - Exposure Controls and Personal Protection

Other Exposure Information	A time weighted average (TWA) concentration for an 8 hour day, and 5 day week has not been established by Safe Work Australia for this product. There is a blanket limit of 10 mg/m ³ for dusts when limits have not otherwise been established.
Engineering Controls	In industrial situations 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 and Face 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	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: NR latex, vinyl, nitrile, neoprene gloves.
Personal Protective Equipment	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.

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Footwear	Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.
Body Protection	Flame retardant antistatic protective clothing. 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.

Section 9 - Physical and Chemical Properties

Form	Solid
Appearance	Colourless transparent orthorhombic or trigonal prisms or white, granular or crystalline powder, slightly hygroscopic.
Odour	Odourless.
Melting Point	334 °C
Boiling Point	400 °C (decomposition).
Decomposition Temperature	400 °C; 530 °C (pure).
Solubility in Water	Very soluble (13.3 g/100 ml at 0 °C; 36 g/100 ml at 25 °C; 247 g/100 cc at 100 °C).
Solubility in Organic Solvents	Soluble in glycerol, liquid ammonia, and absolute alcohol; slightly soluble in alcohol; insoluble in diethyl ether.
Specific Gravity	2.11
pH	5-8 (50g/l H ₂ O); ~ 7.
Vapour Pressure	Negligible @ 20 °C.
Relative Vapour Density (Air=1)	3.00
Volatile Component	0 %vol @ 21 °C
Density	Bulk Density: 800 kg/l.
Flammability	Not combustible but assists combustion of other substances.
Explosion Properties	Risk of fire and explosion on contact with reducing agents. Risk of explosion with metals in powder form, combustible substances, organic substances, sulfides, boron, carbon, carbon/sulfur, phosphides, phosphorus, sulfur, magnesium. Reacts violently with reducing materials, antimony, arsenic, zinc, zirconium and their sulfides, sodium acetate, sodium hypophosphite and also trichloroethylene. When copper phosphide is mixed with potassium nitrate and heated, it explodes. Mixture of germanium nitrate and potassium nitrate explodes when heated. A mixture of potassium nitrate, sulfur, arsenic trisulfide is known as a pyrotechnic formulation. When titanium is heated with potassium nitrate, an explosion occurs. A mixture of potassium nitrate and titanium disulfide explodes when heated. When potassium nitrate is mixed with boron, laminac, and trichloroethylene an explosion can occur. Arsenic disulfide forms explosive mixtures when mixed with potassium nitrate. Charcoal (powdered carbon) and potassium nitrate make a pyrotechnic mixture. Contact at 290 °C causes a vigorous combustion and the mixture explodes on heating. Mixtures of potassium nitrate with sodium phosphinate and sodium thiosulfate are explosive. Dangerous explosion risk when shocked or heated.
Molecular Weight	101.1
Oxidising Properties	Powerful oxidising agent.
Other Information	Index of refraction: 1.335 (Alpha), 1.5056 (Beta), 1.5064 (Gamma). Dissolves in water with a lowering of the temperature.

Section 10 - Stability and Reactivity

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Chemical Stability	Stable under normal conditions of storage and handling. Hygroscopic: absorbs moisture or water from the air.
Possibility of Hazardous Reactions	The substance is a strong oxidizer and its heat of reaction with combustible and reducing materials may cause ignition. Some nitrates may explode when shocked, exposed to heat or flame, or by spontaneous chemical reaction. Mixtures with the following substances may be explosive: powdered titanium, antimony, germanium, magnesium, or zinc, antimony trisulfide, barium sulfide, calcium sulfide, germanium monosulfide or titanium disulfide on heating; zirconium at the fusion temp of the mixture; arsenic when ignited; arsenic disulfide (and addition of sulfur gives a pyrotechnic composition); sulfur and arsenic trisulfide; molybdenum disulfide; sulfides in molten mixtures; sodium acetate; sodium hypophosphite; sodium phosphinate; sodium thiosulfate; aluminium powder, potassium perchlorate, barium nitrate and water; aluminium powder, barium nitrate, sulfur and vegetable adhesives, mixed to a paste with water; blend of a finely divided mixture of potassium nitrate with boron and aluminium on impact; baled peat moss; copper(II) phosphide on heating; copper monophosphide on impact; heating with bis(trichloromethyl)benzene to effect conversion to the bis(acyl chloride); lactose monohydrate; powdered carbon on heating at 290 °C; charcoal and sulfur; white phosphorus on percussion. A mixture with calcium silicide is a readily ignited primer which burns at a very high temperature. It is capable of initiating many high-temperature reactions. The chromium nitride deflagrates with the molten potassium nitrate. Contact of the thorium dicarbide with molten potassium nitrate causes incandescence. Boron phosphide ignites in molten nitrates. Reacts vigorously when heated with sulfides of the alkaline earth group and with red phosphorus. Reacts violently with trichloroethylene. Fluorine attacks potassium nitrate to give fluorine nitrate. Reactive or incompatible with metals, acids. When chlorinated phenols are heated for analytical purposes with calcium hydroxide-potassium nitrate mixtures, chlorinated benzodioxins analogous to the extremely toxic tetrachlorodibenzodioxin may be formed.
Conditions to Avoid	Dust generation, combustible materials, organic materials, exposure to moist air or water/moisture, direct sunlight, extremes of temperature, heat, flames, ignition sources, shock, and incompatible materials.
Incompatible Materials	Organic substances, sulfides, boron, carbon, carbon/sulfur, phosphides, phosphorus, sulfur, magnesium (risk of explosion!); finely powdered metals, chromium nitride, heating with aluminium, titanium, antimony, arsenic, germanium, molybdenum, zinc, zirconium and their sulfides, heating with sulfides of the alkaline earth group including barium sulfide and calcium sulfide; calcium disilicide, sodium phosphinate, sodium thiosulfate, sodium hypophosphite and also trichloroethylene; citric acid, tin chloride, sodium acetate, thorium dicarbide; heavy metals, phosphites, carbonaceous materials, strong acids, strong oxidizing agents, reducing agents, combustible and flammable materials (e.g. alkyl resins, asphalt, gasoline, grease, methyl acetone, polystyrene, polyurethane); sodium peroxide and dextrose; fluorine; mixture of sulfur and arsenic trisulfide; a batch of boron, laminac, and trichloroethylene; mixtures with chlorinated phenols and calcium hydroxide, with heating, may form extremely toxic chlorinated benzodioxins; chromium nitride if heated; mixtures with aluminium powder with potassium perchlorate, barium nitrate, and water; mixtures with aluminium powder, barium nitrate, sulfur, vegetable adhesives, and water; heating with bis(trichloromethyl)benzene; thermal reaction with cellulose mixtures; lactose monohydrate.
Hazardous Decomposition Products	Very toxic and/or hazardous gases and fumes of nitrogen oxides (NO, NO ₂ etc.), potassium oxides, and oxygen, which increases fire hazard.
Hazardous Polymerization	Will not occur.

Section 11 - Toxicological Information

Ingestion	Symptoms may include: nausea, vomiting, colic and diarrhoea. May cause violent gastroenteritis and abdominal pain. Purging and diuresis can be expected. Rare cases of acute toxicity of nitrate occurs as a result of reduction to nitrite. This may occur in cases of absorption of large quantities. The nitrite acts in
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Inhalation	the blood to oxidize haemoglobin to methaemoglobin which does not perform as an oxygen carrier to tissues causing methaemoglobinaemia. Symptoms may include: headache, dizziness, generalized tingling sensation, fall in blood pressure, tachycardia, anoxia, muscular weakness, vertigo, roaring sound in the ears, visual disturbances caused by increased intraocular tension and intracranial pressure, flushed and perspiring skin, which is later cold and cyanotic (bluish-grey), nephritis, dyspnoea, hyperventilation, confusion, stupor, convulsions, syncope, circulatory collapse, coma and death.
Skin	Breathing dust can cause sneezing, coughing, sore throat, and shortness of breath. The toxicity of nitrates is due to their in-vivo conversion to nitrites which may lead to methaemoglobinaemia. Exposure to high levels can interfere with the ability of the blood to carry oxygen causing headache, dizziness and a blue colour to the skin and lips (methaemoglobinaemia), and other symptoms of methaemoglobinaemia (see other symptoms under ingestion). Exposure to higher levels can cause trouble breathing, circulatory collapse and even death.
Eye	Symptoms include redness, itching, and pain. May be harmful if absorbed through the skin. Absorption may take place through skin damaged by burning. Repeated or prolonged skin contact may lead to dermatitis.
Carcinogenicity	Symptoms may include redness, excessive tearing, stinging, pain and swelling.
Reproductive Toxicity	Nitrate or nitrite (ingested) under conditions that result in endogenous nitrosation are evaluated in the IARC Monographs (Vol. 94; in preparation) as Group 2A: Probably carcinogenic to humans.
Chronic Effects	Nitrates, nitrites & organic nitro compounds [resp/skin/oral]: human-reduced oxygen uptake causing oxygen debt, animal-testicular toxin, abortifacient (from: 'Reproductive Hazards of the Workplace' by Linda M. Frazier, MD, MPH & Marvin L. Hage, MD).
	Repeated or prolonged ingestion and inhalation of small amounts may affect the blood, respiration and kidneys and produce anaemia, methaemoglobinaemia with attendant nausea, vomiting, dizziness, rapid heart beat, irregular breathing, cyanosis and anoxia, hyperpnoea and later dyspnoea, and nephritis. Convulsions, coma, and death can occur. Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce damage to the central nervous system (CNS) and lungs. Repeated exposure of the eyes to a low level of dust can produce eye irritation.

Section 12 - Ecological Information

Ecotoxicity	The following applies to nitrates in general: may contribute to the eutrophication of water supplies. Hazard for drinking water.
Persistence and Degradability	Methods for the determination of biodegradability are not applicable to inorganic substances.
Environmental Protection	Do not allow to enter waters, waste water, or soil!
Acute Toxicity - Fish	Poecilia reticulata LC50: 1378 mg/l /96 h.
Acute Toxicity - Daphnia	Daphnia magna EC50: 490 mg/l /48 h.

Section 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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Section 14 - Transport Information

Transport Information	Dangerous Goods of Class 5.1 Oxidising Agents are incompatible in a placard load with any of the following: - Class 1, Class 2.1, Class 2.3, Class 3, Class 4, Class 5.2, Class 7, Class 8, Fire risk substances and combustible liquids.
ADG UN Number	1486
ADG Proper Shipping Name	POTASSIUM NITRATE

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ADG Transport Hazard Class	5.1
ADG Packing Group	III
Hazchem Code	1Z
EPG Number	5A1
IERG Number	31
Environmental Hazards	The following applies to nitrates in general: may contribute to the eutrophication of water supplies. Hazard for drinking water.

Section 15 - Regulatory Information

Regulatory Information	Listed in the Australian Inventory of Chemical Substances (AICS).
Poisons Schedule	Not Scheduled

Section 16 - Any Other Relevant 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'.
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Contact Person/Point	Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. ChemSupply Australia Pty Ltd accepts no responsibility whatsoever for its accuracy or for any results that may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet or by our technical representatives.
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Empirical Formula & Structural Formula	KNO3
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