



1.0 Identification

Product Identifier	Calmag Liquid Fertiliser
Other Means of Identification	Calmag
Recommended Use and Restrictions on use	Dilute and apply as directed on the label
Details of Importer	APTUS PLANT TECH Australia Unit 1/11 Didswith St, East Brisbane QLD 4169
Emergency Phone Number	Australian Poisons Information (24 hours / 7 days) ☎ 13 11 26

2.0 GHS Hazard identification

Classification of The Hazardous Chemical	Category 2 (Blood)
Signal Word	WARNING
Hazard Statement	May cause damage to organs (blood) Causes skin irritation Causes serious eye irritation
Precautionary Statements	IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician. Do not breathe mist/vapours/spray. Wash exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Store locked up. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. Wear protective gloves/protective clothing/eye protection/face protection. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wear protective gloves/protective clothing/eye protection/face protection. Take off contaminated clothing and wash before reuse.
GHS Pictograms	

3.0 Ingredients / Composition %w/w

Ingredient Name/Nature	<2	2>10	>10	>20	>30	>40	>50	>60	>70	>80	>90	>100
Proprietary Ingredients determined to be hazardous at that concentration												
Calcium Nitrate (CAS 10124-37-5)												
Magnesium Nitrate (CAS 10377-60-3)												

4.0 First Aid Measures

First Aid Instructions	Danger? Response? Yes ⇒ Make comfortable, monitor ⇨ No Send for Help. Airway? Breathing? No ⇒ CPR (30 compress: 2 breathes). Defibrillation. ⇨ Yes (Recovery Position & Monitor)
Swallowed	Rinse mouth and SPIT, if conscious give a glass of water. IF exposed or if you feel unwell: contact a Poisons Information Centre (e.g. phone Australia 13 11 26; or a doctor).
Eye	Rinse cautiously with running water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/ attention. For advice , contact a Poisons Information Centre (e.g. phone Australia 13 11 26; or a doctor).
Skin	Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. , For advice , contact a Poisons Information Centre (e.g. phone Australia 13 11 26; or a doctor).
Inhaled	Remove to fresh air; rinse mouth and spit, For advice , contact a Poisons Information Centre (e.g. phone Australia 13 11 26; or a doctor).
Symptoms caused by exposure	Astringent and cauterising effect on skin and mucous membranes. Sodium nitrite acts as a vasodilator and relaxes maximally contracted smooth muscles, especially at the level of the small blood vessels. The smooth muscle relaxant effect of nitrate salts may lead to headache, dizziness and marked hypotension. Nitrites oxidize normal (ferrous) hemoglobin to ferric hemoglobin (methemoglobin).

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Medical Attention / Special Treatment	<p>Calcium nitrate may result in formation of methaemoglobin (ICSC -2009). Magnesium nitrate is a methemoglobin- forming agent (HSDB (2003). (From TOXNET)</p> <p>There is no specific antidote for treatment of nitrite toxicity. However, patients who develop significant methemoglobinemia (symptomatic patients or patients with a methemoglobin level of greater than 30%) should be treated with methylene blue. Contraindications to treatment with methylene blue include known G-6-PD deficiency (may cause hemolysis), known hypersensitivity to methylene blue, and methemoglobin reductase deficiency. FROM TOXNET (2018)</p> <p>A) Serum nitrite concentrations are not widely available or clinically useful. B) Determine CBC and methemoglobin concentration in all cyanotic patients or patients with dyspnea or other signs of respiratory distress. C) Arterial blood gases should be monitored in symptomatic or cyanotic patients. An arterial blood gas test will reveal a falsely normal calculated oxygen saturation despite low measured pulse oximetry. If oxygen saturation is measured, it will be low relative to the pO₂. This saturation gap suggests methemoglobinemia. D) Monitor vital signs. E) Monitor renal function in symptomatic patients. F) Monitor serum electrolyte status in patients with significant vomiting. G) Monitor mental status and perform a neurological exam in symptomatic patients. H) Obtain an ECG and institute continuous cardiac monitoring in symptomatic patients. FROM TOXNET (2018) METHEMOGLOBINEMIA Initiate oxygen therapy. Treat with methylene blue if patient is symptomatic (usually at methemoglobin concentrations greater than 20% to 30% or at lower concentrations in patients with anemia, underlying pulmonary or cardiovascular disease).</p> <p>METHYLENE BLUE: INITIAL DOSE/ADULT OR CHILD: 1 mg/kg IV over 5 to 30 minutes; a repeat dose of up to 1 mg/kg may be given 1 hour after the first dose if methemoglobin levels remain greater than 30% or if signs and symptoms persist. NEONATES DOSE: 0.3 to 1 mg/kg. Additional doses may sometimes be required. Improvement is usually noted shortly after administration if diagnosis is correct. Consider other diagnoses or treatment options if no improvement has been observed after several doses. If intravenous access cannot be established, methylene blue may also be given by intraosseous infusion. Methylene blue should not be given by subcutaneous or intrathecal injection.</p>
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5.0 Fire Fighting Measures

Extinguishing media	As merited by packaging &/or surrounding materials; Not combustible, however, if material is involved in a fire use: Water jets. Water spray (large quantities). <i>UNSUITABLE media includes Dry powder. Carbon dioxide. Halogens. Foam.</i>
Specific Hazards arising from the chemical	Not combustible, however will support the combustion of other materials. Increases intensity of a fire. Decomposes on heating emitting toxic fumes, including those of oxides of nitrogen.
Special protective equipment and precautions for fire fighters HAZCHEM	Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition. Keep containers cool with water spray.

6.0 Accidental Release Measures

Personal precautions, protective equipment and emergency procedures	Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contact and breathing in dust. Work up wind or increase ventilation. Oxidising fluid exempt from Dangerous Goods regulations by dilution. DO not allow the leak/spill to contact strong acids, flammables or combustible substances.
Environmental precautions	Concentrate as supplied should not enter to waterways, may cause localised effects.
Methods and materials for containment and cleaning up	Cover with damp absorbent (inert material, sand or soil). Sweep or vacuum up, but avoid generating dust. Collect and seal in properly labelled containers or drums for disposal. Take off contaminated clothing and wash soon after use (fire hazard exists). Rinse any exposed surfaces thoroughly clean.

7.0 Storage and Handling

Precautions for Safe Handling	Avoid skin and eye contact and breathing in dust. Avoid handling which leads to dust formation. Do not reuse container. When using do not eat, drink or smoke. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap & water.
Safe Storage Practice	Keep in original container, sealed in a well ventilated area.
- Avoid	Avoid storing with strong acids, avoid storage with flammable goods.
- Control	Cross contamination.
- Maintain	Cool, dry environment.
- Other	Keep out of reach of children.

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8.0 Exposure Controls / Personal Protection



National Exposure Standards	None identified				
Control Banding	Band Zero – Household or Consumer Use	Band 1 – good industrial hygiene practice	Band 2 – use local exhaust ventilation	Band 3 – enclose the process	Other
Engineering Controls	Use in a well ventilated area.				
PPE	Wear protective gloves/eye protection/face protection. The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.				

9.0 Physical & Chemical Properties

Appearance	Brown coloured solution	Partition Co-efficient n-Octanol/water	not determined
Odour	Mild	Solubility	water soluble
pH	pH 5 to 6.	Vapour Pressure	not determined
Melting / Freezing Pt	~ 0°C	Vapour Density	not determined
Boiling Point	~ 100°C	Relative Density	1.35 – 1.4 g/mL (at 20°C)
Flash Point	no data	Auto-ignition Temp	not determined
Evaporation Rate	no data	Decomposition Temp	not determined
Flammability	not determined	Viscosity	not determined
Explosive Limits	not determined	Other	Protect from freezing.

10.0 Stability & Reactivity

Reactivity	No information available.
Chemical Stability	Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Possibility of Hazardous Reactions	Hazardous polymerisation will not occur.
Conditions to avoid	Avoid exposure to heat, sources of ignition, and open flame. Avoid dust generation. Avoid contact with organic materials, oils, greases. Avoid contact with combustible chemicals.
In compatible materials	Incompatible with acids, alkalis, reducing agents.
Hazardous Decomposition Products	Oxides of nitrogen. When heated to above 90°C Magnesium nitrate can undergo spontaneous decomposition to toxic dimethylformamide and liberate nitric acid.

11.1 Known Toxicological Information (< 40% Nitrates of Calcium and Magnesium)

Ingredient Name / Type	Data
Acute Toxicity	Probable oral lethal dose in humans is 0.5-5.0 g/kg bw. The minimum toxic dose of nitrite is extremely variable; the assessment of the severity of toxicity should be based on clinical findings in the majority of cases. The lowest reported lethal dose of oral sodium nitrite was a 1 g ingestion prior to death in a 17-year-old girl.
Skin Corrosion / Irritation	Contact with skin may result in irritation. Can be absorbed through cut, broken, or burnt skin with resultant adverse effects; cause dilation of blood vessels by direct smooth muscle relaxation and may also cause methaemoglobinaemia.
Serious Eye Damage Irritation	A severe eye irritant. Contamination of eyes can result in permanent injury.
Respiratory or skin sensitisation	Not sensitising.
Germ cell mutagenicity	Non-mutagenic.
Carcinogenicity	The classification was not possible, due to lack of data. <i>“There is an active endogenous nitrogen cycle in humans that involves nitrates and nitrites, which are interconvertible in vivo. Nitrosating agents that arise from nitrites under acidic gastric conditions react readily with compounds which are easily nitro-sated, especially secondary amines and amides, to generate N-nitroso compounds. These nitrosating conditions are enhanced following ingestion of additional nitrates, nitrites or nitroso compounds. Some of the N-nitroso compounds have the possibility to form known carcinogens in humans under these conditions.”</i>
Reproductive toxicity	No evidence of reproductive effects found in animal studies.
Specific Target Organ Toxicity – single exposure	Blood: Nitrites oxidize normal (ferrous) hemoglobin to ferric hemoglobin (methemoglobin). Calcium nitrate may result in formation of methaemoglobin (ICSC -2009). Magnesium nitrate is a methemoglobin- forming agent (HSDB (2003).
Specific Target Organ Toxicity (STOT) – repeated exposure	No data.

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MINERAL-CALMAG

Safety Data Sheet Version 1.1

Australian Poisons Information (24 hours / 7 days) ☎ 13 11 26

Prepared Date
24th Feb 2021

Aspiration hazard.	No data available.	
Skin - Acute	Irritating	
Inhaled - Acute	Breathing in dust may result in respiratory irritation.	Absorption of nitrates by inhalation, ingestion or through burnt or broken skin may cause dilation of blood vessels by direct smooth muscle relaxation and may also cause methaemoglobinaemia.
Swallowed - Acute	Abdominal pain. Blue lips, fingernails and skin. Confusion. Convulsions. Dizziness. Headache. Nausea. Unconsciousness.	
Eye - Acute	A severe eye irritant. Contamination of eyes can result in permanent injury.	
Early Onset Symptoms	Toxic effects of sodium nitrite are caused by an extension of therapeutic mechanisms. Significant vasodilation may cause hypotension and end-organ hypoperfusion. Excess methemoglobinemia may lead to functional hypoxia. Overdose is rare.	
Delayed Health Effects from exposure	Potential for carcinogenicity in animals.	
Exposure Level & Health Effects	THERAPEUTIC AND NORMAL DOSE RANGE: The acceptable daily intake of dietary nitrites (excluding infants under 6 months of age) is 0.4 mg/kg. The lowest reported lethal dose of oral sodium nitrite was a 1 g ingestion prior to death in a 17-year-old girl. The minimum toxic dose of nitrite is extremely variable; the assessment of the severity of toxicity should be based on clinical findings in the majority of cases.	
Interactive effects	Binding of iron to transferrin was studied by loading iron(III) onto apotransferrin in a chloride and a nitrilotriacetate form. When magnesium (as solution) was added, a marked increase occurred in both the rate of iron binding and the maximum level of iron loaded on transferrin using either iron salt. In the absence of magnesium the amount of iron required to achieve 50% saturation of the binding sites was 0.00016 M, whereas when magnesium was added, only about one third as much iron (54 uM) was required.	
Other	no relevant data	

12.0 Ecological Information

Ecotoxicity (as supplied)	Not classified as ecotoxic
Persistence & Biodegradability	Biodegradable
Bioaccumulative Potential	Does not bio-accumulate
Mobility in soil	No data
Other effects	No data

13.0 Disposal Considerations

Disposal Containers & Methods	Rinse container; dispose as permitted by local jurisdiction.
Physical/chemical properties that may affect disposal options.	None identified
Effects of sewage disposal.	Diluted solutions are unlike to contribute to issues of concern
Special precautions for incineration or land fill.	Diluted solutions are unlike to contribute to issues of concern

14.0 Transport Information

UN Number	Proper Shipping Name / Technical Name	Transport Hazard Class	Packaging Group
UN 1454	Calcium Nitrate exempt under SP 208	nil	nil
Environmental Hazards for Transport Purposes		Special Precautions for user	
nil		nil	

15.0 Regulatory Information

Montreal Protocol	Stockholm Convention	Rotterdam Convention	Basel Convention	MARPOL
Not applicable	Not included	Not Included	Not Included	Not Included
SUSMP	Excluded from scheduling requirements			
Prohibitions / Licensing Restrictions	Biological components require BICON permit. No other restrictions identified.			
APVMA	Excluded by purpose			
NICNAS	All ingredients are included in AICS			

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16.0 Other Information

16.1 Consumer & General Usage Information

Directions for use	Dilute and apply as directed on the label.
Directions for Removal	Rinse under running water.
Nano Materials	None identified

16.2 SDS Preparation

Date Prepared	24 th April 2021.
Changes Made	First edition for Australia
Reference Standards	Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice February 2016. ISBN 978-0-642-33311-7. GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS) Fourth revised edition
Resources Relied upon include	Hazardous Substances Data Bank (HSDB) https://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB Suppliers' SDS; RTECS Toxicity Database; IRAC; CDC NIOSH, NITE, HSI, Safework Australia GHS Hazardous Chemical Information List. Information provided by manufacturer(s).

Disclaimer: This SDS provides safety data only for the product and circumstances of use nominated. The SDS summarises our best knowledge of the specific, well-known and equivocally demonstrated health and safety hazard information pertaining to workplace use of the nominated substance(s) however the author expressly disclaims that the SDS is complete, is a representation or is a guarantee. Published and other resources have been relied upon, and in some cases conflicting information has been identified. Each user should read the SDS and consider the information in the context of their specific conditions and circumstances, and in conjunction with other products. If clarification is required or further information sought in order to make a risk assessment the user should contact the nominated sponsor company. The responsibility for products sold is subject to our standard terms and conditions that are available on request.

16.3 Key abbreviations or acronyms used

%	Percent (parts per hundred)
*C or °C	degrees Celsius
<	less than
>	greater than
ACCC	Australian Competition and Consumer Commission
ADG	Australian Dangerous Goods
AICS	Australian Inventory of Chemical Substances
APVMA	Australian Pesticides and Veterinary Medicines Authority
AS	Australian Standard
ASCC	Australian Society of Cosmetic Chemists
bw	Body weight (nominally a human adult of 60kg is applied)
BOD	Biochemical Oxygen Demand
CAS	Chemical Abstracts Service (Registry Number)
cc	cubic centimetres (equivalent to mL)
COD	Chemical Oxygen Demand
CMR	CMR substances: Article 15 of the EU Cosmetics Regulation 1223/2009 contains provisions on the use of CMR in cosmetic products. Typically substances classified as CMR substances Cat 1A, 1B, or 2 under Part 3 of Annex IV Regulation (EC) No 1272/2008 are banned for use in cosmetic products
COSING	The European Commission database with information on Cosmetic Ingredients & Substances Dangerous Goods
EINECS	European Inventory of Existing Commercial Chemical Substances (Identifying Number)
dw	Dry weight
DNEL	Derived No effect level
EU	Europe / European
FSANZ	Food Standards Australia New Zealand
g	gram
GHS	Globally Harmonised System (safety symbols and labelling)
GMO	Genetically modified organism
h or hr	Hour
HAZCHEM	Emergency action code of numbers and letters that provide information to emergency services especially fire fighters
HSIS	The Safe Work Australia Hazardous Substances Information System
IATA	The International Air Transport Association

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IMAP	NICNAS Inventory Multi-tiered Assessment and Prioritisation
ICAO	The International Civil Aviation Organization
IFA	The International Fragrance Association
INCI	The International Nomenclature of Cosmetic Ingredients
kg	kilogram
L	Litre
LC₅₀	LC ₅₀ is the average concentration of a material (by a defined route) that causes the death of 50% (one half) of a group of (defined) test animals. Normally quoted in mg/kg body weight.
LD₅₀	LD ₅₀ is the average dose of a material, given all at once, which causes the death of 50% of a group of (defined) test animals. Normally quoted in mg/kg body weight. Products with a LD ₅₀ of less than 5000mg/kg are scheduled poisons in Australia (see SUSMP)
LD_{Lo}	Lethal Dose Low, is the minimum amount of a material shown to be lethal to a specified type of animal. Typically quoted in mg/kg body weight.
m or min	minute
m³	cubic metre
Max or max	maximum
mg	milligram
Min or min	minimum
mL	millilitre
mm	millimetre
mm Hg	millimetre of Mercury
MOS	Margin of Safety
MRL	Maximum Residue Limit
MSDS	Material Safety Data Sheet (see also SDS)
Nano	Nano(sized) material / Nano Technology; ... industrial materials (including a cosmetic ingredient) comprising 10% or more by composition that has been intentionally produced, manufactured or engineered to have either an internal or external property that is a size range typically between 1 nm and 100 nm.
ng	nanogram
NICNAS	The National Industrial Chemicals Notification and Assessment Scheme (AUSTRALIA)
NIOSH	The National Institute for Occupational Safety and Health (USA)
NOAEL	No observed Adverse Effects Limit
NOHSC	National Occupational Health and Safety Commission (AUSTRALIA)
NOS	Not otherwise specified
NZS	New Zealand Standard
OECD	Organization for Economic Co-operation and Development (Test Method number)
OSHA	The Occupational Safety and Health Administration (USA)
Perm.	Permethrin (Active ingredient of this formulation)
PEL	Permissible Exposure Limit
pH	(pH) A measure of acidic (less than 7) or alkalinity (above 7); extreme values represent extreme acidic or alkaline conditions. Typically products with a pH less than three or greater than 11 are scheduled poisons (SUSMP)
PNEC	Predicted no effect concentration
ppb	parts per billion
PPE	Personal Protective Equipment
ppm	parts per million
RTECS	The Registry of Toxic Effects of Chemical Substances
S2	Schedule 2, SUSMP Pharmacy Medicine – Substances, the safe use of which may require advice from a pharmacist and which should be available from a pharmacy or, where a pharmacy service is not available, from a licensed person.
S3	Schedule 3, SUSMP Pharmacist Only Medicine – Substances, the safe use of which requires professional advice but which should be available to the public from a pharmacist without a prescription.
S4	Schedule 4, SUSMP Prescription Only Medicine , or Prescription Animal Remedy – Substances, the use or supply of which should be by or on the order of persons permitted by State or Territory legislation to prescribe and should be available from a pharmacist on prescription.
S5	Schedule 5, SUSMP Caution – Substances with a low potential for causing harm, the extent of which can be reduced through the use of appropriate packaging with simple warnings and safety directions on the label.
S6	Schedule 6, SUSMP Poison – Substances with a moderate potential for causing harm, the extent of which can be reduced through the use of distinctive packaging with strong warnings and safety directions on the label.

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S7	Schedule 7, SUSMP Dangerous Poison – Substances with a high potential for causing harm at low exposure and which require special precautions during manufacture, handling or use. These poisons should be available only to specialised or authorised users who have the skills necessary to handle them safely. Special regulations restricting their availability, possession, storage or use may apply.
S8	Schedule 8, SUSMP Controlled Drug – Substances which should be available for use but require restriction of manufacture, supply, distribution, possession and use to reduce abuse, misuse and physical or psychological dependence.
S9	Schedule 9, SUSMP Prohibited Substance – Substances which may be abused or misused, the manufacture, possession, sale or use of which should be prohibited by law except when required for medical or scientific research, or for analytical, teaching or training purposes with approval of Commonwealth and/or State or Territory Health Authorities.
S10	Schedule 10, SUSMP Substances of such danger to health as to warrant prohibition of sale, supply and use - Substances which are prohibited for the purpose or purposes listed for each poison.
SCCP	Scientific Committee on Cosmetic Products and Non-Food Products (EUROPE)
SDS	Safety Data Sheet, (previously called MSDS) now SDS under GHS
STEL	Short Term Exposure Limit
SUSMP	Standard for the Uniform Scheduling of Medicine & Poisons (AUSTRALIA) also Poisons Standard. Poisons are not scheduled on the basis of a universal scale of toxicity. Although toxicity is one of the factors considered, and is itself a complex of factors, the decision to include a substance in a particular Schedule also takes into account many other criteria such as the purpose of use, potential for abuse, safety in use and the need for the substance.
T1 or TI	NICNAS IMPA Framework Low risk; chemicals that are not expected to pose a concern to workers, public health or the environment
T2 or TII	NICNAS IMPA Framework Assessable risk; products not classified as T1 risk information on a substance-by-substance or chemical category-by-category
TGA	Therapeutic Goods Administration (AUSTRALIA)
TLV	Threshold Limit Value
TWA	Time Weighted Average
ug	microgram
uL	microlitre
UN	United Nations (number)
US or USA	The United States of America

End of SDS