



SAFETY DATA SHEET CALCIUM NITRATE + BORON REVISION 4, DATE 01 NOV 19

1. IDENTIFICATION

Product Name	Calcium Nitrate + Boron
Other Names	Calcium Nitrate + 0.1% Boron; Calcium Nitrate + 0.2% Boron; Calcium Nitrate + 0.3% Boron; Calcium Nitrate Granular with Boron
Uses	Fertilisers.
Chemical Family	No Data Available
Chemical Formula	$5\text{Ca}(\text{NO}_3)_2 \cdot \text{NH}_4\text{NO}_3 \cdot 10\text{H}_2\text{O} + \text{B}$
Chemical Name	Contains: Calcium ammonium nitrate; Boron
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)

Not Scheduled

Redox Ltd
Corporate Office Sydney
Locked Bag 15 Minto NSW 2566 Australia
2 Swettenham Road Minto NSW 2566 Australia
All Deliveries: 4 Holmes Road Minto NSW 2566 Australia

Phone +61 2 9733 3000
Fax +61 2 9733 3111
E-mail sydney@redox.com
Web www.redox.com
ABN 92 000 762 345



Australia
Adelaide
Brisbane
Melbourne
Perth
Sydney

New Zealand
Auckland
Christchurch
Hawke's Bay
UK
London

Malaysia
Kuala Lumpur
USA
Los Angeles
Oakland
Mexico
Saltillo



Globally Harmonised System

Hazard Classification		Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)	
Hazard Categories		Acute Toxicity (Oral) - Category 4 Serious Eye Damage/Irritation - Category 1	
Pictograms		 	
Signal Word		Danger	
Hazard Statements		H302	Harmful if swallowed.
		H318	Causes serious eye damage.
Precautionary Statements	Prevention	P280	Wear protective gloves/eye protection/face protection.
		P270	Do not eat, drink or smoke when using this product.
	Response	P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTRE/doctor.
		P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
		P330	Rinse mouth.
	Disposal	P501	Dispose of contents/container in accordance with local / regional / national / international regulations.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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Safe Work Australia

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification	Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations
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Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

HSNO Classifications	Health Hazards	6.1D	Substances that are acutely toxic - Harmful
		8.3A	Substances that are corrosive to ocular tissue

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Calcium ammonium nitrate	5Ca (NO ₃) ₂ .NH ₄ NO ₃ .10H ₂ O	15245-12-2	>99 %
Boron	B	7440-42-8	>=0.1 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. Do not induce vomiting. Call a Poison Centre or doctor/physician for advice. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
Eye	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. Immediately call a Poison Centre or doctor/physician for advice. Seek medical attention without delay. *Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin	IF ON SKIN: Remove contaminated clothing and shoes immediately. Wash skin with plenty of soap and running water/shower. If skin irritation occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention. Apply resuscitation if victim is not breathing - Administer oxygen if breathing is difficult.
Advice to Doctor	Treat symptomatically based on individual reactions of patient and judgement of doctor. *The substance and/or its metabolites may bind to haemoglobin inhibiting normal uptake of oxygen. Symptoms include cyanosis (a bluish discolouration skin and mucous membranes) and breathing difficulties. Symptoms may not be evident until several hours after exposure.
Medical Conditions Aggravated by Exposure	Persons with other blood dyscrasias, especially anemia, might have increased sensitivity. Persons exposed to other oxidising agents or other agents known to induce methemoglobinemia, such as aniline, nitrobenzene, or other nitrates, or those exposed to agents known to deprive the body of oxygen, such as carbon monoxide, hydrogen sulfide or asphyxiates, might be hyper-susceptible. Pre-existing heart disease might be aggravated from exposure to this product.

5. FIRE FIGHTING MEASURES

General Measures	Alert Fire Brigade and tell them location and nature of hazard. If safe to do so, move undamaged containers from fire area. Do not move cargo if cargo has been exposed to heat. Cool containers with flooding quantities of water until well after fire is out - If impossible, withdraw from area and let fire burn. Dam fire control water for later disposal.
Flammability Conditions	Non-combustible material; However, may intensify fire (oxidiser). Not considered a significant fire risk; however, containers may burn.
Extinguishing Media	If material is involved in a fire, use flooding quantities of water for extinction - Do not use dry chemicals, Carbon dioxide (CO ₂) or foam. Large fire: Flood fire area with water from a protected position.
Fire and Explosion Hazard	May explode from heating, shock, friction or contamination. May ignite combustibles. Containers may explode when heated.
Hazardous Products of Combustion	Decomposes on heating and produces toxic fumes of Nitrogen oxides (NO _x).
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may pollute waterways.
Personal Protective Equipment	Wear self-contained breathing apparatus (SCBA) and chemical splash suit. Structural firefighter's uniform will provide limited protection.
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available

Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. Avoid exposure to heat - ELIMINATE all ignition sources. Do not contaminate - Keep combustibles away from spilled material. Do not touch or walk through spilled material. Clean up all spills immediately. Avoid generating dust. Avoid breathing dust and contact with eyes skin and clothing.
Clean Up Procedures	Recover product wherever possible. Sweep/shovel or vacuum up (consider explosion-proof machines designed to be grounded during storage and use) and place in clean, dry, labelled containers for disposal (see SECTION 13). Move container from spill area. Use dry clean up procedures and avoid generating dust. Do NOT use air hoses for cleaning.
Containment	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas. Prevent dust cloud.
Decontamination	No information available.
Environmental Precautionary Measures	Prevent entry into drains and waterways. If contamination of drains or waterways occurs, advise emergency services.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.
Personal Precautionary Measures	Use personal protective equipment as required (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Minimise dust generation and accumulation. Avoid breathing dust and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Avoid exposure to heat. Avoid contact with incompatible materials. Take precautionary measures against static discharges by bonding and grounding equipment.
Storage	Store (under cover) in a cool, dry and well-ventilated place, out of direct sunlight. Keep containers securely sealed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect containers against physical damage. Protect from moisture. Keep away from heat and sources of ignition - No smoking. Keep away from food/feedstuffs, combustibles and other incompatible materials (see SECTION 10). Do not store on wooden flooring.
Container	Store in original packaging or suitable container/package as recommended by manufacturer. Check that all containers are clearly labelled and free from leaks. Bags should be stacked, blocked, interlocked and limited in height so that they are stable and secure against sliding or collapse.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product. For dusts from solid substances without specific occupational exposure standards: - Safe Work Australia Exposure Standard (Nuisance dusts): 8 hr TWA = 10 mg/m ³ (measured as inhalable dust). - New Zealand WES (Particulates not otherwise classified): TWA = 10 mg/m ³ ; TWA = 3 mg/m ³ (respirable dust).
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	Use in a well-ventilated area. General exhaust is adequate under normal operating conditions.
Personal Protection Equipment	- Respiratory protection: In case of inadequate ventilation, wear respiratory protection. Recommended: Dust mask/particulate filter respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Safety glasses with side shields; Chemical goggles. - Hand protection: Handle with gloves. Recommended: Wear general protective gloves, e.g. light weight rubber gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Long-sleeved protective clothing and safety footwear; Overalls; Barrier cream.

Special Hazards Precautions	Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
Work Hygienic Practices	When handling, Do NOT eat, drink or smoke. Always wash hands with soap and water after handling. Work clothes should be laundered separately.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Granulate
Odour	Odourless
Colour	White or light yellow
pH	5.7 - 7.0 (10% solution)
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	No Data Available
Melting Point	45 °C
Freezing Point	No Data Available
Solubility	Soluble in water
Specific Gravity	No Data Available
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	1,100 kg/m ³
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	No information available.
Fast or Intensely Burning Characteristics	May explode from heating, shock, friction or contamination.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.

Properties That May Initiate or Contribute to Fire Intensity	Non-combustible material; However, may intensify fire (oxidiser). Not considered a significant fire risk; however, containers may burn. May ignite combustibles.
Reactions That Release Gases or Vapours	Decomposes on heating and produces toxic fumes of Nitrogen oxides (NO _x).
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	Contact with acids produces toxic fumes.
Chemical Stability	Product is considered stable; Unstable in the presence of incompatible materials.
Conditions to Avoid	Avoid generating dust. Do not contaminate. Avoid exposure to heat. Take action to prevent static discharges.
Materials to Avoid	Avoid storage with combustible/organic materials. Incompatible/reactive with strong acids, acid chlorides, acid anhydrides and chloroformates, reducing agents, powdered metals.
Hazardous Decomposition Products	Decomposes on heating and produces toxic fumes of Nitrogen oxides (NO _x).
Hazardous Polymerisation	Hazardous polymerisation will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	<ul style="list-style-type: none">- Acute toxicity: Harmful if swallowed. Causes irritation to the gastrointestinal tract. The substance and/or its metabolites may bind to haemoglobin inhibiting normal uptake of oxygen. This condition, known as methemoglobinemia, is a form of oxygen starvation (anoxia). Symptoms include cyanosis of the lips, nose and earlobes, weakness, dizziness, light-headedness, increasingly severe headache, ataxia, rapid shallow respiration, drowsiness, nausea, vomiting, confusion, lethargy and stupor.- Skin corrosion/irritation: The material may cause skin irritation after prolonged or repeated exposure. May produce skin redness, swelling, the production of vesicles, scaling and thickening of the skin.- Eye damage/irritation: Causes serious eye damage.- Respiratory/skin sensitisation: Not sensitising (Nitric acid, ammonium calcium salt).- Germ cell mutagenicity: Nitric acid, ammonium calcium salt is not mutagenic.- Carcinogenicity: No information available.- Reproductive toxicity: No information available.- STOT (single exposure): The material is not thought to produce adverse health effects or irritation of the respiratory tract.- STOT (repeated exposure): Long term exposure to high dust concentrations may cause changes in lung function, i.e. pneumoconiosis, caused by particles less than 0.5 micron penetrating and remaining in the lung.- Aspiration toxicity: No information available.
Acute	
Ingestion	Acute toxicity (Oral): COMPONENT: Calcium ammonium nitrate (CAS No.): - LD50, Rat: >300 - 2,000 mg/kg
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	No information available.
Persistence/Degradability	Ammonium ion will convert to the nitrate form with accompanying acidification of the soil. Nitrate ion will become part of the natural Nitrogen cycle by converting to nitrogen gas (N ₂) or by becoming part of organisms.
Mobility	Ammonium and nitrate ions are mobile (the nitrate ion more so than ammonium ion) and will leach from soils and into

water courses. Calcium ion is less mobile and will remain attached to soil constituents.

Environmental Fate

Harmful to aquatic organisms - Do NOT discharge into sewer or waterways.

Bioaccumulation Potential

No information available.

Environmental Impact

No Data Available

13. DISPOSAL CONSIDERATIONS**General Information**

Recycle, wherever possible, or dispose of by burial in a land-fill specifically licensed to accept chemical and/or pharmaceutical wastes or incineration in a licensed apparatus (after admixture with suitable combustible material).

Special Precautions for Land Fill

Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

14. TRANSPORT INFORMATION**General Information**

The commercial grade of calcium nitrate fertiliser, when consisting mainly of a double salt (calcium nitrate and ammonium nitrate) containing not more than 10% ammonium nitrate and at least 12% water of crystallisation, is not subject to DG regulation.

Land Transport (Australia)

ADG Code

Proper Shipping Name

Calcium Nitrate + Boron

Class

No Data Available

Subsidiary Risk(s)

No Data Available

No Data Available

UN Number

No Data Available

Hazchem

No Data Available

Pack Group

No Data Available

Special Provision

No Data Available

Comments

NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Malaysia)

ADR Code

Proper Shipping Name

Calcium Nitrate + Boron

Class

No Data Available

Subsidiary Risk(s)

No Data Available

No Data Available

UN Number

No Data Available

Hazchem

No Data Available

Pack Group

No Data Available

Special Provision

No Data Available

Comments

NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (New Zealand)

NZS5433

Proper Shipping Name

Calcium Nitrate + Boron

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Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (United States of America)

US DOT

Proper Shipping Name	Calcium Nitrate + Boron
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport

IMDG Code

Proper Shipping Name	Calcium Nitrate + Boron
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport

IATA DGR

Proper Shipping Name	Calcium Nitrate + Boron
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification

NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

15. REGULATORY INFORMATION**General Information**

No Data Available

Poisons Schedule (Aust)

Not Scheduled

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code

HSR002571

National/Regional Inventories**Australia (AIC)**

Listed

Canada (DSL)

Not Determined

Canada (NDSL)

Not Determined

China (IECSC)

Not Determined

Europe (EINECS)

Not Determined

Europe (REACH)

Not Determined

Japan (ENCS/METI)

Not Determined

Korea (KECI)

Not Determined

Malaysia (EHS Register)

Not Determined

New Zealand (NZIoC)

Listed

Philippines (PICCS)

Not Determined

Switzerland (Giftliste 1)

Not Determined

Switzerland (Inventory of Notified Substances)

Not Determined

Taiwan (NCSR)

Not Determined

USA (TSCA)

Not Determined

16. OTHER INFORMATION**Related Product Codes**

CANITB1000, CANITB1215, CANITB1500, CANITB1501, CANITB1504, CANITB1506, CANITB2000, CANITB2100, CANITB3000, CANITB3001, CANITB3010, CANITB3011

Revision

4

Revision Date

01 Nov 2019

Key/Legend

< Less Than
 > Greater Than
AICS Australian Inventory of Chemical Substances
atm Atmosphere
CAS Chemical Abstracts Service (Registry Number)
cm² Square Centimetres
CO₂ Carbon Dioxide
COD Chemical Oxygen Demand
deg C (°C) Degrees Celcius
EPA (New Zealand) Environmental Protection Authority of New Zealand
deg F (°F) Degrees Farenheit
g Grams
g/cm³ Grams per Cubic Centimetre
g/l Grams per Litre
HSNO Hazardous Substance and New Organism
IDLH Immediately Dangerous to Life and Health
immiscible Liquids are insoluable in each other.
inHg Inch of Mercury
inH₂O Inch of Water
K Kelvin
kg Kilogram
kg/m³ Kilograms per Cubic Metre
lb Pound
LC₅₀ LC stands for lethal concentration. LC₅₀ is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD₅₀ LD stands for Lethal Dose. LD₅₀ is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or L Litre
m³ Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m³ Milligrams per Cubic Metre
Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH₂O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Heath and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight