Safety Data Sheet BARIUM NITRATE

SDS no. RTA4VTWF • Version 1.0 • Date of issue: 2025-05-11

SECTION 1: Identification

GHS Product identifier

Product name	BARIUM NITRATE

Other means of identification

Product	Product Code
Barium Nitrate AR	BA034
Barium Nitrate LR	BL034
Barium Nitrate TG	BT034

Recommended use of the chemical and restrictions on use

Pyrotechnics (gives green light), incendiaries, tracer bullets, primers, and detonators, green signal lights, chemicals (barium peroxide), ceramic glazes, glass industry, in vacuum tube industry (neon sign lightings), electronics and laboratory reagent.

Supplier's details

Name	ChemSupply Australia Pty Ltd
Address	38-50 Bedford Street 5013 Gillman South Australia Australia
Telephone	08 8440 2000
email	www.chemsupply.com.au

Emergency phone number

CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

SECTION 2: Hazard identification

General hazard statement

Classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture

GHS classification in accordance with: UN GHS revision 7

- Acute toxicity, inhalation, Cat. 4
- Acute toxicity, oral, Cat. 4
- Serious eye damage/eye irritation, Cat. 2A
- Oxidizing solids, Cat. 2

GHS label elements, including precautionary statements

Pictograms

Signal word	**Warning**

Hazard statement(s)

H272	May intensify fire; oxidizer
H302	Harmful if swallowed
H319	Causes serious eye irritation
H332	Harmful if inhaled

Precautionary statement(s)

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220	Keep away from clothing and other combustible materials.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P264	Wash hands 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.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/physcian if you feel unwell,
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER/doctor/physcian if you feel unwell.
P337+P313	If eye irritation persists: Get medical advice/attention.
P370+P378	In case of fire: Use agents recommended in Section 5 of SDS for extinction
P501	Dispose of contents/container to an approved waste disposal facility

SECTION 3: Composition/information on ingredients

Mixtures

Molecular weight: 261.34

Components

Component	CAS no.	Concentration
Barium nitrate (EC no.: 233-020-5)	**10022-31-8**	**<= 100 % (weight)**
CLASSIFICATIONS: Acute toxicity, inhalation, Cat. 4; Acute toxicity, oral, Cat. 4; Oxidizing solids, Cat. 2; Serious eye damage/eye irritation, Cat. 2A. HAZARDS: H272 - May intensify fire; oxidizer; H302 - Harmful if swallowed; H319 - Causes serious eye irritation; H332 - Harmful if inhaled.		

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice	First Aid Facilities: Eye wash station, safety shower and normal washroom facilities.
If inhaled	If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear
In case of skin contact	Wash affected area thoroughly with copious amounts of running water. Remove contaminated clothing and wash before reuse. In severe cases or if irritation persists, seek medical attention.
In case of eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek immediate medical assistance
If swallowed	DO NOT INDUCE VOMITING. Wash out mouth with water. Seek immediate medical attention
Personal protective equipment for first-aid responders	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Most important symptoms/effects, acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of immediate medical attention and special treatment needed, if necessary
For advice in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor at once.

SECTION 5: Fire-fighting measures

Suitable extinguishing media
Alcohol-resistant foam. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Specific hazards arising from the chemical
Hazards from Combustion Products: Very toxic fumes of nitrogen oxides, ammonia, and oxides of barium.
Will accelerate burning when involved in a fire. May ignite combustibles (wood, paper, clothing, etc). Fire wll produce irritating, poisonous, and/or corrosive gases.

Special protective actions for fire-fighters
Wear SCBA and chemical splash suit. Structural firefighter's uniform will provide limited protection.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures
Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms. Evacuate the area of all non-essential personnel.
Wear protective clothing specified for normal operations (see Section 8)

Methods and materials for containment and cleaning up

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. 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.
Large Liquid Spill: SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL.

SECTION 7: Handling and storage

Precautions for safe handling
Store in orginal container. Store away from incompatiables.

Conditions for safe storage, including any incompatibilities
The material is a strong oxidiser. Store in tightly closed containers, in a cool, dry, well-ventilated area, away from incompatible substances. Store away from extremes of temperature, heat, sparks, open flame, ignition sources, acids, alkalis, powdered metals, food and feedstuffs, reducing agents and combustible, organic or other readily oxidizable materials. Avoid storage on wood floors. Protect against physical damage, direct sunlight and 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. Inspect regularly for deficiencies such as damage or leaks.

SECTION 8: Exposure controls/personal protection

Appropriate engineering controls
Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

Individual protection measures, such as personal protective equipment (PPE)

Eye/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.

Skin protection
Clean impervious clothing should be worn. Clothing for protection against
chemicals should comply with AS 3765 Clothing for Protection Against Hazardous
Chemicals.

Body protection
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: Clean clothing or protective clothing should be worn, preferably with and apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Respiratory protection
If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Physical state	Solid
Appearance	Colourless or white cubic, lustrous crystals, or crystalline powder, or white solid.
Color	No data available.
Odor	Odourless.
Odor threshold	No data available.
Melting point/freezing point	592 °C.
Boiling point or initial boiling point and boiling range	No data available.
Flammability	No data available.
Lower and upper explosion limit/flammability limit	No data available.
Flash point	No data available.
Explosive properties	Nitrates may explode when shocked, exposed to heat or flame or by spontaneous chemical reaction. All inorganic nitrates act as oxygen carriers; under proper conditions these can give up their oxygen to other materials, which may in turn detonate. Risk of fire and explosion on contact with oxidizable substances, combustible substances, reducing agents and powdered metals. In sufficient quantity and reduced particle size it is capable of creating a dust explosion.
Auto-ignition temperature	No data available.
Decomposition temperature	595 °C.
Oxidizing properties	Strong oxidizer; heat of reaction with reducing agents or combustibles may cause ignition.
pH	5.0 -8.0 (25 °C, 5% Aq. soln.)
Kinematic viscosity	No data available.
Solubility	Solubility in Water: Soluble, 87 in g/l at 20 °C. Solubility in Organic Solvents: Slightly soluble in ethanol and acetone.
Partition coefficient n-octanol/water (log value)	log Pow: Not applicable (inorganic; dissociation).
Vapor pressure	Negligible (mm Hg).
Evaporation rate	No data available.
Density and/or relative density	Specific Gravity: 3.24 at 23 °C.; Density: Bulk density: 1600 kg/m^3.
Relative vapor density	9
Particle characteristics	No data available.

Supplemental information regarding physical hazard classes
No data available.

Further safety characteristics (supplemental)
Other Information: Index of Refraction: 1.572.
Heat of solution: 36 BTU/lb= 20 cal/g= 0.84 x 10+5 J/kg.
Heat of formation: -988 kJ/mol.

SECTION 10: Stability and reactivity

Reactivity
Stable under normal conditions of storage and handling.

Chemical stability
Stable at room temperature in closed containers under normal temperatures, pressures and conditions of storage and handling.

Possibility of hazardous reactions
Reacts with powdered metals, eg. aluminium and magnesium, causing fire and explosion hazard. Mixtures with finely divided aluminium-magnesium alloys are easily ignitable and extremely sensitive to friction or impact. Will turn shock-sensitive if contaminated with sulfur powder or light metal powder. Catalytic decomposition may occur in the presence of metals such as lead, silver, copper, zinc, cadmium, nickel, iron, and cobalt. Reacts violently with strong acids. Can be explosive when mixed with oxidizers, e.g. sodium peroxide. Reacts with combustible and reducing materials with risk of fire and explosion.

Conditions to avoid
Dust generation, heat, moisture, contact with combustible and incompatible materials.

Incompatible materials
Reducing agents, acids, bases, hydroxylamine, phosphorus, esters (e.g. butyl acetate, ethyl acetate, propyl formate), combustible, organic and flammable materials (e.g. alkyl resins, asphalt, gasoline, grease, paper, oil, wood, charcoal, methyl acetone, polystyrene, polyurethane), acid anhydrides, tin chloride, sulfur, calcium silicide, sodium peroxide, metals such as lead, silver, copper, magnesium, zinc, cadmium, nickel, iron, and cobalt, metals in powder form (aluminium, magnesium), finely divided aluminium-magnesium alloys, magnesium plus barium oxide plus zinc, and oxidizers.

Hazardous decomposition products
Very toxic fumes of nitrogen oxides, ammonia, and oxides of barium.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Ingestion: Harmful by ingestion. Ingesting a small amount is unlikely to cause significant toxicity. Large amounts may initially cause gastrointestinal symptoms, including mucosal irritation, salivation, nausea, vomiting, haemorrhaging of the digestive tract, colic, and diarrhoea, followed by myocardial and general muscular stimulation with tingling in the extremities. The barium ion is a muscle poison causing stimulation and then paralysis. May cause various motor disturbances including stiffness, cramps, weakness or paralysis of the musculature, tightness of the muscles of the face and neck, muscular tremors, The diaphragmatic muscles may be involved, leading to hypoventilation. Central nervous system stimulation may be seen, followed by depression. May cause dizziness and anxiety. The barium ion stimulates cardiac, smooth and striated muscle. May cause cardiac irregularity, low blood potassium (hypokalaemia), bradycardia, ventricular dysrhythmias, hypertension, ventricular tachydysrhythmias including ventricular fibrillation, shock, convulsions, and death from cardiac or respiratory failure, usually occurring a few hours to a few days following exposure to the compound. May cause kidney damage late in the course. Ingestion of nitrate containing compounds can lead to methemoglobinemia. Estimated lethal dose lies between 1 to 15 grams.

Inhalation: Harmful by inhalation. Evaporation at 20 °C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed, especially if powdered. Inhalation of released NOx may cause respiratory tract irritation. Symptoms may include coughing, sore throat and shortness of breath. Inhalation at high concentrations may cause CNS depression and asphyxiation. May cause methemoglobinemia, cyanosis and convulsions. Systemic poisoning may occur with symptoms similar to those of ingestion.

Skin corrosion/irritation
Symptoms include itching, redness, and pain. May be harmful if absorbed through the skin.

Serious eye damage/irritation
Symptoms may include itching, redness, stinging, blurring, tearing and severe pain.

Respiratory or skin sensitization
Not classified based on available information.

Germ cell mutagenicity

Not classified based on available information.

Carcinogenicity
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.

Reproductive toxicity
Not classified based on available information.

Specific target organ toxicity (STOT) - single exposure
Not classified based on available information.

Specific target organ toxicity (STOT) - repeated exposure
Not classified based on available information.

Aspiration hazard
Not classified based on available information.

Additional information
Chronic Effects: Repeated or prolonged exposure to the substance can produce damage to kidneys, lungs, the nervous system, heart, blood, G.I. system, bone marrow, spleen, and the liver. Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation. Prolonged or repeated skin contact may cause dermatitis. Small, repeated doses of ingested nitrates can lead to weakness, general depression, headache and mental impairment.

SECTION 12: Ecological information

Toxicity
Toxic for aquatic organisms. Toxic for plants and animals. The following applies to barium compounds: barium ions toxic for aquatic organisms, hazard for drinking water! The following applies to nitrates in general: may contribute to the eutrophication of water supplies. Hazard for drinking water.
Acute Toxicity - Fish: Brachydanio rerio LC50: < 100 mg/l;
The following applies to barium compounds: fish: lethal as from 158 mg/l: Salmo lethal as from 158 mg/l (as $BaCl_2$); L. idus LC50: 870 mg/l (as $BaCl_2$);
The following applies to nitrates in general: fish: LC50 > 500 mg/l.

Acute Toxicity - Daphnia: The following applies to barium compounds: crustaceans: toxic as from 29 mg/l.

Acute Toxicity - Algae: The following applies to barium compounds: Sc. quadricauda toxic as from 34 mg/l.

SECTION 13: Disposal considerations

Disposal methods

Product disposal
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

Other disposal recommendations
Do not discharge this material into waterways, drains and sewers.

SECTION 14: Transport information

ADG (Road and Rail)

UN Number: 1446
Class: 5.1, 6.1
Packing Group: II
Proper Shipping Name: BARIUM NITRATE

Environmental Hazards: Toxic for aquatic organisms. Toxic for plants and animals. Hazard for drinking water. May contribute to the eutrophication of water supplies.

Hazchem emergency action code (EAC)
1Y

IMDG
UN Number: 1446
Class: 5.1, 6.1
Packing Group: II
EMS Number:
Proper Shipping Name: BARIUM NITRATE

IATA
UN Number: 1446
Class: 5.1, 6.1
Packing Group: II
Proper Shipping Name: BARIUM NITRATE

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

Australia SUSMP
Poison Schedule: S6

SECTION 16: Other information

Further information/disclaimer
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.

Preparation information
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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 fot the Preparation of Safety Data Sheets for Hazardous Chemicals', July 2020.
Safe Work Australia, 'National Guide for Classifying Hazardous Chemicals', July 2020.
Safe Work Australia, Workplace Exposure Standards for Airbourne Contaminants, December 2019
Safe Work Australia, Hazardous Chemical Information System (HCIS), hcis.safeworkaustralia.gov.au
IATA, Dangerous Goods Regulations (DGR)
IMO, International Maritime Dangerous Goods Code (IMDG)