MATERIAL SAFETY DATA SHEET

PRODUCT NAME **POTASSIUM NITRATE**

Product Code: 001/05-US

Date of issue: March 2012 Supersedes: October 2008

1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier Potassium nitrate / Krista K / Ultrasol K / Champion

Identified uses

Industrial use of potassium nitrate for formulation of preparations, intermediate use and end-use in industrial settings

Industrial end-use as energy storage salt

Professional use in formulation of fertilizer preparations and end-use as fertilizer

Non Recommended Uses

Food additive; Reagent in waste water treatment

Supplier SQM North America
2727 Paces Ferry Rd, Building Two, Suite 1425
Atlanta, GA 30339

Company Telephone/Fax (770) 916 9400 / (770) 916 9404

Emergency Telephone Number (800) 424 9300 (CHEMTREC)

2. HAZARDS IDENTIFICATION

Emergency Overview

Crystals/Prills, white, odorless

WARNING

Oxidizer. Contact with combustible materials will not cause spontaneous ignition, however, sodium nitrate will enhance an existing fire.

May cause skin and eye irritation.

NFPA 704: National Fire Protection Association		HMIS® III	
Health	1	Health	1
Fire	0	Flammability	0
Reactivity	1	Physical hazards	1
Special	Oxidizer		

OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Potential Health Effects

Likely routes of exposure: Eye contact, skin contact, inhalation.

In case of inhalation	Irritation to respiratory tract	
In case of skin contact	May cause redness or irritation	
In case of eye contact	May cause redness or irritation	
In case of ingestion	Ingestion of large amounts may cause:	Gastrointestinal disturbances

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name	CAS No	EC No	Concentration
Potassium nitrate	7757-79-1	231-818-8	> 94 %
Sodium nitrate	7631-99-4	231-554-3	0.01 - 5 %
Sulphate (SO_4^{+2})			< 1 %
Chloride (Cl^-)			< 0.6 %
Magnesium (Mg^{+2})			< 0.5 %
Nitrite (NO_2^-)			< 0.02 %
Calcium (Ca^{+2})			< 0.2 %
Perchlorate (ClO_4^-)			< 0.01%
Iodate (IO_3^-)			0.005 - 0.01 %

For specific details on composition according to the product grade, see product data sheet

4. FIRST AID MEASURES

Description of first aid measures

General information

In case of persisting adverse effects consult a physician. Never give anything by mouth to an unconscious person or a person with cramps.

In case of inhalation

Remove to fresh air and keep at rest in a position comfortable for breathing. Get medical attention for any breathing difficulty.

In case of skin contact

Wash with plenty of soap and water. Remove contaminated clothing. If skin irritation occurs: Get medical advice/attention.

In case of eye contact

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.

In case of ingestion

Induce vomiting. Rinse mouth immediately and drink plenty of water.

Most important symptoms and effects, both acute and delayed

The following symptoms may occur:

In case of inhalation	Irritation to respiratory tract	
	Delayed lung effects after short term exposure to thermal degradation products	
In case of skin contact	May cause redness or irritation	
In case of eye contact	May cause redness or irritation	
In case of ingestion	Ingestion of large amounts may cause:	Gastrointestinal disturbances

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flammable properties

Not flammable.

Extinguishing media

Suitable extinguishing media:	Use any suitable mean for extinguishing surrounding fire. Spray water for small fires. For large fires flood with abundant water.
Unsuitable material:	None, but attention should be paid to compatibility with chemicals surrounding.

Protection for firefighters

Specific hazards arising from the chemical

Thermal decomposition can lead to the escape of toxic/corrosive gases and vapours.

Products of combustion

Thermal decomposition products: refer to section 10.

Protective equipment and precautions for firefighters

Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Provide adequate ventilation. Wear personal protection equipment (Section 8).

Environmental precautions

Do not allow to enter into surface water or drains. Ensure waste is collected and contained.

Methods for containment and cleaning up

Take up mechanically, placing in appropriate containers for disposal or recovery.

Unsuitable material for containment/taking up:	Do not absorb in saw-dust or other combustible absorbents.

Other information

None

7. HANDLING AND STORAGE

Handling

Avoid generation of dust. Provide adequate ventilation. Wear personal protective equipment. Wash hands thoroughly after handling. Do no eat, drink or smoke when using this product. Keep away from flammable, combustible and reducing substances.

Storage

Keep/store only in original container. Store in a well-ventilated place. Keep container tightly closed.

Do not store together with:	Combustible substance, reducing agents

Perchlorate containing product - Special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate and Section 15 for more information regarding California State regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Occupational exposure limits

Sodium nitrate:	No specific occupational exposure limit.		
Particulates Not Otherwise Regulated (PNOR):	Inert or Nuisance Dust:		
		mppcf*	mg/m^3
	Respirable fraction	15	5
	Total dust	50	15

*Millions of particles per cubic foot of air

Engineering controls

Use exhaust ventilation to keep airborne concentrations below exposure limits.

Personal Protective Equipment

Eye/face protection	Chemical goggles required all the time.
Skin Protection	Nitrile rubber gloves, over 0.11 mm thickness, > 480 min breakthrough time, recommended.
Respiratory Protection	Wear respiratory protection, where airborne concentrations are expected to exceed exposure limits

General Hygiene Considerations

Avoid contact with eyes and skin. Wash hands thoroughly after handling. Have eye-wash facilities immediately available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Solid, prilled or crystalline
Colour	White
Odour	Odourless
Odour Threshold	No applicable
pH value	8-10 (5% aqueous solution)
Melting point / melting range	335 °C / 635 F at 1013 hPa
Boiling temperature / boiling range	Not applicable
Flash point	Not applicable
Vapourisation rate / Evaporation rate	No data available
Flammable solids	Not flammable
Explosion limits (LEL, UEL)	Not applicable
Vapour pressure	Not applicable
Relative vapour density (air = 1)	No data available
Density	2.1 at 20°C / 68 F
Solubility	> 100 g/L at 25 °C / 77 F (water)
Partition coefficient n-octanol /water	Not applicable
Auto Ignition temperature (AIT)	Not applicable
Decomposition temperature	> 600 °C / 1112 F
Viscosity	Not applicable
Explosive properties	Not explosive
Oxidising properties	Oxidizer

Other information

None

10. STABILITY AND REACTIVITY

Stability/Reactivity

Stable under normal storage and temperature conditions.

Conditions to avoid

Keep away from flammable, combustible and reducing substances.

Incompatible materials

Flammable, combustible and reducing substances under specific conditions. For storage and handling incompatibilities, refer to Section 7.

Hazardous decomposition products

Thermal decomposition products (> 1112 F / 600 °C): Nitrous oxides (NO_x), potassium nitrite and potassium oxide.

Possibility of hazardous reactions

None identified

11. TOXICOLOGICAL INFORMATION

The following information mostly refers to the major component of the product.

Information on toxicological effects

Acute toxicity			Species:	Method:
Acute oral toxicity	LD50:	> 2000 mg/kg bw	Rat.	OECD Guideline 425
		Data obtained by analogy conclusion		
Acute dermal toxicity	LD50:	> 5000 mg/kg bw	Rat.	OECD Guideline 402
Acute inhalation toxicity	LC50:	> 0.527 mg/L (4-h) (maximum achievable concentration)	Rat.	OECD Guideline 403

Irritant and corrosive effects

Irritation to the skin	Result:	Species:	
Equivalent/similar to OECD guideline 404	non-irritant.	Rabbit.	Data obtained by analogy conclusion
Primary dermal irritation index (PDII): 0 of max. 5 (mean) (Time point: 1, 24, 48,72h)			
Irritation to eyes	Result	Species:	
OECD Guideline 437	non-irritant.	In vitro study	
OECD Guideline 405/EU B.5	non-irritant.	Rabbit.	
Respiratory or skin sensitisation	Result:	Species:	
OECD Guideline 429/EU B.42	not sensitising.	Mouse.	Data obtained by analogy conclusion
Respiratory sensitisation	No information available.		

Germ cell mutagenicity / Genotoxicity

In-vitro genotoxicity	Method:	Result:	
Gene-mutations microrganisms	bacterial reverse mutation assay	negative	(literature information)
Gene-mutations mammalian cells	OECD Guideline 476/EU B.17	negative	
Chromosome aberr. mammalian cells	According to Ishidate & Odashima (1977)	negative	(literature information)
Sister Chromatid Exchange (SCE)	Equivalent or similar to OECD 479	negative	(literature information)

Carcinogenicity

International Agency for Research on Cancer (IARC)	Inadequate animals and humans evidence
National Toxicology Program (NTP)	Not listed
29 CFR part 1910, subpart Z	Not listed
California Proposition 65	Not listed
WHO (2003) Nitrate in drinking water	No association between nitrate exposure in humans and the risk of cancer

Reproductive toxicity
Adverse effects on sexual function and fertility/developmental toxicity
OECD guideline 422. NOAEL(C): 1500 mg/kg/d Rat.
At the highest dose tested, no effects on fertility or development were observed in this repeated dose toxicity study.
Specific target organ toxicity (single exposure)
Practical experience / human evidence
No relevant effect have been observed after single exposure to potassium nitrate.
Specific target organ toxicity (repeated exposure)
OECD guideline 422.

	Effect dose:	Organs affected:
NOAEL(C):	1500 mg/kg bw/day	None

Aspiration hazard
Physicochemical data and toxicological information does not indicate an aspiration hazard.
Other Toxicological Information
This product contains trace amounts of naturally-occurring perchlorate and iodate.Like other goitrogenic substances, perchlorate may affect iodine uptake by thyroid under specific conditions.

12. ECOLOGICAL INFORMATION

The following information mostly refers to the major component of the product.

Toxicity
Aquatic toxicity

96-h LC50	1378 mg/L	*Poecilia reticulata* (freshwater fish)	(literature information)
48-h EC50	490 mg/L	*Daphnia magna* (fresh water flea).	(literature information)
10 d EC50	> 1700 mg/L	Several algae species	(literature information)

Persistence and degradability
In aqueous compartments, the substance will dissociate into sodium and nitrate ions. Other minor compounds are also expected to be dissociated in their corresponding ions. Sodium ions are not subject to further degradation. Under anoxic conditions, nitrate is subjected to denitrification and is ultimately converted into molecular nitrogen as part of the nitrogen cycle. Nitrate and other oxyanions impurities are likely to be found in oxic compartments.
Bioaccumulative potential
Potassium nitrate has a low potential for bioaccumulation based on physicochemical properties (high water solubility).
Mobility in soil
Nitrate has a low potential for adsorption. Portion not taken up by plants, can leach to groundwater. Potassium may be absorbed by plants and it can also participate in ion exchange processes.
Other adverse effects
Excess nitrate leaching may enrich waters leading to eutrophication.

13. DISPOSAL CONSIDERATIONS

Disposal should be in accordance with applicable regional, national and local laws and regulations.
It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal method in compliance with applicable regulations (eg. Resource Conservation and Recovery Act (RCRC) 40 CFR 261).
Perchlorate containing product - Special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate and Section 15 for more information regarding California State regulations.

14. TRANSPORT INFORMATION

US DOT (ground)

UN-No.	1486
Proper Shipping Name	POTASSIUM NITRATE
Class(es)	5.1
Packing group	III
Hazard label(s)	5.1 (oxidizer)
Special marking	No

Sea transport (IMDG)

UN-No.	1486
Proper Shipping Name	POTASSIUM NITRATE
Class(es)	5.1
Packing group	III
Marine pollutant	No
Hazard label(s)	5.1 (oxidizer)
Special marking	No
Special Provision	964

Air transport (ICAO-TI / IATA-DGR)

UN-No.	1486
Proper Shipping Name	POTASSIUM NITRATE

Class(es)	5.1
Packing group	III
Hazard label(s)	5.1 (oxidizer)
Special marking	No

Special precautions for user
None
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable
Remark
None

15. REGULATORY INFORMATION

US Federal
SARA Title III Rules
Section 311/312 Hazard Classes

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	Yes (Oxidizer)
Release of Pressure	No
Reactive Hazard	No

Section 313 Toxic Chemicals
N511 Nitrate compounds (water dissociable; reportable only when in aqueous solution)
Section 302 Extremely Hazardous Substances (EHS)/CERCLA Hazardous Substances
Potassium nitrate is not listed

US State Regulations

California Proposition 65	Potassium nitrate is not listed
California Code of Regulations Title 22 (Health & Safety Code), Chapter 33	See http://www.dtsc.ca.gov/hazardouswaste/perchlorate/

Canada
WHMIS Classification: Class C
This product has been classified according to the hazard criteria of the 2010 Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.
European Union
Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Hazard classes and Hazard categories	Hazard statements
Ox. Sol. 3*	H272

*Applicable only to the crystalline form. Granular form that passes UN Test 0.1 is not classified under GHS/CLP.

16. OTHER INFORMATION

This MSDS complies with 29 CFR part 1910 subpart Z, 2010 Canada Controlled Products Regulations (CPR) and ANSI Standard Z400.1-2004

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Indication of changes
All sections were reviewed, contents were updated and format was changed.