SAFETY DATA SHEET

PRODUCT NAME **SODIUM NITRATE**

Product Code: 002/07-US

Date of issue: January 2014 Supersedes: October 2012

1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Sodium Nitrate / Niterox
QSodium Nitrate
Sodium Nitrate Technical Grade
Sodium Nitrate Industrial Grade
Sodium Nitrate Standard Grade
Sodium nitrate Refined Grade - Thermosolar - Crystals

Recommended uses:

Industrial use in formulation of preparations, intermediate use and end-use in industrial settings.
Industrial end-use as energy storage salt.

Restrictions on uses:

Food additive, reagent in water treatment, ingredient in drain cleaners, professional and consumer end-use as fertilizer, formulation of preparations with an end-use as fertilizer.

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

Classification of the substance or mixture

Classification of the chemical in accordance with 29CFR §1910.1200

Hazard classes and Hazard categories	Hazard statements
Oxidizing solid, Cat. 3	May intensify fire; oxidizer
Midly irritating to eyes, cat. 2B	Causes eye irritation.

Label elements

Hazard pictograms

Signal word Warning

Hazard Statements May intensify fire; oxidizer
Causes eye irritation.

Precautionary Statements

Keep away from flammable / combustible / reducing materials.
Wear eye protection. Wash hands thoroughly after handling.
In case of fire: use any suitable mean for extinguishing surrounding fire. Spray water for small fires. For large fires flood with abundant water.
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.
Dispose of contents/container according to local/state/federal regulations.

Other hazards

None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name	CAS No	EC No	Concentration
Sodium nitrate	7631-99-4	231-554-3	> 95 %
Potassium (K^+)			< 2 %
Chloride (Cl^-)			< 1 %
Sulphate (SO_4^{+2})			< 2 %
Magnesium (Mg^{+2})			< 0.5 %
Calcium (Ca^{+2})			< 0.2 %
Perchlorate (ClO_4^-)			0.01 -0.5 %
Iodate (IO_3^-)			< 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, saturated clothing immediately.

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

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	Causes serious eye 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

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.

Specific hazards arising from the chemical

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

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

Thermal decomposition products: Nitrous oxides (NOx), sodium nitrite and sodium oxide.

Protective equipment and precautions for firefighters

Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (self contained breathing apparatus (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 and material 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

Precautions for Safe Handling

Avoid generation of dust. Provide adequate ventilation. Wear personal protective equipment. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Keep away from flammable, combustible and reducing substances.

Conditions for safe storage, including any incompatibilities

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:

OSHA	PEL	Not Established	
	STEL/ceiling	Not Established	
ACGIH	TWA	Not Established	(2012 TLVs® and BEIs®)
	STEL/ceiling	Not Established	(2012 TLVs® and BEIs®)

Derived No-Effect Level (DNEL) suggested by the manufacturer

Workers (industrial/professional):	
DNEL Human, dermal, long term (repeated):	20.8 mg/kg/day (systemic)
DNEL Human, inhalation, long term (repeated):	36.7 mg/m3 (systemic)

Derived No-Effect Level (DNEL) is the level of exposure to the substance above which humans should not be exposed.

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 / freezing range	307°C/584°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	Considered negligible (based on melting point)
Vapour density	No data available
Density	2.26 at 20°C/68°F
Solubility	> 100 g/L at 20°C/68°F (water)
Partition coefficient n-octanol /water	Not applicable
Auto Ignition temperature (AIT)	Not applicable
Decomposition temperature	> 550°C/1022°F
Viscosity	Not applicable
Explosive properties	Not explosive
Oxidising properties	Oxidizer

Other information

None

10. STABILITY AND REACTIVITY

Reactivity

No hazardous reaction when handled and stored according to provisions.

Chemical stability

Stable under normal storage and temperature conditions.

Possibility of hazardous reactions

None identified

Conditions to avoid

Keep away from flammable, combustible and reducing substances.

Incompatible materials

Flammable, combustible and reducing substances under specifc conditions.

Hazardous decomposition products

Thermal decomposition products: Nitrous oxides (NO_x), sodium nitrite and sodium oxide.

11. TOXICOLOGICAL INFORMATION

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

Likely routes of exposure (inhalation, ingestion, skin and eye contact)

Eye contact, skin contact and inhalation. Exposure by ingestion is not expected to occur through normal industrial use.

Symptoms related to the physical, chemical and toxicological characteristics

May be irritant to the respiratory tract. Causes serious eye irritation. May cause redness or irritation to the skin. Ingestion of large amounts may cause gastrointestinal disturbances. May cause delayed lung effects after short term exposure to thermal degradation products.

Information on toxicological effects from short and long term exposure

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
		Data obtained by analogy conclusion		
Acute inhalation toxicity	LC50:	> 0.527 mg/L (4-h)	Rat.	OECD Guideline 403
		(maximum achievable concentration)		
		Data obtained by analogy conclusion		
Assessment / classification:		Based on available data, the classification criteria are not met		

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	Irritant	Rabbit.
Assessment / classification:	Midly irritating to eyes, category 2B: Causes eye irritation.	

Respiratory or skin sensitisation

Skin sensitization	Result	Species:
OECD Guideline 429	not sensitising.	Mouse.
Respiratory sensitisation	No information available.	
Assessment / classification:	Based on available data, the classification criteria are not met	

Genetic effects

In-vitro genotoxicity	Method	Result	
Gene-mutations microorganisms	Equivalent or similar to OECD 471	negative	(literature information)
Chromosome aberrations mammalian cells	OECD Guideline 473/EU B.10	negative	
In-vivo genotoxicity			
In-vivo unscheduled DNA Synthesis (UDS)	According to Alavantic, D. (1988)	negative	(literature information)
In-vivo micronucleus assay		equivocal	(literature information)
In-vivo chromosome aberrations		equivocal	(literature information)

Assessment / classification:

Overall assessment of data, indicates that sodium nitrate is not genotoxic *in vitro* and *in vivo* .

Based on available data, the classification criteria are not met

Reproductive toxicity

No reliable data available for sodium nitrate. Data obtained from chemically related substance.

Adverse effects on sexual function and fertility

OECD guideline 422.	NOAEL(C):	1500 mg/kg/d	Rat.

Adverse effects on 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. Data from other nitrate substances are in line with this study.

Assessment / classification: Based on available data, the classification criteria are not met

Specific target organ toxicity (single exposure)

Practical experience / human evidence

No relevant effect have been observed after single exposure to sodium nitrate.

Assessment / classification: Based on available data, the classification criteria are not met

Specific target organ toxicity (repeated exposure)

Several oral repeated dose studies with sodium nitrate are available, however, most of them lack of reliability.

A reliable study with potassium nitrate did not show effects at highest dose tested.

OECD guideline 422.	Effect dose:	Organs affected:
NOAEL(C):	1500 mg/kg bw/day	None

Assessment / classification:	Based on available data, the classification criteria are not met

Aspiration hazard

Physicochemical data and toxicological information does not indicate an aspiration hazard.

Assessment / classification:	Based on available data, the classification criteria are not met

Carcinogenicity

No substance related neoplastic lesions were observed in a chronic toxicity study (literature information)

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
Assessment / classification:	Based on available data, the classification criteria is not met

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.

Ecotoxicity

Aquatic Toxicity

Aquatic toxicity			(literature information)
96-h LC50	6000 mg/L	freshwater fish	(literature information)
96-h LC50	4400 mg/L	marine water fish	(literature information)
24-h EC50	8600 mg/L	*Daphnia magna* (fresh water flea).	(literature information)
10 d EC50	> 1700 mg/L	Several algae species Data obtained by analogy conclusion	
Assessment / classification		Based on available data, the classification criteria are not met	

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

Sodium 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. Sodium can 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 federal and state laws.

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.

Sodium nitrate waste exhibiting the characteristic of ignitability has the EPA Hazardous Waste Number of D001 according to the Resource Conservation and Recovery Act (RCRA) 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. TRANSPORTATION INFORMATION

US DOT (49CFR part 172)

UN-No.	1498
UN Proper Shipping Name	SODIUM NITRATE
Hazard class	5.1
Packing group	III
Hazard label(s)	5.1 (oxidizer)
Special marking	No
Special Provision	A1; A29; IB8; IP3; T1; TP33; W1

International Maritime Organization (IMDG Code)

UN-No.	1498
UN Proper Shipping Name	SODIUM NITRATE
Hazard class	5.1
Packing group	III
Marine pollutant	No
Hazard label(s)	5.1 (oxidizer)
Special marking	No
Special Provision	964

International Civil Aviation Organization (ICAO) and International Air Transport Association (IATA)

UN-No.	1498
UN Proper Shipping Name	SODIUM NITRATE
Hazard class	5.1
Packing group	III
Hazard label	5.1 (oxidizer)
Special marking	No

Special handling procedure

None

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

Other special precautions

None

15. REGULATORY INFORMATION

US Federal

SARA Title III Rules

Section 311/312 Hazard Classes

Acute Health Hazard	Yes (Irritant)
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

Sodium nitrate is not listed

DHS - Chemical of Interest (Appendix A to 6CFR Part 27)

Sodium nitrate is listed (ACG)

NFPA 704/2012: National Fire Protection Association

Health	1
Fire	0
Instability	0
Special	OX

US State Regulations

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

Canada

Ingredient Disclosure List:	Sodium nitrate is listed
WHMIS Classification:	Class C (Oxidizer), D2B (Eye irritation)

This product has been classified according to the hazard criteria of the Controlled Products Regulations (CPR) and the SDS 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
Eye Irrit. 2	H319

Chemical Inventories

United States TSCA	Sodium nitrate is listed
Canada DSL	Sodium nitrate is listed
México (INSQ)	Sodium nitrate is listed
European Union (EINECS)	Sodium nitrate is listed
China (IECS)	Sodium nitrate is listed
Japan (METI)	Sodium nitrate is listed
Korea (KECI)	Sodium nitrate is listed

16. OTHER INFORMATION

This SDS complies with 29 CFR part 1910 subpart Z (2012), Canada Controlled Products Regulations (2010) and ANSI Standard Z400.1-2004

Data source	Sodium nitrate REACH (EC) Registration Dossier		
Prepared by	Regulatory Affairs Department, SQM		
E-mail	product_safety@sqm.com ind-northamerica@sqm.com		
Date of issue:	January 2014	**Supersedes**	October 2012

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall SQM be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if SQM has been advised of the possibility of such damages.

Indication of changes

Version 7	(January 2014) Revised version. Section 15: Additional regulatory information. Section 16: Data source was added. (December 2012) New version. All sections were reviewed and modified to comply with 29CFR part 1910 subpart Z (2012).
Version 6	(March 2012) All sections were reviewed, contents were updated and format was changed.