SAFETY DATA SHEET

PRODUCT NAME
Product Code: 002/07-US
Date of issue: October 2012
Supersedes: March 2012

1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier: Sodium Nitrate / Niterox

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 waste water treatment, preparation of fertilizers mixtures, fertilizer end-use.

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
Oxidizing solid, Cat. 3

Hazard statements
May intensify fire; oxidizer

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 and face 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

<table>
<thead>
<tr>
<th>Substance name</th>
<th>CAS No</th>
<th>EC No</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium nitrate</td>
<td>7631-99-4</td>
<td>231-554-3</td>
<td>&gt; 95 %</td>
</tr>
<tr>
<td>Potassium (K)</td>
<td></td>
<td></td>
<td>&lt; 2 %</td>
</tr>
<tr>
<td>Chloride (Cl)</td>
<td></td>
<td></td>
<td>&lt; 1 %</td>
</tr>
<tr>
<td>Sulphate (SO₄²⁻)</td>
<td></td>
<td></td>
<td>&lt; 2 %</td>
</tr>
<tr>
<td>Magnesium (Mg²⁺)</td>
<td></td>
<td></td>
<td>&lt; 0.5 %</td>
</tr>
<tr>
<td>Calcium (Ca²⁺)</td>
<td></td>
<td></td>
<td>&lt; 0.2 %</td>
</tr>
<tr>
<td>Perchlorate (ClO₄⁻)</td>
<td></td>
<td></td>
<td>0.01 -0.5 %</td>
</tr>
<tr>
<td>Iodate (IO₃⁻)</td>
<td></td>
<td></td>
<td>&lt; 0.01 %</td>
</tr>
</tbody>
</table>

For specific details on composition according to the product grade, see product data sheet.
SAFETY DATA SHEET

PRODUCT NAME: SODIUM NITRATE

Product Code: 002/07-US
Date of issue: October 2012
Supersedes: March 2012

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
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

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:

<table>
<thead>
<tr>
<th>OSHA</th>
<th>PEL</th>
<th>Not Established</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEL/ceiling</td>
<td>TWA</td>
<td>Not Established</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Workers (industrial/professional):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL Human, dermal, long term (repeated):</td>
<td>20.8 mg/kg/day (systemic)</td>
</tr>
<tr>
<td>DNEL Human, inhalation, long term (repeated):</td>
<td>36.7 mg/m³ (systemic)</td>
</tr>
</tbody>
</table>

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)
SAFETY DATA SHEET

PRODUCT NAME
Product Code: 002/07-US
Date of issue: October 2012

SODIUM NITRATE
Supersedes: March 2012

Vapour density
Density
Solubility
Partition coefficient n-octanol/water
Auto Ignition temperature (AIT)
Decomposition temperature
Viscosity
Explosive properties
Oxidising properties
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 specific conditions.

Hazardous decomposition products
Thermal decomposition products (> 1112°F/600°C): Nitrous oxides (NOx), 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. May cause redness or irritation to the skin and eyes. 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

Acute oral toxicity
LD50: > 2000 mg/kg bw Rat. OECD Guideline 425

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

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

Irritant and corrosive effects

Irritation to the skin
Equivalent/similar to OECD guideline 404 non-irritant. Data obtained by analogy conclusion

Irritation to the skin
Primary dermal irritation index (PDII): 0 of max. 5 (mean) (Time point: 1, 24, 48, 72h)
**PRODUCT NAME**
Product Code: 002/07-US
Date of issue: October 2012

**SAFETY DATA SHEET**

**SODIUM NITRATE**
Supersedes: March 2012

<table>
<thead>
<tr>
<th>Irritation to eyes</th>
<th>Result</th>
<th>Species:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD Guideline 437</td>
<td>non-irritant.</td>
<td>In vitro study</td>
</tr>
<tr>
<td>OECD Guideline 405</td>
<td>Irritant</td>
<td>Rabbit</td>
</tr>
</tbody>
</table>

**Midly irritating to eyes, category 2B: Causes eye irritation.**

<table>
<thead>
<tr>
<th>Species:</th>
<th>Mouse.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Result</td>
<td>not sensitising.</td>
</tr>
</tbody>
</table>

**No information available.**

**Based on available data, the classification criteria are not met.**

**Genetic effects**

<table>
<thead>
<tr>
<th>In-vitro genotoxicity</th>
<th>Method</th>
<th>Result</th>
<th>(literature information)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gene-mutations microorganisms</td>
<td>Equivalent or similar to OECD 471</td>
<td>negative</td>
<td></td>
</tr>
<tr>
<td>Chromosome aberrations mammalian cells</td>
<td>OECD Guideline 473/EU B.10</td>
<td>negative</td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>In-vivo genotoxicity</th>
<th>Method</th>
<th>Result</th>
<th>(literature information)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-vivo micronucleus assay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-vivo chromosome aberrations</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>OECD guideline 422. NOAEL(C):</th>
<th>1500 mg/kg/d</th>
<th>Rat.</th>
</tr>
</thead>
</table>

**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.

<table>
<thead>
<tr>
<th>OECD guideline 422. Effect dose:</th>
<th>Organs affected:</th>
<th>NOAEL(C):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500 mg/kg bw/day</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

**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.
SAFETY DATA SHEET

PRODUCT NAME
SODIUM NITRATE

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
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

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
SAFETY DATA SHEET

PRODUCT NAME
Product Code: 002/07-US
Date of issue: October 2012
Supersedes: March 2012

SODIUM NITRATE

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
NS11 Nitrate compounds (water dissociable; reportable only when in aqueous solution)
Section 302 Extremely Hazardous Substances (EHS)/CERCLA Hazardous Substances
Sodium nitrate is not listed

NFPA 704: National Fire Protection Association
Health 1
Fire 0
Reactivity 0
Special Oxidizer

NFPA Hazard Levels
0=minimal, 1=slight hazard, 2=moderate hazard, 3=severe hazard, 4=extreme hazard

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.
**SAFETY DATA SHEET**

**PRODUCT NAME**
Product Code: 002/07-US  
Date of issue: October 2012  
Supersedes: March 2012

**SAFETY DATA SHEET**

**PRODUCT NAME**
Product Code: 002/07-US  
Date of issue: October 2012  
Supersedes: March 2012

**European Union**
Classification according to Regulation (EC) No 1272/2008 (EU-GHS/CLP)

<table>
<thead>
<tr>
<th>Hazard classes and Hazard categories</th>
<th>Hazard statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ox. Sol. 3</td>
<td>H272</td>
</tr>
<tr>
<td>Eye Irrit. 2</td>
<td>H319</td>
</tr>
</tbody>
</table>

**Chemical Inventories**

- United States TSCA: Sodium nitrate is listed
- Canada DSL: 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

Prepared by: Regulatory Affairs Department, SQM
E-mail: product_safety@sqm.com
Ind-northamerica@sqm.com

Last revision date: October 2012

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**Indication of changes**

All sections were reviewed and modified to comply with 29 CFR part 1910 subpart Z (2012).