# 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<br>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<br>ind-northamerica@sqm.com | | |
| **Date of issue:** | January 2014 | **Supersedes** | October 2012 |

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**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.