

MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
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Gaithersburg, Maryland 20899-2300

RM Number: 8569
MSDS Number: 8569
RM Name: Light Stable Isotopes Reference
Materials

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Description: This Reference Material (RM) is intended for use in developing and validating methods for measuring relative differences in nitrogen (N) and oxygen (O) isotope-number ratios in nitrate. A unit of RM 8569 consists of one glass bottle containing 0.9 g of sodium nitrate.

Substance: Sodium nitrate.

Other Designations: Nitric acid sodium salt; sodium niter; saltpeter (chile).

2. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 1 Fire = 0 Reactivity = 0

Major Health Hazards: Irritation.

Physical Hazards: Oxidizer. May ignite or explode on contact with combustible materials.

Potential Health Effects (Acute and Chronic):

Inhalation: Acute exposure may result in irritation of the respiratory tract accompanied by coughing, and shortness of breath. No data listed for chronic exposure.

Skin Contact: Acute exposure may cause irritation with redness. No data listed for chronic exposure.

Eye Contact: Acute exposure to dust may cause irritation, redness, and pain. No data listed for chronic exposure.

Ingestion: Ingestion of this material is unlikely under normal conditions of use. Acute exposure to large doses may result in gastrointestinal tract irritation accompanied by nausea, vomiting and diarrhea, cause cardiac irregularities, and affect kidney functions. Severity of effects depends on the amount ingested. Chronic exposure to nitrates has resulted in weakness, general depression, headache, mental impairment, anemia, and nephritis. Reproductive effects have been reported in animals.

Listed as a Carcinogen/Potential Carcinogen

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	_____	<u>X</u>
In the International Agency for Research on Cancer (IARC) Monographs	_____	<u>X</u>
By the Occupational Safety and Health Administration (OSHA)	_____	<u>X</u>

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Sodium nitrate	7631-99-4	231-554-3	100

EC Classification: O, Xn

EC Risk (R No.): 8, 22

EC Safety (S No.): 24, 36, 46.

EC Risk/Safety Phrases: See Section 15, "Regulatory Information".

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration by qualified personnel. Seek immediate medical attention.

Skin Contact: Rinse affected area with soap and water for at least 15 minutes. Seek medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

Ingestion: If swallowed, seek immediate medical attention. If vomiting occurs, keep head lower than hips to help prevent aspiration.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Negligible fire hazard. Oxidizer; may ignite or explode in contact with combustible materials.

Extinguishing Media: Use water. Do not use dry chemicals, carbon dioxide or halogenated extinguishing agents.

Fire Fighting: Remove container away from fire area if it can be done without risk.

Flash Point (°C): Not applicable.

Method Used: Not applicable.

Autoignition Temp. (°C): Not applicable

Flammability Limits in Air

UPPER (Volume %): Not applicable.

LOWER (Volume %): Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Collect spilled material in appropriate container for proper disposal.

Disposal: Refer to Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

Storage: Store and handle in accordance with all current regulations and standards.

Safe Handling Precautions: See Section 8, "Exposure Controls and Personal Protection".

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: There are no established exposure limits for sodium nitrate.

Ventilation: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Respirator: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29 CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye Protection: Wear safety goggles. An eyewash station and drench shower should be readily available near the handling and use areas.

Personal Protection: In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

9. PHYSICAL AND CHEMICAL PROPERTIES

Component: Sodium nitrate

Appearance and Odor: Solid, colorless to white crystalline powder, odorless.

Molecular/Chemical Formula: NaNO₃

Molar Mass (g/mol): 84.99

Density (g/cm³): Not listed.

Specific Gravity (water = 1): 2.261

Decomposition (°C): 380 (716 °F)

Boiling point: Not applicable.

Melting Point (°C): 307 (584.6 °F)

Water Solubility: 92.1 % at 25°C

Solvent Solubility: Soluble in alcohol, methanol, ammonia.

pH: 7.0 in aqueous solution.

10. STABILITY AND REACTIVITY

Stability: Stable Unstable

Conditions to Avoid: Sodium nitrate is an oxidizer; avoid contact with combustible materials. Keep out of water supplies and sewers.

Incompatible Materials: Combustible materials, acids, cyanides, metal powders, metal oxides, metal salts, organic compounds, reducing agents.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition: Oxides of nitrogen; oxides of sodium.

Hazardous Polymerization: Will Occur Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: Inhalation Skin Ingestion

Toxicity Data:

Rat, Oral LD₅₀: 1267 mg/kg

Irritation Data: In tests on rabbit eyes, a 10 % aqueous solution applied continuously for five minutes had no significant effect.

Tunorigenic/Mutagen:

This material has been reviewed and the Registry of Toxic Effects of Chemicals System (RTECS) publishes the following endpoints:

Tumorigenic: 100 gm/kg Rat, oral (2 years).

Mutagenic: 133µg/well *Escherichia coli*; 13 g/kg/6week rat.

Reproductive Effects:

RTECS publishes the following endpoints for reproductive effects:

16.8 g/kg Mouse, oral TDLo (male 14 days).

Health Effects: See Section 2, "Hazards Identification" for potential health effects.

Target Organs: Eyes, respiratory tract, gastrointestinal tract, skin.

Medical Conditions Aggravated by Exposure: Not listed.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data:

Fish: Bluegill (*Lepomis macrochirus*) LC₅₀: 2000 mg/L (static) 96 hr.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Sodium nitrate, Class 5.1, UN1498, Packing Group III, Packing Instruction: 559.

15. REGULATORY INFORMATION

U.S. REGULATIONS

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21)

ACUTE HEALTH:	No
CHRONIC HEALTH:	No
FIRE:	Yes
REACTIVE:	No
PRESSURE:	No

STATE REGULATIONS

California Proposition 65: Not listed.

CANADIAN REGULATIONS

WHMIS Information: Not provided for this material.

EUROPEAN REGULATIONS

EC Classification: O - Oxidizing; Xn – Harmful.

EC Risk Phrases:

R8 – Contact with combustible material may cause fire.

R22 – Harmful if swallowed.

EC Safety Phrases:

S24 – Avoid contact with skin.

S36 – Wear suitable protective clothing

S46 – If swallowed, seek medical advice immediately and show this container or label.

NATIONAL INVENTORY STATUS

U.S. Inventory (TSCA): Sodium nitrate is listed.

TSCA 12(b), Export Notification: Not listed.

16. OTHER INFORMATION

Sources: ChemADVISOR, Inc., MSDS *Sodium nitrate*, 20 December 2011.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The reference values for this material are given in the NIST Report of Investigation.