# MATERIAL SAFETY DATA SHEET

## 1. SUBSTANCE AND SOURCE IDENTIFICATION

**National Institute of Standards and Technology**
**Standard Reference Materials Program**
**100 Bureau Drive, Stop 2300**
**Gaithersburg, Maryland 20899-2300**

**RM Number: 8558**
**MSDS Number: 8558**
**RM Name: Light Stable Isotope Reference Materials**

**Date of Issue: 12 June 2012**

**Telephone: 301-975-2200**
**FAX: 301-948-3730**
**E-mail: SRMMSDS@nist.gov**

**Emergency Telephone ChemTrec:**
**1-800-424-9300 (North America)**
**+1-703-527-3887 (International)**

**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 8558 consists of one glass bottle containing 0.9 g of potassium nitrate.

**Substance:** Potassium nitrate.

**Other Designations:** Nitric acid potassium salt; salt peter; $KNO_3$.

## 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 sore throat, coughing, and shortness of breath. No data listed for chronic exposure.

**Skin Contact:** Acute exposure may cause 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. Reproductive effects have been reported in animals.

**Listed as a Carcinogen/Potential Carcinogen**

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

## 3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

| Component | CAS Number | EC Number (EINECS) | Nominal Mass Concentration (%) |
|---|---|---|---|
| Potassium nitrate | 7757-79-1 | 231-818-8 | 100 |

**EC Classification:** O

**EC Risk (R No.):** 8

**EC Safety (S No.):** Not listed.

**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 a large amount is swallowed, seek medical attention.

## 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.

**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 potassium 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:** Potassium nitrate

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

**Molecular/Chemical Formula:** $KNO_3$

**Molar Mass (g/mol):** 101.11

**Density (g/cm$^3$):** Not listed.

**Specific Gravity (water = 1):** 2.109 at 16 °C

**Decomposition (°C):** 400 (752 °F)

**Boiling point:** Not applicable.

**Melting Point (°C):** 334 (633.2 °F)

**Water Solubility:** 13.3 % at 0°C

**Solvent Solubility:** Soluble in liquid ammonia, glycerol.

**pH:** 7.0 in aqueous solution.

## 10. STABILITY AND REACTIVITY

**Stability:** X Stable _____ Unstable

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

**Incompatible Materials:** Combustible materials, acids, halogens, metal powders, metal salts, organic compounds, reducing agents.

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

**Hazardous Decomposition:** Oxides of nitrogen; oxides of potassium.

**Hazardous Polymerization:** _____ Will Occur X Will Not Occur

## 11. TOXICOLOGICAL INFORMATION

**Route of Entry:** X Inhalation X Skin X Ingestion

**Toxicity Data:**

Rat, Oral $LD_{50}$: 3015 mg/kg

**Irritation Data:** No irritation data listed.

**Tunorigenic/Mutagen:**

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

Tumorigenic: No data listed.

Mutagenic: 5 pph *Escherichia coli*.

**Reproductive Effects:**

RTECS publishes the following endpoints for reproductive effects:

22 g/kg Rat, Oral TDLo (pregnant 1-22 days).

15 g/kg Guinea pig, Oral TDLo (prior to copulation 24 weeks).

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

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

**Medical Conditions Aggravated by Exposure:** Not listed.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity Data:** No exotoxicity data available.

## 13. DISPOSAL CONSIDERATIONS

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

## 14. TRANSPORTATION INFORMATION

**U.S. DOT and IATA:** Potassium nitrate, Class 5.1, UN1486, 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: | Yes |
| 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

**EC Risk Phrases:**

R8 – Contact with combustible material may cause fire.

**EC Safety Phrases:** Not listed.

**NATIONAL INVENTORY STATUS**

**U.S. Inventory (TSCA):** Potassium nitrate is listed.

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

## 16. OTHER INFORMATION

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

European Chemical Substances Information System (ESIS), *Potassium nitrate* CAS No. 7757-79-1, available at http://esis.jrc.ec.europa.eu/, (accessed Jun 2012).