



## MATERIAL SAFETY DATA SHEET

### Potassium Nitrate

#### 1. Product Identification

**Synonyms:** Saltpeter; niter; Nitric acid, potassium salt

**CAS No.:** 7757-79-1

**Molecular Weight:** 101.11

**Chemical Formula:** KNO<sub>3</sub>

**Product Codes:** P212

#### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Potassium Nitrate	7757-79-1	99 - 100%	Yes

#### 3. Hazards Identification

##### EMERGENCY OVERVIEW

**DANGER!** STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

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Health Rating: 2 - Moderate

Flammability Rating: 0 - None

Reactivity Rating: 3 - Severe (Oxidizer)

Contact Rating: 2 - Moderate (Life)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

Storage Color Code: Yellow (Reactive)

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##### Potential Acute Health Effects:

Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation (lung irritant). Slightly hazardous in case of ingestion.

##### **Inhalation:**

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

##### **Ingestion:**

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. May cause gastroenteritis and abdominal pains. Purging and diuresis can be

expected. Rare cases of nitrates being converted to the more toxic nitrites have been reported, mostly with infants.

**Skin Contact:**

Causes irritation to skin. Symptoms include redness, itching, and pain.

**Eye Contact:**

Causes irritation, redness, and pain.

**Potential Chronic Health Effects:**

Under some circumstances methemoglobinemia occurs in individuals when the nitrate is converted by bacteria in the stomach to nitrite. Nausea, vomiting, dizziness, rapid heartbeat, irregular breathing, convulsions, coma, and death can occur should this conversion take place. Chronic exposure to nitrites may cause anemia and adverse effects to kidney.

CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure is not known to aggravate medical condition

**4. First Aid Measures**

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Serious Inhalation:**

Not available.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**Eye Contact:**

Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

**5. Fire Fighting Measures**

**Fire:**

Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustible may cause ignition.

**Explosion:**

Some nitrates may explode when shocked, exposed to heat or flame, or by spontaneous chemical reaction. Sealed containers may rupture when heated. Sensitive to mechanical impact.

**Special Remarks on Explosion Hazards:**

Not available.

**Fire Extinguishing Media:**

Dry chemical, carbon dioxide, Halon, water spray, or fog. If water is used, apply from as far a distance as possible. Water spray may be used to keep fire exposed containers cool. Do not allow water runoff to enter sewers or waterways.

**Products of Combustion:**

Not available.

**Fire Hazards in Presence of Various Substances:**

Not applicable.

**Special Information on Fire Hazards:**

When heated to decomposition it emits toxic fumes of sulfur oxides and potassium sulfate. It may ignite during milling or grinding (when powdering it).

**Fire Fighting Media and Instructions:**

Not applicable.

**Special Information:**

Wear full protective clothing and breathing equipment for high-intensity fire or potential explosion conditions. This oxidizing material can increase the flammability of adjacent combustible materials.

**6. Accidental Release Measures****Small Spill:**

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill:**

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

**7. Handling and Storage****Precautions:**

Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

**Storage:**

Keep container tightly closed. Keep container in a cool, well-ventilated area.

## 8. **Exposure Controls/Personal Protection**

### **Airborne Exposure Limits:**

None established.

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial

Ventilation, A Manual of Recommended Practices, most recent edition, for details.

### **Engineering Controls:**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

### **Personal Protection:**

Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

### **Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

### **Personal Respirators:**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### **Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

## 9. **Physical and Chemical Properties**

### **Appearance:**

White crystals.

### **Odor:**

Odorless.

### **Solubility:**

36 gm/100 ml water

### **Density:**

2.1

### **pH:**

ca. 7.

**% Volatiles by volume @ 21C (70F):**

0.

**Boiling Point:**

400C (752F).

**Melting Point:**

333C (631F).

**Vapor Density (Air=1):**

3.00.

**Vapor Pressure (mm Hg):**

Negligible @ 20C.

**Molecular Weight:**

222.31

**Evaporation Rate (BuAc=1):**

No information found.

## 10. **Stability and Reactivity**

**Stability:**

Stable under ordinary conditions of use and storage.

**Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

**Conditions of Instability:**

Incompatible materials, moisture, air.

**Incompatibilities:**

Heavy metals, phosphites, organic compounds, carbonaceous materials, strong acids, and many other substances.

**Hazardous Decomposition**

Oxides of nitrogen and toxic metal fumes may form when heated to decomposition.

**Special Remarks on Reactivity:**

Liberates sulfur dioxide in contact with acids. Air sensitive. Moisture sensitive. It oxidizes to in air to sulfate, more readily in presence of moisture.

**Corrosivity:**

Non-corrosive in presence of glass.

**Hazardous Polymerization:**

Will not occur.

## 11. **Toxicological Information**

**Routes of Entry:**

Inhalation. Ingestion.

**Toxicity to Animals:**

LD50: Not available. LC50: Not available.

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC.

**Other Toxic Effects on Humans:**

Hazardous in case of skin contact (irritant), of inhalation (lung irritant). Slightly hazardous in case of ingestion.

**Special Remarks on Chronic Effects on Humans:**

May cause adverse reproductive effects based on animal test data. May affect genetic material (mutagenic).

**Special Remarks on other Toxic Effects on Humans:**

**Acute Potential Health Effects:**

***Skin:***

May cause skin irritation.

***Eyes:***

May cause eye irritation.

***Inhalation:***

May cause respiratory tract irritation. May cause asthmatic attacks due to allergic sensitization of the respiratory tract.

***Ingestion:***

May cause gastrointestinal tract irritation with abdominal pain, nausea, vomiting and diarrhea. May cause allergic/hypersensitivity/ anaphylactoid reaction. Some asthmatics are said to be sensitive to minute amounts of sulfites in foods. It may cause a worsening of asthma in asthmatics. Individuals sensitive to sulfides may experience stomach upset, tightness in the chest, or wheezing. Extremely large concentrations may produce central nervous system, seizures, hypotension, tachycardia, and cardiovascular collapse.

**12. Ecological Information**

**Ecotoxicity:**

Not available

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:**

The product itself and its products of degradation are not toxic.

**13. Disposal Considerations**

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

**Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations

**14. Transport Information**

**DOT Classification:**

Not a DOT controlled material

**Identification:**

Not applicable.

**Special Provisions for Transport:**

Not available.

**Protective Equipment:**

Gloves (impervious). Synthetic apron. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

**15. Other Information**

**NFPA Ratings:** Health: **1** Flammability: **0** Reactivity: **0**

**Label Hazard Warning:**

DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**Label Precautions:**

Keep from contact with clothing and other combustible materials.

Store in a tightly closed container.

Do not store near combustible materials.

Remove and wash contaminated clothing promptly.

Avoid contact with eyes, skin and clothing.

Avoid breathing dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. If inhaled, remove to fresh air. Get medical attention for any breathing difficulty. In all cases call a physician.

**Product Use:**

Laboratory use.

**Revision Information:**

*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 the company 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 the company has been advised of the possibility of such damages.*



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