



LABORATORY CHEMICALS AND CONSUMABLES

# MATERIAL SAFETY DATA SHEET

## POTASSIUM NITRATE

### 1. Chemical Product and Company information.

**Product name:** Potassium Nitrate

**Contact Information:**

Radchem cc  
PO Box 166982  
Brackendowns  
Alberton 1454  
Telephone : **011 867 3726 / 2864**

### 2. Hazard Identification

Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation (lung irritant). Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation.

### 3. Composition / information on ingredients

**CAS #:** 7757-79-1

**Synonym:** Nitric Acid, potassium salt; saltpeter

**Chemical Name:** Potassium Nitrate

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

### 4. First Aid Measures

**Eye Contact:** Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

**Skin Contact:** In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Serious Skin Contact:** Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.



**Serious Inhalation:** Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

**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.

**Serious Ingestion:** Not available

## **5. Fire-fighting measures**

**Flammability of the Product:** Non-flammable.

**Fire Hazards in Presence of Various Substances:** Not applicable

**Explosion Hazards in Presence of Various Substances:** Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of shocks, of heat.

**Fire Fighting Media and Instructions:** Not applicable

**Special Remarks on Fire Hazards:** In contact with easily oxidizable substances, it may react rapidly enough to cause ignition, violent combustion, or explosion. It increases the flammability of any combustible substance. A mixture of potassium nitrate and calcium silicide is a readily ignited primer and burns at a very high temperature. Contact of the carbide with molten potassium nitrate causes incandescence. When heated to decomposition it emits very toxic fumes.

**Special Remarks on Explosion Hazards:** A mixture of potassium nitrate and antimony trisulphide explodes when heated. When copper phosphide is mixed with potassium nitrate and heated, it explodes. Mixture of germanium nitrate and potassium nitrate explodes when heated. A mixture of potassium nitrate, sulphur, arsenic trisulphide is known as a pyrotechnic formulation. When titanium is heated with potassium nitrate, an explosion occurs. A mixture of potassium nitrate and titanium disulfide explodes when heated. When potassium nitrate is mixed with boron, laminac, and trichloroethylene an explosion can occur. Powdered zinc and potassium explode if heated. Arsenic disulfide forms explosive mixtures when mixed with potassium nitrate. Charcoal (powdered carbon) and potassium nitrate make a pyrotechnic mixture. Contact at 290 C causes a vigorous combustion and the mixture explodes on heating. A mixture of potassium nitrate and sodium acetate may cause an explosion. A mixture of potassium nitrate and sodium hypophosphite constitutes a powerful explosive. Mixtures of potassium nitrate with sodium phosphinate and sodium thiosulfate are explosive.

## **6. Accidental release measures**

**Small Spill:** Use appropriate tools to put the spilled solid in a convenient waste disposal container.

**Large Spill:** Oxidizing material. Stop leak if without risk. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal.

## **7. Handling and storage**

**Precautions:** Keep away from heat. Keep away from sources of ignition. Keep away from combustible material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as reducing agents, combustible materials, organic materials, metals.

**Storage:** Hygroscopic. Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalise, reducing agents and combustibles. See NFPA 43A, Code for the Storage of Liquid and Solid Oxidizers.



## **8. Exposure controls/personal protection**

**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.

## **9. Physical and chemical properties**

**Physical state and appearance:** Solid (Crystalline solid, Granular solid)

**Odour:** Odourless

**Taste:** Cooling, Saline, Pungent.

**Colour:** White

**Boiling Point:** Decomposition temperature: 400°C

**Melting Point:** 334°C

**Critical Temperature:** Not available

**Specific Gravity:** 2.109 (Water = 1) @ 16 degrees C

**Vapour Density:** Not available

**Volatility:** Not available

**Odour Threshold:** Not available

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water.

**Solubility:** Easily soluble in hot water. Soluble in cold water. Insoluble in diethyl ether. Soluble in liquid ammonia, glycerine, and absolute alcohol. Solubility in water: 1g/2.8 ml water @ 25 C.; 13.3 g/100 ml water @ 0 C; 1g/0.5 ml boiling water.

## **10. Stability and reactivity**

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Incompatible materials, dust generation

**Incompatibility with various substances:** Reactive with reducing agents, combustible materials, organic materials, metals.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:** Hygroscopic; keep container tightly closed. Potassium nitrate reacts vigorously when heated with sulphides of the alkaline earth group including barium sulphide and calcium sulphide. Also incompatible with boron, and finely powdered metals, chromium nitride, aluminium, titanium, antimony, germanium, zinc, zirconium, calcium disilicide, metal sulphides, carbon, sulphur, phosphorus, phosphides, sodium phosphinate, sodium thiosulfate, citric acid, tin chloride, sodium acetate, thrium carbide.

**Special Remarks on Corrosivity:** Not available

**Polymerization:** Will not occur.

## **11. Toxicological information**

**Routes of Entry:** Inhalation. Ingestion

**Toxicity to Animals:** Acute oral toxicity (LD50): 1901 mg/kg [Rabbit].

**Chronic Effects on Humans:** May cause damage to the following organs: blood, kidneys, central nervous



system (CNS).

**Other Toxic Effects on Humans:** Hazardous in case of skin contact (irritant), of ingestion, of inhalation (lung irritant).

**Special Remarks on Toxicity to Animals:** Not available

**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: Causes skin irritation. Eyes: Causes eye irritation Inhalation: Breathing Potassium Nitrate can irritate the nose and throat causing sneezing and coughing. High levels can interfere with the ability of the blood to carry oxygen causing headache, dizziness and a blue colour to the skin and lips (methemoglobinemia), and other symptoms of methemoglobinemia (see other symptoms under ingestion). Higher levels can cause trouble breathing, circulatory collapse and even death. Ingestion: Ingestion of large quantities may cause violent gastroenteritis with nausea, vomiting, and severe abdominal pain. It may also cause colic and diarrhoea. Acute toxicity of nitrate occurs as a result of reduction to nitrite. The nitrite acts in the blood to oxidize haemoglobin to methemoglobin which does not perform as an oxygen carrier to tissues causing Methemoglobinemia. Symptoms may include vertigo, muscular weakness, syncope, irregular pulse, convulsions, anoxia, coma, fall in blood pressure, roaring sound in the ears, a persistent throbbing headache, generalized tingling sensation, heart palpitations, visual disturbances caused by increased intraocular tension and intracranial pressure, flushed and perspiring skin, which is later cold and cyanotic. Circulatory collapse and death may occur. Chronic Potential Health Effects: Ingestion and Inhalation: Repeated or prolonged exposure to small amounts may affect the blood, respiration and kidneys and produce anemia, Methemoglobinemia with attendant cyanosis and anoxia, hyperpnea and later dyspnea, and nephritis.

## **12. Ecological information**

**Ecotoxicity:** Not available

**BOD5 and COD:** 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 products of degradation are less toxic than the product itself.

**Special Remarks on the Products of Biodegradation:** Not available

## **13. Disposal considerations**

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

## **14. Transport information**

**DOT Classification:** CLASS 5.1: Oxidizing material

**Identification:** : Potassium nitrate : UN1486 PG: III

**Special Provisions for Transport:** Not available

*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 Radchem CC. 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 Radchem CC has been advised of the possibility of such damages.*

