

Material Safety Data Sheet / Safety Data sheet

Potassium Nitrate

Section 1: Chemical Product Identifier and Synonyms

Product Name: Potassium Nitrate

UN Number: 1486

CAS Number: 7757-79-1

Synonym: Saltpetre

Chemical Formula: KNO₃

Section 2: Composition and Information on Ingredients

Composition

Name	CAS Number:	% By Weight
Potassium Nitrate	7757-79-1	>100%

Toxicology Data On Ingredients: Potassium Nitrate LD50: Not Available. LC50: Not Available

Section 3: Hazards Identification

Potential Acute Health Effects:

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.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 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.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get 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.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire 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.

Explosion Hazards in Presence of Various Substances: Not available.

Risks of explosion of the product in presence of mechanical impact: Not available.

Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: In contact with easily oxidisable 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 disulphide 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 disulphide 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.

Section 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; dyke if needed. Call for assistance on disposal.

Section 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, alkalis, reducing agents and combustibles. See NFPA 43A, Code for the Storage of Liquid and Solid Oxidizers.

Section 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

Exposure Limits:

Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Crystalline Solid.)

Odour: Odourless.

Taste: Cooling, Saline. Pungent.

Molecular Weight: Not available.

Colour: White.

pH (1% soln/water): Not available.

Boiling Point: Decomposition temperature: 400°C (752°F)

Melting Point: 334°C (633.2°F)

Critical Temperature: Not available.

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

Vapour Pressure: Not available.

Vapour Density: Not available.

Volatility: Not available.

Odour Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Easily soluble in hot water. Soluble in cold water. Insoluble in diethyl ether. Soluble in liquid ammonia, glycerin, 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.

Section 10: Stability and Reactivity Data

Stability: The product is stable under normal conditions.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, dust generation

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

Special Remarks on Reactivity: Non-corrosive in presence of glass.

Special Remarks on Corrosivity: 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, thorium carbide.

Polymerization: Will not occur.

Section 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, severe abdominal pain. It may also cause colic and diarrhea. 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 anaemia, Methemoglobinemia with attendant cyanosis and anoxia, hyperpnoea and later dyspnoea, and nephritis.

Section 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 as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Information

Waste Disposal: Dispose of in accordance with local regulations

Section 14: Transport Information

DOT Classification: CLASS 5.1: Oxidizing material.

Identification: Potassium nitrate : UN1486 PG: III

Special Provisions for Transport: Not available.

Section 15: Regulatory Information

Regulations: Labelling according to Regulation (EC) No 1272/2008.

Section 16: Other Information

The information supplied in this Safety Data Sheet is designed only as guidance for the safe use, storage and handling of the product. This information is correct to the best of our knowledge and belief at the date of publication however no guarantee is made to its accuracy. This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials. The author will not be held liable for any damage or injury caused by this product and does not obviate the requirement for end users to carry out their own workplace and specific use risk assessment.

Date of Publication: 18th May 2017