

School Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8855



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POTASSIUM NITRATE

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SECTION 1. INTRODUCTORY INFORMATION

MATERIAL NAME AND FORMULA: POTASSIUM NITRATE; KNO_3

SYNONYMS: Niter; Saltpeter; Nitric Acid, Potassium Salt; Nitre

CAS. NUMBER: 7757-79-1

INGREDIENTS: Potassium Nitrate, >99%

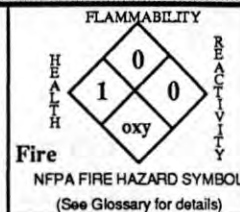
DOT CLASSIFICATION: Oxidizer (UN 1486).

EPA CLASSIFICATION: Hazardous Waste (D001)

MANUFACTURERS: Always request Material Safety Data Sheets from your chemical supplier. These should indicate the manufacturer of the substance and include an emergency phone number to call. The Manufacturers section of this book contains a listing of some of the larger manufacturers and available emergency numbers.

DESCRIPTION: Potassium nitrate is available as a transparent, colorless, or white crystalline powder or granules. The substance is slightly hygroscopic. It has no odor and a pungent, saline taste. (DO NOT TASTE IT!)

PRELIMINARY INFORMATION: Potassium nitrate is a strong oxidizer. Violent reactions, including fire and/or explosion, are possible when this material is in contact with or heated with a variety of materials (see sect. 2). This chemical is used for a number of commercial purposes and is a chemical reagent with a variety of applications in a chemistry lab.



Nonfire: 0, 0, 0, oxy

SECTION 2. USE AND STORAGE INFORMATION

— PRELIMINARY PLANNING CONSIDERATIONS —

- Safety glasses or goggles and protective clothing (rubberized apron, etc.) should be worn for all experiments.
- Be sure eyewash station and safety shower are in good working order and readily available.
- Always provide for safe disposal of all chemical waste generated in the lab. Check applicable regulations prior to use.
- Provide adequate ventilation. Eliminate sources of ignition.
- Rubber gloves are recommended when working with this material to minimize skin contact.

— USAGE PRECAUTIONS AND PROCEDURES —

- READ THE LABEL and follow all precautions.
- Maintain good housekeeping practices to avoid unintentional mixing with incompatible materials. Clean up spilled material promptly.
- For safety, contact lenses should not be worn in the laboratory; soft lenses may absorb irritants and all lenses may concentrate them. Particles can also adhere to contact lenses and cause corneal damage.
- After working with this material, always wash hands and face before eating, drinking, or smoking. No smoking in storage or use area.
- Keep away from combustibles and sources of heat or ignition. Avoid creating airborne dust conditions.
- Remove contaminated clothing and launder before reuse. Clothing contaminated with potassium nitrate dust or solution can become highly flammable.
- Prevent this material from contacting eyes, skin, or clothing. Do not inhale dust or solution mists of KNO_3 . Do not eat this chemical!
- Keep this material away from notebooks, textbooks, or personal belongings to avoid contamination or removal from lab.
- Potassium nitrate may be an explosion or fire risk due to shock as well as heating with incompatibles.

— ADDITIONAL INFORMATION —

- Potassium nitrate does not polymerize. It is stable at room temperature under normal conditions.
- Violent reactions (including fire and explosion) may occur on its contact with organic materials, combustible materials, and reducing agents. Specific incompatibilities under various conditions include aluminum, titanium, antimony, zinc, zirconium (and other metals), calcium disilicide, chromium nitride, metal sulfides, boron, carbon, sulfur, phosphorus, sodium thiosulfate, citric acid, tin chloride, and sodium acetate.

— PREFERRED STORAGE LOCATION AND METHODS —

- Storage area should be cool and well ventilated. Containers should be tightly closed. Potassium nitrate is slightly hygroscopic.
- Do not store chemicals alphabetically by name; store by chemical family instead to keep compatibles together.
- All chemical containers should be protected from physical damage and kept out of direct sunlight.
- Smoking should not be permitted in areas where chemicals are stored. Purchase only amounts equivalent to one year's needs.
- Store with compatible materials on sturdy shelving. Keep away from combustibles and other incompatibles. Do not store this material on wood floors.

SECTION 3. SPILLS AND DISPOSAL PROCEDURES

IF MATERIAL IS SPILLED:

- Ventilate area of spill. Prevent spilled material from making contact with combustible or incompatible material. Eliminate all possible sources of ignition.
- Cleanup personnel should wear personal protective equipment as necessary to prevent skin or eye contact and inhalation of dust or solution mist. For liquid (solution) spills, cover material with an inert solid absorbent (vermiculite, dry sand, etc.) and scoop into an appropriate container (with secure lid) for disposal in accordance with existing regulations. Dike with inert absorbent material, as needed, to contain and limit spill area.
- Sweep, vacuum, or scoop up spilled solid, avoiding generation of dust. Place in a suitable container (with secure lid) for later disposal. Pick up residues completely to avoid possible future fire hazard from this oxidizer.

DISPOSAL OF SMALL QUANTITIES:

- Potassium nitrate may require treatment with soda ash in solution prior to disposal. Follow applicable regulations.
- This is a hazardous waste material. Contact your supplier or a licensed disposal contractor for specific treatment/disposal procedures.

DISPOSAL OF LARGER AMOUNTS: Contact a licensed disposal company.

FOLLOW ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS FOR ALL WASTE DISPOSAL

SECTION 4: HEALTH HAZARDS

Potassium nitrate has not been identified as a known or suspected carcinogen by the NTP, IARC, or OSHA.

- No TLV established.
- Rat, Oral, LD₅₀: 3750 mg/kg
- Rabbit, Oral, LD₅₀: 1901 mg/kg
- Inhalation of excessive amounts of potassium nitrate may be irritating to the nose, throat, and respiratory tract.
- Prolonged exposure may cause anemia, kidney injury (nephritis), and methemoglobinemia (the presence of methemoglobin, a soluble brown crystalline blood pigment that differs from hemoglobin in that it contains ferric iron and is unable to combine reversibly with molecular oxygen).
- Ingestion can cause severe gastrointestinal distress with abdominal pain, nausea, vomiting, and diarrhea.
- Eye contact may cause irritation.

SECTION 5: FIRST AID PROCEDURES**Eye contact:**

- Flush eyes promptly with a gentle flow of running water for at least 15 minutes, including under the eyelids.

Skin contact:

- Wash exposed areas of skin with soap and water. Prevent further contact.
- Remove contaminated clothing promptly. (Potential fire hazard when dry.)
- Get medical attention if irritation occurs.*

Inhalation:

- Remove victim to fresh air; restore and/or support breathing as necessary. Get prompt medical attention.*

Ingestion:

- Get prompt medical attention.*
- Give several glasses of water to drink. Induce vomiting -- but ONLY if victim is conscious and alert. Keep victim warm and at rest.
- Never give anything by mouth to a person who is unconscious or convulsing.

* Get medical help (in school, paramedic, or community) for further treatment, observation, and support after first aid.

SECTION 6: FIRE PROCEDURES AND DATA

- KNO₃ is not combustible. However, it is a strong oxidizer that can irritate and intensify combustion of flammable materials. If possible to do safely, remove containers of this material from the fire area.
- Extinguishing media: Flood fires involving potassium nitrate with large quantities of water.
- At high temperatures this substance can fuse or melt; application of water to molten material can result in dangerous spattering of this material.
- For major fires, or if large quantities of this material are involved, fire fighters should wear appropriate protective clothing and use respiratory protection. Self-contained breathing apparatus is recommended.
- A water spray may be used to cool fire-exposed containers and disperse vapors.

THERMAL DECOMPOSITION PRODUCTS: Oxygen and toxic oxides of nitrogen (above 752°F [400°C]).

FLASH POINT AND METHOD(S) ... Not Found

AUTOIGNITION TEMPERATURE ... Not Found

FLAMMABILITY LIMITS IN AIR (vol. %) : Not Found

SECTION 7: PHYSICAL DATA

BOILING POINT (@ 1 atm) ... 752°F (400°C) (Decomposes)

VAPOR PRESSURE (@ 20°C, mm Hg) ... Negligible

SOLUBILITY IN WATER (@ 0°C) ... 13.3 g/100 cc (247 g/100 cc @ 100°C)

pH OF AQUEOUS SOLUTION (5%) (@ 25°C) ... 4.5 to 7.0

SPECIFIC GRAVITY (@ 16°C) ... 2.11

MELTING POINT ... 633°F (334°C)

FORMULA WEIGHT ... 101.1

% VOLATILE ... 0

DATA SOURCES: Genium's Industrial MSDS #205 (7/86) and references 4-7, 9, 25, 49, 58, 77, 82, 506, 509-11.
(see glossary for titles)

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Approvals:

Author

Indust. Hygiene/Safety

Medical Review

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