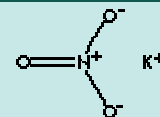


POTASSIUM NITRATE

PRODUCT IDENTIFICATION

CAS NO.	7757-79-1
EINECS NO.	231-818-8
FORMULA	KNO ₃
MOL WT.	101.1
H.S. CODE	2834.21
TOXICITY	Oral rat LD50: 3750 mg/kg
SYNONYMS	Nitre; Nitric Acid Potassium Salt; Saltpeter; Vicknite; Kalii Nitras; Kaliumnitrat (German); Niter; Nitrate Of Potash; Kaliumnitrat (Dutch); Nitrato de potasio (Spanish); Nitrate de potassium (French);



DERIVATION

CLASSIFICATION

GENERAL DESCRIPTION

Potassium Nitrate (KNO₃) is a colorless transparent crystal or white powder. It is soluble in hot water but slightly soluble in cold water. It releases oxygen, when it decomposes on heating. It is a strong oxidizer which burns and explodes with organics. Potassium nitrate is prepared commercially by the reaction of potassium chloride with sodium nitrate. It is used in the manufacture of gunpowder. It is also used in explosives, fireworks, matches, and fertilizers, and as a preservative in foods especially meats. It is sometimes used in medicine as a diuretic. Potassium nitrate pill type is mainly used to produce kinescope, optics glass, high grade craft glassware

PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	odorless white crystals
MELTING POINT	334 C
BOILING POINT	(Decomposes at 400 C)
SPECIFIC GRAVITY	2.11
SOLUBILITY IN WATER	soluble
pH	
VAPOR DENSITY	3.0
AUTOIGNITION	
NFPA RATINGS	Health: 2; Flammability: 0; Reactivity: 0 Special Hazard: OX
REFRACTIVE INDEX	
FLASH POINT	Not combustible, but substance is a strong oxidizer
STABILITY	Stable under ordinary conditions

APPLICATIONS

Glass, Explosives, Pyrotechnics, Matches, Fertilizers, Metal Heat Treatment and Heat Transfer, Ceramics, Oxidizer, Petrochemicals, Toothpaste, Denitrifies, eat Curing, Cheese, rocket propellants

SALES SPECIFICATION

APPEARANCE	white powder
ASSAY (as KNO ₃)	99.5% min
POTASSIUM OXIDE (as K ₂ O)	46.0% min
NITROGEN	13.0% min
MOISTURE	0.1% max
WATER INSOLUBLES	0.02% max
SULPHATE (as SO ₄)	0.01% max
CHLORIDE (as Cl)	0.03% max

IRON(as Fe)	0.002% max
NITRITES	0.01% max
HEAVY METAL (as Pb)	0.001% max
PARTICLE SIZE	100% -20 mesh, 95% +200 mesh
TRANSPORTATION	
PACKING	25kgs, 50kgs, 1mt in Bag
HAZARD CLASS	5.1 (Packing Group: III)
UN NO.	1486

GENERAL DESCRIPTION OF NITRIC ACID & ITS SALTS

Nitric Acid is a colourless, highly corrosive, poisonous liquid (freezing point : -42° C, boiling point: 83° C) that will react with water or steam to produce heat and toxic, corrosive, and flammable vapors. It is toxic and can cause severe burns. It is an important industrial chemical for the manufacture of fertilizers, dyes, drugs, plastics, and explosives. Nitric acid is prepared commercially by the two-stage oxidation of ammonia (Ostwald process) to nitrogen dioxide. Ammonia gas is successively oxidized to nitric oxide and nitrogen dioxide by air or oxygen in the presence of a platinum gauze catalyst, which is then absorbed in water to form nitric acid. The resulting acid-in-water solution (about 50-78% by weight acid) can be dehydrated by distillation with sulfuric acid. It is miscible with water in all proportions. The nitric acid of commerce is typically a solution of 52% to 68% nitric acid in water. More concentrated solutions are available. It forms an azeotrope that has the composition 68% nitric acid and 32% water and that boils at 120.5°C. Solutions containing over 86% nitric acid are commonly called fuming nitric acid; they often have a reddish-brown color from dissolved nitrogen oxides. In aqueous solution it is both a strong acid and a powerful oxidizing agent. Among the many important reactions of nitric acid are: neutralization with ammonia to form ammonium nitrate, used widely in fertilizers and explosives; nitration of glycerol and toluene, forming the explosives nitroglycerin and trinitrotoluene, respectively; preparation of nitrocellulose; and oxidation of metals to the corresponding oxides or nitrates.

Many compounds are oxidized by nitric acid. Nonmetallic elements such as carbon, iodine, phosphorus and sulfur are oxidized by concentrated nitric acid to their oxides or oxyacids with the formation of NO₂. Hydrochloric acid, aqueous HCl, is readily oxidized by concentrated nitric acid to chlorine and chlorine dioxide. The action of nitric acid on a metal usually results in reduction of the acid (*i.e.*, a decrease in the oxidation state of the nitrogen). The products of the reaction are determined by the concentration of nitric acid, the metal involved (*i.e.*, its reactivity), and the temperature. In most cases, a mixture of nitrogen oxides, nitrates, and other reduction products is formed. Relatively unreactive metals such as copper, silver, and lead reduce concentrated nitric acid primarily to NO₂. The reaction of dilute nitric acid with copper produces NO, while more reactive metals, such as zinc and iron, react with dilute nitric acid to yield N₂O. When extremely dilute nitric acid is used, either nitrogen gas or the ammonium ion (NH₄⁺) may be formed. Nitrates, which are salts or esters of nitric acid contains NO₃⁻ (nitrate ion), are formed by replacing the hydrogen with a metal (e.g., sodium or potassium) or a radical (e.g., ammonium or ethyl). Some important inorganic nitrates are potassium nitrate (used in explosives, fireworks, matches, and fertilizers, and as a preservative in foods. It is sometimes used in medicine as a diuretic.), sodium nitrate (used in making potassium nitrate, fertilizers, and explosives.), silver nitrate (used in the preparation of silver salts for photography, in chemical analysis, in silver plating, in inks and hair dyes, and to silver mirrors.), and ammonium nitrate (Major uses are in fertilizers and explosives). Calcium nitrate is used in fertilizers; barium and strontium nitrates are used to color fireworks and signal flares; bismuth nitrate is used in making pharmaceuticals. Most nitrates are soluble in water, and a major use of nitric acid is to produce soluble metal nitrates. All nitrates decompose when heated and may do so explosively. The presence of nitrates in the soil is of great importance, since it is from these compounds that plants obtain the nitrogen necessary for their growth. Organic nitrates are esters formed by reaction of nitric acid with the hydroxyl (-OH) group in an alcohol. Nitrocellulose (or cellulose nitrate) is a highly flammable compound formed when cellulose

materials are treated with concentrated nitric acid. The extent of the reaction between the cotton and acid can be varied to give a range of compounds, from the highly explosive gun-cotton to the flammable collodion cotton or pyroxilin. These are now used worldwide as propellants in cartridges and other ammunition. Collodion cotton and other less reactive forms of nitrocellulose are used chiefly in lacquers. They also form the basis of one of the earliest plastics, celluloid, made by the action on nitrocellulose of a solution of camphor in ethanol. Guncotton, fully nitrated cellulose, is used for explosives. Nitroglycerin is the nitric acid triester of glycerol and is more correctly called glycerol trinitrate. It is mixed with an absorbent material to form dynamite and is also used as a component of smokeless powder. Guncotton, fully nitrated cellulose is used for explosives.