



**PRODUCT INFO  
& DATASHEET**

**SICO®-SOLNOP POTASSIUM NITRATE**  
*water soluble crystalline NK 13.7-0-46.3 fertiliser – Topquality*  
**Compound solid inorganic macronutrient fertilizer**  
**(IMO 5.1 – UN 1486)**

01/2023

**1/ CERTIFICATE OF ANALYSIS**

**\* GENERAL DESCRIPTION**

CHEMICAL FORMULA	KNO <sub>3</sub>
CAS No	7757-79-1
APPEARANCE	white crystals

**\* CHEMICAL SPECIFICATIONS**

**(declared content)**

PURITY		%	99	
TOTAL NITROGEN	N	%	<b>13.7</b>	
Nitric Nitrogen	N-NO <sub>3</sub>	%	<b>13.7</b>	
POTASSIUM	K <sub>2</sub> O	%	<b>46.3</b>	
LOW IN CHLORIDE	Cl	%	0.2	max.

**\* PHYSICAL PROPERTIES (typical)**

pH	5% in dist. water	pH	8-10
SOLUBILITY	in water at 20° C	g/100 cm <sup>3</sup>	~ 30
DENSITY	bulk	m <sup>3</sup>	~ 1.14 (metric)/m <sup>3</sup>
ANGLE OF REPOSE		°	34
ELECTRICAL CONDUCTIVITY	solutions at 20 °C	mS/cm	1.3
SPECIFIC GRAVITY			2.11
GRANULOMETRY	powder, 99% of the product passes through sieve of 1 mm		

**2/ SALES RATIONALE & ADVANTAGES OF POTASSIUM NITRATE AS A FERTILISER**

**Main advantages of potassium nitrate are :**

**- It supplies potassium virtually free of chlorine**

*An abundance of chlorine can decrease yields and deteriorate quality of many crops. This makes the difference with respect to potassium chloride, which contains 47 % of chlorine and is the most used potassium fertiliser because of its lower price. Potassium nitrate is virtually free of chlorine.*

**- It has a high and complete water solubility**

*It is very suitable to be applied in solution. Its solubility is much higher than that of potassium sulphate, which is also a chlorine free potassium source. It is fully water soluble and will not cause clogging of nozzles or pipes.*

**- The chemical composition of potassium nitrate does not include unnecessary elements**

*Potassium and nitrate nitrogen can be completely absorbed by plants, leaving no residues that may result in salt accumulation in the soil or other growing media.*

**- All its nitrogen is in the nitrate form**

*The nitrate form does not need to be transformed in the soil, and is immediately available for plant uptake, even in cold, wet, acid or fumigated soils and even under semi-dry weather conditions. Nitrate tends to promote the uptake of potassium, magnesium and calcium and to depress that of chloride while ammonium has the opposite effect.*

**Potassium Nitrate is virtually free of chlorine:**

Chlorine is an essential plant micronutrient, meaning plants require it in very small amounts.

As chlorine is an abundant element in nature, its deficiency in crops is very uncommon. High chlorine levels, on the other hand, are detrimental to yield and quality of crops, particularly to those that are more sensitive to this element.

Harmful amounts of chlorine in crops can result from a high supply of the element by fertilizers, soils, irrigation waters and some pesticides. Animal manure and organic materials also add with some chloride and salts to the soils.

The only consistent or general symptom of excess chlorine is reduced leaf size and slower growth rate, without leaf symptoms. In some plants symptoms occur including burning and firing of leaf tips or margins, bronzing, premature yellowing and absent on of leaves, and less frequently, chlorosis.

**Situations when non-chloride fertilizers are preferred:**

**\* Chlorine sensitive crops**

Most fruit and vegetable crops, as well as beans and peas are sensitive to high chlorine levels. An excess of chlorine in tobacco leaves decreases burn rate, making it useless for smoking purposes.

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Potato storage resistance is also harmed by excess of chlorine.

Fruit and vegetable crops as well as tobacco are high value agricultural products and their prices strongly depend on quality.

**\* High potassium fertilizer rates**

Adequate potassium nutrition is essential to obtain optimum quality and maximum yield of crops. Since plants extract potassium in large amounts, in many cases considerable quantities of potassium need to be applied as fertilisers. If potassium chloride is used, a correspondingly large amount of chlorine is added to the soil. For example a rate of 180 kg/ha of K<sub>2</sub>O can be applied as 300 kg/ha of potassium chloride or as 400 kg/ha of potassium nitrate. In the first case, 140 kg/ha of chlorine, which is a very large amount of this element, will be supplied in addition to potassium. In the case of potassium nitrate 52 kg/ha of nitrogen will be added instead, with less than 4 kg/ha of chlorine.

**\* Intensive cropping**

In some regions intensive cropping systems are practiced. Sometimes high value crops such as vegetables and flowers are grown in very intensive, "forced" conditions, like in greenhouses or under plastic covers. In these cases yields are very high, demanding large fertilization rates especially with nitrogen and potassium. Under these conditions potassium nitrate is an ideal fertiliser, supplying enough nutrients without adding unduly amounts of chlorine and salts.

**\* High Chlorine soils and irrigation waters**

Chlorine is normally present in soils as well as in irrigation waters. In some regions, mainly under arid and semi-arid conditions, the soil and/or irrigation water may contribute with significant amounts of chlorine.

**\* Potassium Nitrate is highly water soluble**

The solubility of potassium nitrate in water is higher than that of potassium sulphate, and increases markedly with temperature.

This high solubility of potassium nitrate makes it a very suitable fertiliser for application in irrigation water (fertigation).

In addition, because potassium nitrate is virtually free of chlorine, as well as of unnecessary elements and insoluble matters, it is a very adequate fertiliser for use in foliar feeding.

**Potassium Nitrate supplies immediately available Nitrogen.** Potassium nitrate provides quick acting nitrogen because all of it is in the nitrate form. Nitrate nitrogen can be directly absorbed by the plant roots without any soil bacterial action having to take place. In addition, it travels through the soil more easily than the ammonium form of nitrogen. The time of nitrogen availability to plants is better controlled using nitrate nitrogen.

**3/ USE OF POTASSIUM NITRATE**

- Use**
- Direct application to soil- Bulk blending
  - Granulation of fertilisers
  - Fertigation (irrigation water)
  - Liquid fertiliser solutions
  - Foliar feeding

**Instructions for use**

Dose according to the crop's nutrition requirements and agronomic conditions. Typical application rates range from 0.1-1 g/L drip solution for fertigation; 1-3 kg/100L spray solution for foliar application. These product application rates are recommendations. We recommend farmers to seek counsel from their adviser to adjust the recommendations to their particular situation and to avoid over-fertilisation. Contact your distributor or local agronomist for more specific recommendations.

**Direct Application**

Potassium nitrate can be directly applied to the soil. In annual crops, because of its potassium content, is usually used in the base fertilisation at seeding or transplanting time. Because of its wide N:K<sub>2</sub>O ratio of 1:3.5 potassium nitrate can be applied in combination with a phosphate fertiliser, later on more nitrogen can be supplied in one or more applications. Examples of application rates for several crops are given in below table. These rates are just a reference since actual application rates will vary according to conditions at each case.

In some cases as in sandy soils, potassium nitrate is applied also after seeding time as a top or side dressing, to boost early plant growth with readily available nitrogen. In perennial crops it is used in one or more applications as needed.

<u>Crops</u>	<u>Rate of application</u>			
	<u>kg/ha</u>			
	KN <sub>3</sub>	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
Citrus	450	60	0	200
Apples	400	52	0	176
Vineyards	300	39	0	132
Tobacco Virginia	300	39	0	132
Tobacco Burley/dark	550	72	0	242
Cotton	250	33	0	110
Tomato	350	46	0	154
Melons	300	39	0	132
Cabbage	350	46	0	154

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### **Bulk Blends**

Potassium nitrate can be physically mixed with other granular fertilisers in special plants. Bulk blends allow production of a wide variety of NPK and NK formulations according to specific farmer's needs. Use of bulk blends by farmers is growing in many countries.

### **Granulation**

Potassium nitrate can be ammoniated or mixed with other fertiliser materials by means of industrial processes. The objective is to obtain a granular product with all the granules having the same composition (complex fertiliser).

### **Liquid Fertiliser Solutions**

Potassium nitrate can be used as a component of liquid fertilisers or suspension fertilisers, manufactured by some industries.

### **Fertigation**

Potassium nitrate is an ideal fertiliser to apply through the irrigation water. Drip irrigation and sprinkler irrigation systems are especially well adapted to apply potassium nitrate.

The dissolving process of potassium nitrate lowers the temperature of the resulting solution ("endothermic reaction"), which influences its solubility. For practical purposes, to prepare a mother solution of potassium nitrate, its solubility is generally assumed to be of 130 grams/litre. In case of drip irrigation, the final concentration of potassium nitrate emitted to the soil is usually of 0.25 to 0.5 grams/litre, depending on crop requirements. Concentrations in excess may increase the electrical conductivity and pH of the solution to undesirable levels. Lower concentrations should be used when the water contains significant amounts of dissolved salts.

### **Foliar Fertilisation**

One or several sprays of potassium nitrate dissolved in water can be applied to obtain a rapid improvement of crop nutrition. Potassium nitrate is compatible with a wide range of agrochemicals. Concentrations of potassium nitrate in the solution vary according to plant species and are more concentrated when small volume sprays are applied. In general, 2-5% (kg of  $K_2O$ /100 l of water) can be used for citrus, olives, pineapples and cotton; 1-3 % for vegetables and mango and 0.5-1.0 % for deciduous trees and grapes. Aerial applications can be more concentrated because less water volume is used.

### **4/ PACKING**

in 25 kg IMO approved laminated pp bags, about 27 MT/20ft (without pallets) or 24 MT/20ft if on pallets.

### **5/ STORAGE**

Shelf life: min. 2 years, if stored properly: dry, away from direct sunlight in well ventilated warehouse.

Storage conditions: Keep only in the original container. Store in dry, well-ventilated area. Protect from sunlight. Keep container closed when not in use. Keep away from incompatible materials (reducing agents, flammable materials, combustible materials. Keep away from children. Do not eat, drink nor smoke during its use.

### **6/ WARNING: GHS Regulation**

May intensify fire; oxidiser.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Keep away from clothing and other combustible materials.

Wear protective gloves/protective clothing/eye protection/face protection.

In case of fire: use any suitable mean for extinguishing surrounding fire. Spray water for small fires. For large fires flood with abundant water.

Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

### **7/ GENERAL INFORMATION: FOR PROFESSIONAL USE ONLY.**

Before using this product, please read the product specifications, the material safety data sheet and any other product literature. The conditions of your use and application of our products, technical assistance and information (whether verbal, written, or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. Such application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety and environmental standpoints. It is also not recommended that the product be used for any described purpose without verifications by the user of compliance with all applicable laws, regulations and registration requirements. No warranty is made as to the accuracy of any data or statements contained herein other than the chemical specifications guaranteed in the Product Data Sheet. While this product is furnished in good faith, this product is provided to you without any representation or warranty, expressed or implied, as to condition, utility merchantability completeness, suitability or fitness for any particular purpose or use or any other matter or thing whatsoever and without recourse against SAP International Corp. in any event. Without limiting the generality of the foregoing, SAP International Corp. specifically disclaims any responsibility or liability relating to the use of this product and shall not in any event, be liable for any special, incidental or consequential damages arising from such use.