



# **STRONG MINERALS**

**Mineral fertilizers of  
K+S Minerals and Agriculture**



**K+S**





## **K+S Minerals and Agriculture - Crude salts turned into high-grade plant nutrients**

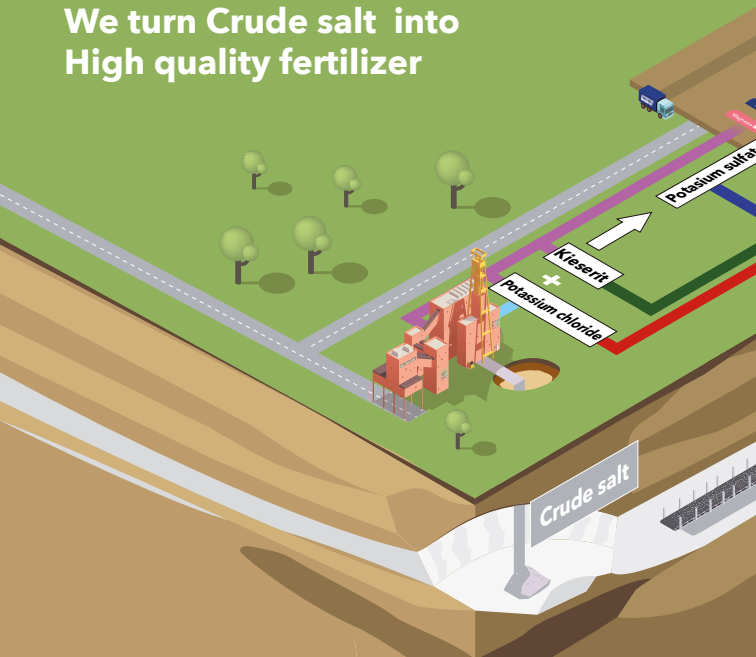
K+S extracts valuable underground potassium and magnesium salts by mining to process them into various products including mineral fertilizers, pharmaceutical salts, table salts, animal feeds or industrial products.

With more than 125 years of company history, K+S is the world's most experienced potash producer and refiner. In addition to kieserite and other magnesium compounds, our unique deposits supply a range of valuable natural resources in the form of potassic minerals such as sylvine and carnallite. This enables us to produce essential plant nutrients including potassium, magnesium and sulphur in a single step and to turn them into outstanding mineral fertilizers. Our highly varied product range is unique in the world.

This brochure provides an overview of our product range, covering products for soil fertilization, foliar fertilization or fertigation purposes.

For more information about our products, please contact our regional consultants or call our specialists at our headquarters.

## We turn Crude salt into High quality fertilizer

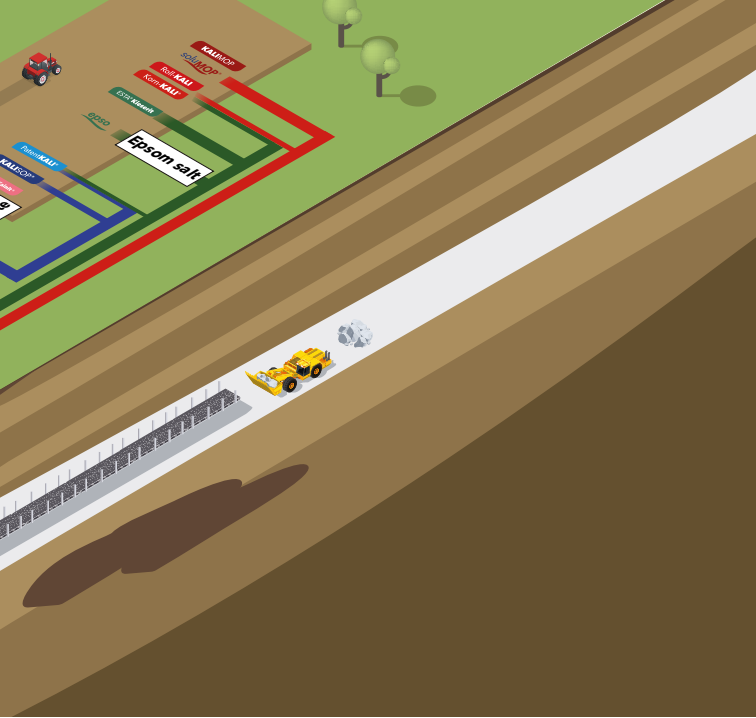


## The fascination of mining - our potash deposits

The formation of potash deposits in Germany occurred about 250 million years ago because of the evaporation of the Zechstein Sea. Today, the shallow, seam-like potash deposits with thicknesses of about 3 - 8 meters are located at depths of between 500 and 2500 meters. Our mining operations extend down to depths of than 1000 meters.

You will find our modern K+S mines in Saxony-Anhalt as well as in the Werra-Fulda district of Hesse and Thuringia. We extract potash crude salts and refine them into products used in agriculture, industry, health, and nutrition. Yet we do not only produce in Germany. In 2017, the Bethune potash plant built by K+S started production in Canada, expanding the global presence of the K+S Group. Following the addition of K+S Potash Canada, we are now a potash supplier with production sites on two continents.

Due to their natural origin, many of our fertilizers are approved for use in organic farming.



# Diverse, high quality and ecologically - our products at a glance

Further information:

Products | K+S Aktiengesellschaft ([kpluss.com](http://kpluss.com))



**KALISOIL**

**SOIL  
FERTILIZERS**

	K <sub>2</sub> O
Korn-KALI®	40
Korn-KALI® <sup>+B</sup>	40
Roll-KALI®	48
Magnesia-Kainit®	9
KALIMOP®	60
KALISOP®	50
KALISOP® <sup>PREMIUM</sup>	50
PatentKALI®	30
ESTA® Kieserit	-



**KALISOLU**

**FOLIAR AND  
LIQUID FERTILIZERS**

	K <sub>2</sub> O
epsoTOP®	-
epsoMICROTOP®	-
epsoCOMBITOP®	-
epsoBORTOP®	-
epsoPROFITOP®	-
soluSOP® <sup>52</sup> ORGANIC	52
soluMOP®	60

2024 | Please refer to the technical data sheet for the specification.

We extract plant nutrients from mining operations and refine them into soil, foliar, and fertigation fertilizers. Due to their natural origin, our versatile products are approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165.



MgO	S *	Other nutrients
6	5.2	3 Na
6	5.2	0.25 B · 3.3 Na
4	4	-
4	3.2	26.7 Na
-	-	-
-	17.6	-
-	17.6	-
10	17.6	-
25	20.8	-

Data in %

MgO	S *	Other nutrients
16	13	-
15	12.4	0.9 B · 1 Mn
13.5	13.8	4 Mn · 1 Zn
12.6	10	4 B
12	14	5 Mn · 2 Zn · 1 Cu
-	18	-
-	-	-

Data in %

\*Conversion example sulphur (S) to sulphur trioxide (SO<sub>3</sub>):  
5.2% S x 2.5 = 13% SO<sub>3</sub>

# K+S SOIL FERTILIZERS





# Korn-KALI®



**EC FERTILIZER**  
**MINERAL FERTILIZER**  
**K<sub>2</sub>O (MgO, SO<sub>3</sub>) 40 (6+13)**

**40% K<sub>2</sub>O** water soluble potassium oxide (= 33.2% K)  
**6% MgO** water soluble magnesium oxide (= 3.6% Mg)  
**13% SO<sub>3</sub>** water soluble sulphur trioxide (= 5.2% S)

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4% Na<sub>2</sub>O water soluble sodium oxide (= 3% Na)

- for the basic supply of potassium and magnesium to crops requiring sulfur
- maximum nutrient concentration for advantages in logistics, storage, and application
- suitable for many chloride-tolerant crops
- contains only sulfate sulfur of natural origin (Kieserite)
- quickly soluble in water and immediately available to plants
- works independently of the pH-value of the soil
- particularly suitable as a maintenance fertilizer at optimum magnesium levels in the soil
- precise application due to narrow granule size range
- ideal potassium fertilizer for stubble and fall fertilization
- for single application or for further processing in bulk blends
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards

+B

**Korn-KALI®**



## EC FERTILIZER

### MINERAL FERTILIZER WITH MICRONUTRIENTS

**K<sub>2</sub>O (MgO, Na<sub>2</sub>O, SO<sub>3</sub>) 40 (6+4.5+13) +0.25% B**

**40% K<sub>2</sub>O** water soluble potassium oxide (= 33.2% K)  
**6% MgO** water soluble magnesium oxide (= 3.6% Mg)  
**4.5% Na<sub>2</sub>O** water soluble sodium oxide (= 3.3% Na)  
**13% SO<sub>3</sub>** water soluble sulphur trioxide (= 5.2% S)  
**0.25% B** water soluble Boron as sodium

- for the basic supply of potassium and magnesium to crops in need of sulfur and with increased boron requirements
- particularly suitable for sugar beets, rapeseed, corn, and sunflowers
- maximum nutrient concentration for advantages in logistics, storage, and application
- suitable for many chloride-tolerant crops
- contains only sulfate sulfur of natural origin (kieserite)
- precise distribution due to narrow granule size range
- for single application or for further processing in bulk blends
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards

# Roll-KALI®



## EC FERTILIZER INORGANIC MACRONUTRIENT FERTILIZER

**K<sub>2</sub>O (MgO, SO<sub>3</sub>) 48 (4+10)**

**48% K<sub>2</sub>O** water soluble potassium oxide (= 39.8 % K)

**4% MgO** water soluble magnesium oxide (= 2.4 % Mg)

**10% SO<sub>3</sub>** water soluble sulphur trioxide (= 4 % S)

- for single application or for further processing in premium bulk blends
- for the basic potassium and magnesium supply of crops requiring sulfur
- round granules with particularly good spreading properties even at large spreading widths
- maximum nutrient concentration for advantages in logistics, storage, and application
- suitable for many chloride-tolerant crops
- contains only sulfate sulfur of natural origin (kieserite)
- quickly soluble in water and immediately available to plants
- works independently of the pH-value of the soil
- ideal for blending with commercial N and P fertilizers due to its specific density
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards

# Magnesia-Kainit®



## EC FERTILIZER

### MINERAL FERTILIZER

**K<sub>2</sub>O (MgO, Na<sub>2</sub>O, SO<sub>3</sub>) 9 (4+36+8)**

- 9% K<sub>2</sub>O** water soluble potassium oxide (= 7.5% K)
- 4% MgO** water soluble magnesium oxide (= 2.4% Mg)
- 36% Na<sub>2</sub>O** water soluble sodium oxide (= 26.7% Na)
- 8% SO<sub>3</sub>** water soluble sulphur trioxide (= 3.2% S)

- for grassland and forage farming, contains sodium important for animal feed
- improves health, performance, and fertility of animals through magnesium and sodium enrichment in the basic feed when fertilized regularly
- magnesium and sodium are important components for fertility and longevity of high performance cows
- sodium for best performance of livestock and sodium-loving crops
- rapidly soluble in water and immediately available to plants
- works independently of soil pH
- four key nutrients in one product for advantages in logistics, storage, and application
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards

# KALIMOP®



**EC FERTILIZER**  
**MINERAL FERTILIZER**  
**K<sub>2</sub>O 60**

**60% K<sub>2</sub>O** water soluble potassium oxide (= 49.8 % K)

- high spreading quality even at large spreading widths
- precise distribution due to narrow granule size range
- suitable for many chloride-tolerant crops
- as a straight fertilizer and as a component in bulk blends
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards

# KALISOP®



**EC FERTILIZER**  
**MINERAL FERTILIZER**  
**K<sub>2</sub>O (SO<sub>3</sub>) 50 (44)**

**50% K<sub>2</sub>O** water soluble potassium oxide (= 41.5% K)  
**44% SO<sub>3</sub>** water soluble sulphur trioxide (= 17.6% S)

- highly concentrated potassium sulfate fertilizer, virtually chloride-free and therefore the ideal potassium source for chloride-sensitive crops with high sulfur requirements
- all nutrients are water soluble and directly available to plants
- low salt index and thus particularly suitable for sensitive special crops in intensive cultivation systems
- no change in the pH value of the soil
- non-hygroscopic, easy to store and to use in single application or as a component in bulk blends
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards

PREMIUM

**KALISOP®**



## EC FERTILIZER

### INORGANIC MACRONUTRIENT FERTILIZER

**K<sub>2</sub>O (SO<sub>3</sub>) 50 (44)**

**50% K<sub>2</sub>O** water soluble potassium oxide (= 41.5 % K)

**44% SO<sub>3</sub>** water soluble sulphur trioxide (= 17.6 % S)

- highly concentrated potassium sulfate fertilizer, virtually chloride-free and therefore the ideal potassium source for chloride-sensitive crops with high sulfur requirements
- all nutrients are water soluble and directly available to plants
- low salt index and thus particularly suitable for sensitive special crops in intensive cultivation systems
- no change in the pH value of the soil
- non-hygroscopic, easy to store and to use in single application or as a component in bulk blends
- **KALISOP PREMIUM** as a round granular fertilizer enables a particularly precise distribution at spreading widths of up to 48 m
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards

# PatentKALI®



## EC FERTILIZER

### MINERAL FERTILIZER

**K<sub>2</sub>O (MgO, SO<sub>3</sub>) 30 (10+44)**

**30% K<sub>2</sub>O** water soluble potassium oxide (= 24.9% K)

**10% MgO** water soluble magnesium oxide (= 6% Mg)

**44% SO<sub>3</sub>** water soluble sulphur trioxide (= 17.6% S)

- practically chloride-free (max. 3% Cl) and therefore particularly suitable for demanding specialty crops
- round granules with particularly good spreading properties even at large spreading widths
- contains all nutrients in a rapidly water-soluble and fully plant-available sulfate form of natural origin (kieserite)
- is particularly suitable for potatoes, fruit, and vegetables due to the ideal K-Mg ratio
- acts independently of the pH value of the soil and does not change it
- no risk of soil salinization during drought due to a low salt index
- as a straight fertilizer or for further processing in low-chloride premium bulk blends
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards



# ESTA® Kieserit



## EC FERTILIZER MINERAL FERTILIZER (MgO, SO<sub>3</sub>) (25+52)

**25 % MgO** water soluble magnesium oxide (= 15.1 % Mg)  
**52 % SO<sub>3</sub>** water soluble sulphur trioxide (= 20.8% S)

- for the targeted supply of crops in particular need of magnesium and sulfur or for undersupplied soils
- for single application or for further processing in complex fertilizers
- for agriculture, horticulture, forestry, and special crops
- contains exclusively sulfate sulfur and magnesium of natural origin (kieserite)
- quickly soluble in water and immediately available to plants
- works independently of the pH-value of the soil
- no risk of soil salinization during dry periods
- enables sulfur fertilization independent of nitrogen application
- improves nitrogen uptake due to good sulfur supply
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards

# K+S FOLIAR FERTILIZERS





**EC FERTILIZER**  
**MINERAL FERTILIZER**  
**(MgO, SO<sub>3</sub>) (16+32.5)**

**16% MgO** water soluble magnesium oxide (= 9.6% Mg)  
**32.5% SO<sub>3</sub>** water soluble sulphur trioxide (= 13% S)

- completely water-soluble foliar fertilizer
- covers the peak demand in all growth phases for various crops such as cereals, rapeseed, sugar beets, or potatoes
- very high efficiency due to loss-free absorption via the leaf
- can be used in combination with most pesticides and liquid fertilizers as well as in fertigation plants
- works independently of the pH-value of the soil, as the nutrients are absorbed directly through the leaf
- contains only sulfate sulfur and magnesium of natural origin (kieserite)
- magnesium increases root growth
- sulfur is essential for protein synthesis and increases nitrogen efficiency
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards

# epsom **MICROTOP**<sup>®</sup>



## EC FERTILIZER

### MINERAL FERTILIZER WITH MICRONUTRIENTS

**(MgO, SO<sub>3</sub>) (15+31) + 0.9% B + 1% Mn**

**15% MgO** water soluble magnesium oxide (= 9% Mg)

**31% SO<sub>3</sub>** water soluble sulphur trioxide (= 12.4% S)

**1% Mn** water soluble Manganese as sulphate

**0.9% B** water soluble Boron as boric acid

- completely water-soluble foliar fertilizer
- specially adapted to the nutrient requirements of root and leaf crops
- prevents deficiency symptoms quickly and reliably
- extremely high efficiency due to loss-free absorption via the leaf
- can be combined with most crop protection products and liquid fertilizers
- magnesium increases root growth
- sulfur is essential for protein synthesis and increases nitrogen efficiency
- boron promotes the formation of flowers and fruits
- manganese is essential for enzyme activation
- works independently of soil pH, as nutrients are absorbed directly through the leaf
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards



## EC FERTILIZER

### MINERAL FERTILIZER WITH MICRONUTRIENTS

**(MgO, SO<sub>3</sub>) (13.5+34.5) + 4 % Mn + 1 % Zn**

**13.5 % MgO** water soluble magnesium oxide (= 8.1 % Mg)

**34.5 % SO<sub>3</sub>** water soluble sulphur trioxide (= 13.8 % S)

**4 % Mn** watersoluble Manganese as sulphate

**1 % Zn** watersoluble Zinc as sulphate

- completely water-soluble foliar fertilizer
- especially for crops requiring manganese and zinc such as field vegetables, fruit, and cereals
- prevents deficiency symptoms quickly and safely
- very high efficiency due to loss-free absorption through the leaf
- inexpensive alternative when micronutrients (trace nutrients) are needed
- magnesium increases root growth
- sulfur is essential for protein synthesis and increases nitrogen efficiency
- manganese is essential for enzyme activation
- zinc is part of protein biosynthesis
- works independently of soil pH, as nutrients are absorbed directly through the leaf
- can be blended with most crop protection products
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards



**EC FERTILIZER**  
**MINERAL FERTILIZER WITH MICRONUTRIENTS**  
**(MgO, SO<sub>3</sub>) (12.6+25) + 4% B**

**12.6% MgO** water soluble magnesium oxide (= 7.6% Mg)  
**25% SO<sub>3</sub>** water soluble sulphur trioxide (= 10% S)  
**4% B** water soluble Boron as boric acid

- completely water-soluble foliar fertilizer
- especially for medium to high boron demanding crops such as rapeseed, sugar beets, corn, and sunflowers
- very high efficiency due to loss-free absorption through the leaf
- miscible with most crop protection agents
- lowers the pH value of the spray water
- magnesium increases root growth
- sulfur is essential for protein synthesis and increases nitrogen efficiency
- boron promotes the formation of flowers and fruits
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards



## EC FERTILIZER

### MINERAL FERTILIZER WITH MICRONUTRIENTS

**(MgO, SO<sub>3</sub>) (12+35) + 1 % Cu + 5 % Mn + 2 % Zn**

**12 % MgO** water soluble magnesium oxide (= 7.2 % Mg)

**35 % SO<sub>3</sub>** water soluble sulphur trioxide (= 14 % S)

**1 % Cu** watersoluble Copper as sulphate

**5 % Mn** watersoluble Manganese as sulphate

**2 % Zn** watersoluble Zinc as sulphate

- is an immediately effective foliar fertilizer specially adapted to the micronutrient requirements of cereals in an ideal combination with magnesium and sulfur
- is particularly suitable for soils known for copper, manganese, and zinc deficiencies
- improves stalk stability
- improves winter hardiness
- is particularly suitable as a preventive measure against deficiency situations, especially in growth phases
- all nutrients are completely water-soluble in an ideal ratio to each other and can be completely absorbed immediately through the leaf and therefore take effect quickly
- unfolds its effect independent of the pH-value of the soil, as the nutrients are absorbed directly through the leaf
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards



**EC FERTILIZER**  
**MINERAL FERTILIZER**  
**K<sub>2</sub>O 60**

**60% K<sub>2</sub>O** water soluble potassium oxide (= 49.8% K)

- completely water-soluble fertigation and foliar fertilizer
- ideal source of potassium for fertigation and foliar fertilization
- for low chloride-sensitive crops
- very well tolerated by plants
- in 5 % concentration the freezing point of the spray water drops to -2 °C
- can be combined with EPSO products
- can be used as foliar fertilizer and in fertigation systems
- miscible with most plant protection products and other fertilizers
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards





**EC FERTILIZER**  
**MINERAL FERTILIZER**  
**K<sub>2</sub>O (SO<sub>3</sub>) 52.5 (45)**

**52.5% K<sub>2</sub>O** water soluble potassium oxide (= 42.6 % K)  
**45% SO<sub>3</sub>** water soluble sulphur trioxide (= 18 % S)

- water-soluble fertigation and foliar fertilizer
- highest possible concentration of potassium and sulfur
- immediately available to plants
- practically free of chloride and sodium
- relatively basic pH-value
- especially suitable for fruit and vegetable crops
- covers peak requirements in all growth phases
- improves plant quality and increases tolerance to drought and frost
- miscible with most organic and conventional crop protection products and other fertilizers
- approved for use in organic farming in accordance with Regulations (EU) 2018/848 and (EU) 2021/1165 and other standards







**KALI ACADEMY®**

KNOWLEDGE CREATES VALUES

## Discover the knowledge of the KALI Academy

The KALI Academy is the K+S knowledge base on all aspects of plant nutrition. For more than 100 years, we have been actively researching solutions to agronomic challenges.

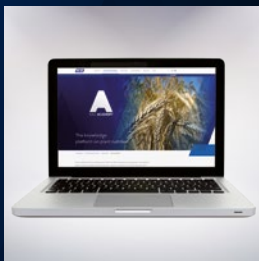
These include increasing productivity, promoting soil fertility as well as the efficient, environmentally friendly use of resources through balanced fertilization.

All about the KALI Academy® at  
**[www.kali-academy.com](http://www.kali-academy.com)**

### Online Platform

Exciting company reports, technical articles or practical tips on current aspects of plant nutrition can be found on the website:

**[www.kali-academy.com](http://www.kali-academy.com)**



### Webinars

Get information on relevant aspects - compact, effective, and fast in our interactive webinars:

**Webinars | [kpluss.com](http://kpluss.com)**



### Videos

Watch our explanatory videos on all aspects of plant nutrition in our KALI Academy playlist on YouTube:

**[video.kali-academy.com](http://video.kali-academy.com)**





## **Strong Know-how: Research & Advisory of K+S**

K+S supports agricultural practice all over the world by providing expert knowledge on fertilisation, in order to achieve high yields and excellent quality, and to maintain these even under adverse climatic conditions. The foundation of the advice provided is our extensive research activity.

The advisory service of K+S as well aims at transferring existing and new research findings in the field of plant nutrition to agricultural practice. Farmers all over the world benefit from this know-how, which enables them to implement new and promising methods in their fertilization practice, and to thereby improve yields and quality of their harvests. Our commitment and our expertise represent a significant contribution to securing global food supply and to protect the livelihoods of farmers.

Information on [www.kpluss.com/agriculture](http://www.kpluss.com/agriculture).



## How to contact us

Detailed information on all K+S fields of expertise can be found at: [www.kpluss.com](http://www.kpluss.com)

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