



# **WE ARE ALL AROUND**

**High quality minerals for industries and life.**







## Raw materials. They shape processes.

In industrial processes, minerals are the quiet enablers of modern power. They form the basis for progress, efficiency, and an improved quality of life. Though often invisible, they are indispensable and the driving force behind many of today's most important developments. Our potassium, magnesium, and sodium products ensure reliable processes and safe products.

At K+S, we stand for mineral raw materials that make a difference. We understand our customers' needs and develop solutions tailored to their processes. We are precise, efficient, and responsible. With our decades of experience and global network, we are a reliable partner for companies that value quality and innovation.

This brochure will take you on a journey from the depths of our mines to the many ways our customers use our products. It illustrates how natural minerals are transformed into essential raw materials that drive and influence industrial processes. At the same time, it represents our fascination with mining, our roots, and our commitment to ensuring a secure and reliable supply of raw materials.

Prepare to be impressed and convinced.

Yours sincerely and Glück auf!

Holger Bekemeier

Head of Industry+ Customer Segment  
K+S Minerals and Agriculture GmbH



08

Fascination of Mining



Research  
and Quality

18



32

Our Minerals



We enrich everyday life  
and are all around

36



# Industry+ At a glance

## THE VALUE CREATION OF K+S MINERALS AND AGRICULTURE GMBH

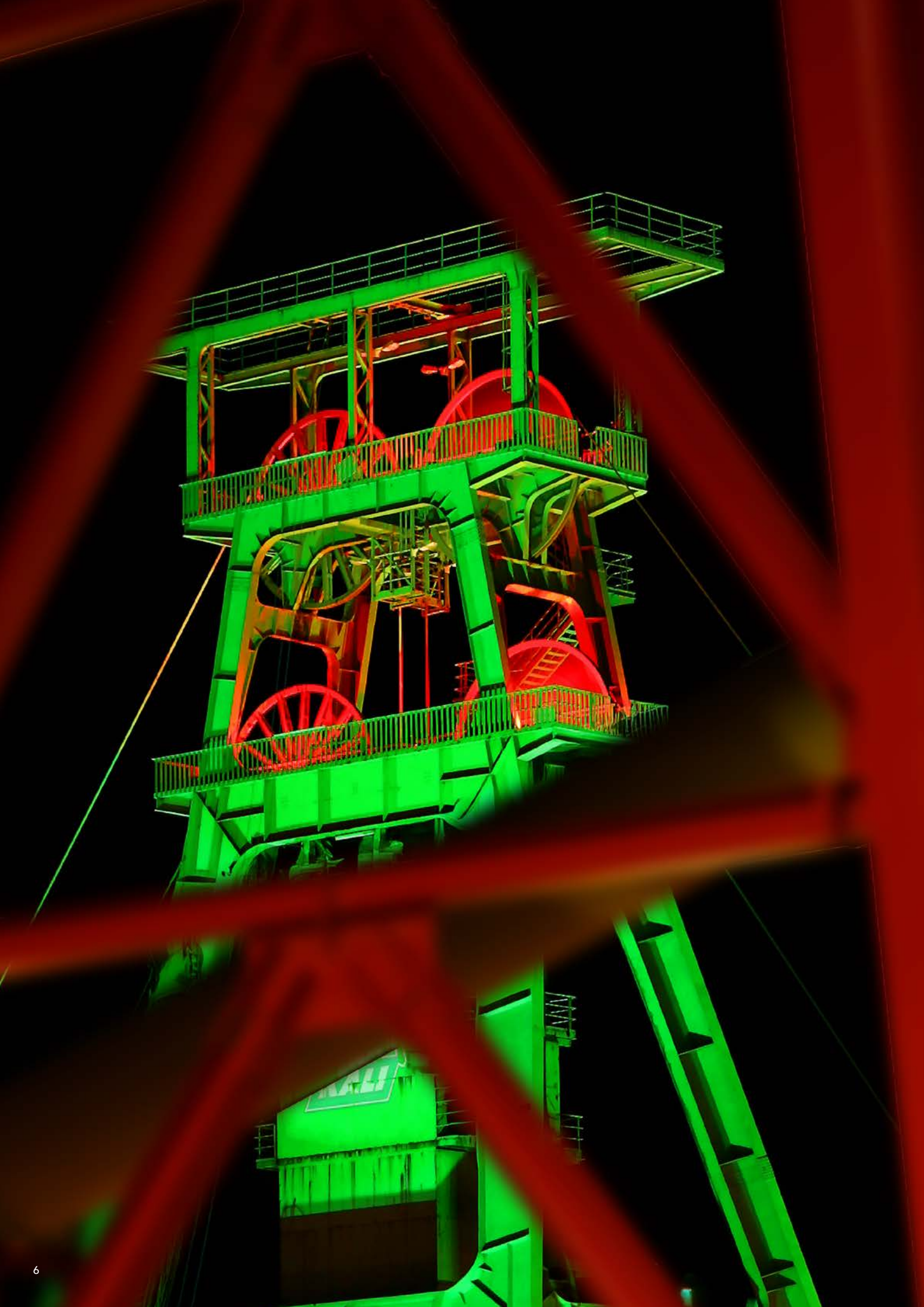
|                                                                             |    |
|-----------------------------------------------------------------------------|----|
| Raw materials. They shape processes                                         | 02 |
| We are all around                                                           | 06 |
| Fascination of mining – Our minerals: From the depths for the world         | 08 |
| From raw material to purity – Manufacturing and refining processes          | 12 |
| Research and Quality – Reliable product expertise for industrial challenges | 18 |
| Logistics – Quality with an impact                                          | 26 |
| Environment – Projects for a future-proof industry                          | 28 |

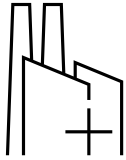
## MINERALS AND PRODUCTS

|                                                                                                                   |    |
|-------------------------------------------------------------------------------------------------------------------|----|
| Our minerals – Versatile and powerful                                                                             | 32 |
| Industry+ – We enrich everyday life                                                                               | 36 |
|  Chemicals _____               | 38 |
|  De-Icing _____                | 40 |
|  Animal Nutrition _____        | 42 |
|  Food Processing _____         | 46 |
|  Industrial Applications _____ | 50 |
|  Water Treatment _____         | 54 |
|  Pharma _____                  | 58 |
|  Consumer _____                | 60 |

## CONTACT

|                                                     |    |
|-----------------------------------------------------|----|
| Available worldwide – tailored to your requirements | 66 |
|-----------------------------------------------------|----|





## INDUSTRY+



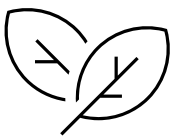
## We are all around

Our potassium, magnesium, and sodium products are more than just raw materials. They are essential components of our daily lives, even if they are not always visible.

At K+S, we specialize in mineral raw materials essential to numerous industrial applications. As a reliable partner, we supply customers worldwide with high-quality products indispensable to food processing, animal nutrition, the pharmaceutical industry, and water treatment. Our solutions also contribute significantly to efficiency, safety, and quality in the chemical industry, technical processes, winter road maintenance, and the consumer goods sector.

With our decades of experience and broad product portfolio, we can meet a wide range of requirements and offer reliable and tailor-made solutions of the highest standard.

In agriculture, our products increase crop yields and improve quality. Used worldwide as soil and foliar fertilizers, as well as in modern fertigation technologies, they support farmers in achieving resource-efficient and targeted fertilization.

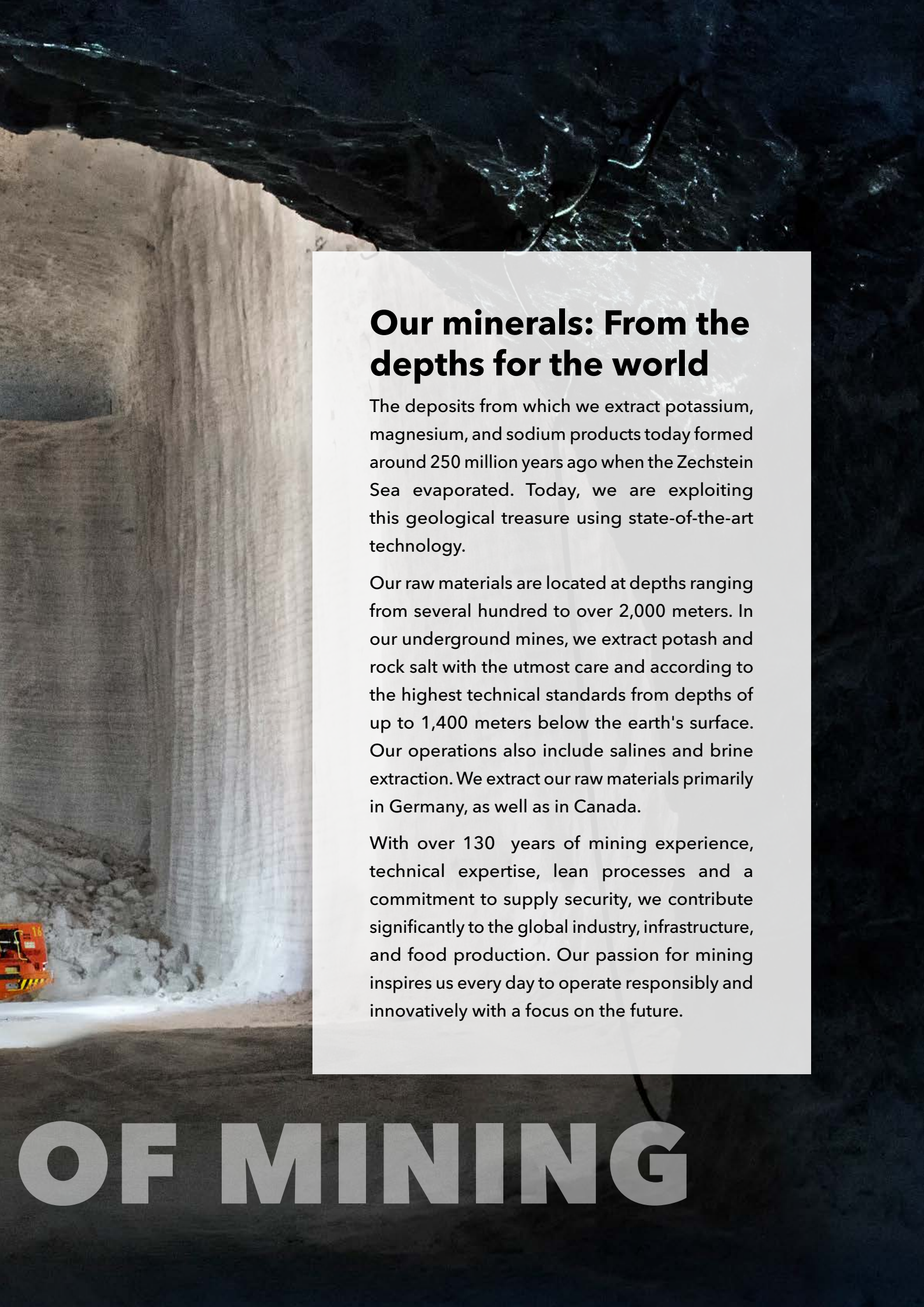


## AGRICULTURE





**FASCINATION**



## **Our minerals: From the depths for the world**

The deposits from which we extract potassium, magnesium, and sodium products today formed around 250 million years ago when the Zechstein Sea evaporated. Today, we are exploiting this geological treasure using state-of-the-art technology.

Our raw materials are located at depths ranging from several hundred to over 2,000 meters. In our underground mines, we extract potash and rock salt with the utmost care and according to the highest technical standards from depths of up to 1,400 meters below the earth's surface. Our operations also include salines and brine extraction. We extract our raw materials primarily in Germany, as well as in Canada.

With over 130 years of mining experience, technical expertise, lean processes and a commitment to supply security, we contribute significantly to the global industry, infrastructure, and food production. Our passion for mining inspires us every day to operate responsibly and innovatively with a focus on the future.

# **OF MINING**

# Sodium, potassium and magnesium salts: Natural treasures with a history

Over 250 million years ago, tectonic movements altered the earth's surface. These movements created natural barriers behind which lagoons filled with ancient seawater formed.

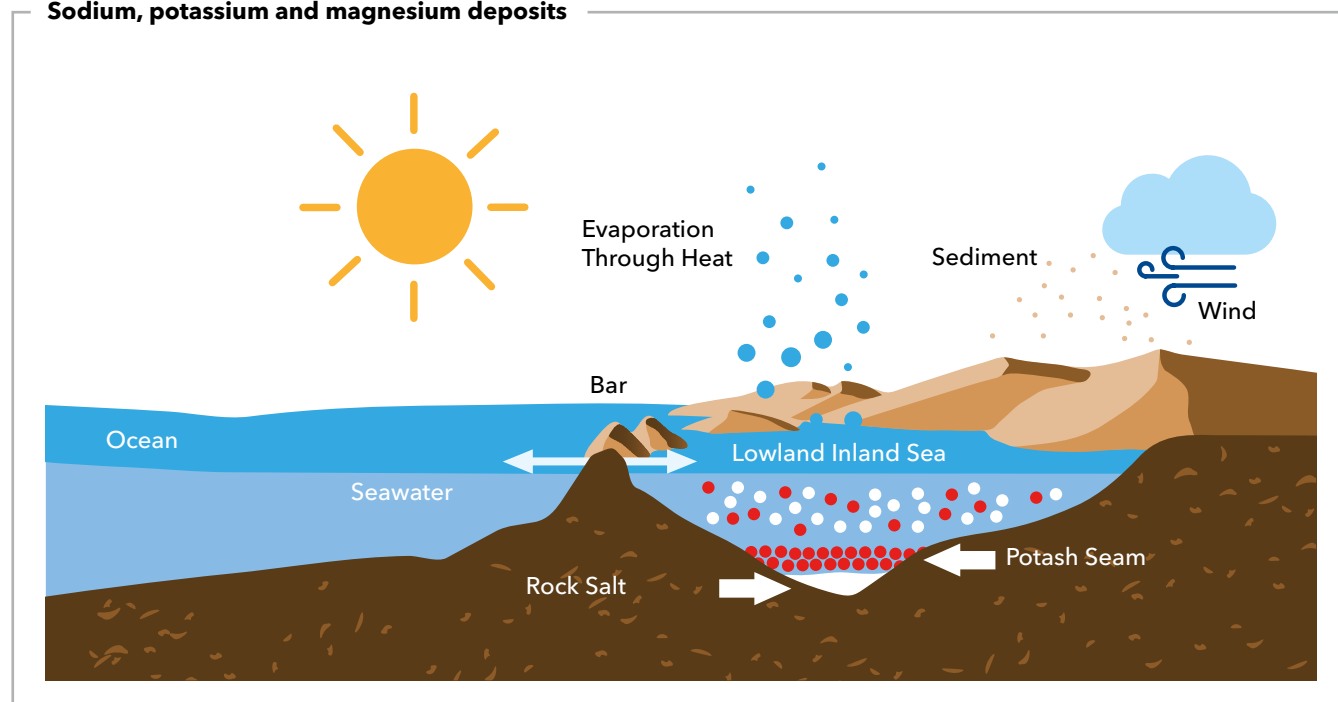
Due to solar radiation, the water slowly evaporated. Depending on their solubility, lime and gypsum were first deposited, followed later by rock salt, as well as potassium and magnesium salts. This process repeated itself over millions of years. Seawater flowed in and evaporated, and the wind carried sediments that covered the minerals with a protective layer. This created thick layers of salt up to 300 meters thick, depending on the region.

Today, salt minerals lie sealed by thick layers of clay, protected from environmental influences, and preserved in their original purity in the depths of the earth.



*Fascinating structures are created by layers of salt and other rock formations – an impressive testament to nature.*

## Sodium, potassium and magnesium deposits



# Extraction of our minerals:

## Two processes, one raw material

There are two methods used to extract sodium, potassium, and magnesium salts: underground mining and solution mining.

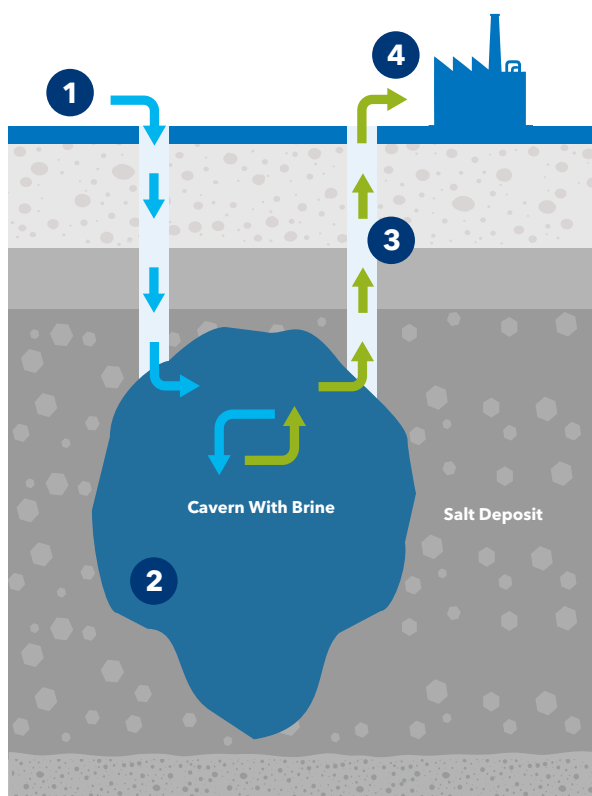
In underground mining, salts are extracted in solid form and transported to the surface. In solution mining, however, the deposit is dissolved in water, and the resulting brine is

pumped to the surface. The brine can then undergo further processing, such as evaporation or crystallization.

Both methods provide valuable minerals that are precisely tailored to the different requirements of production, processing, and quality assurance.

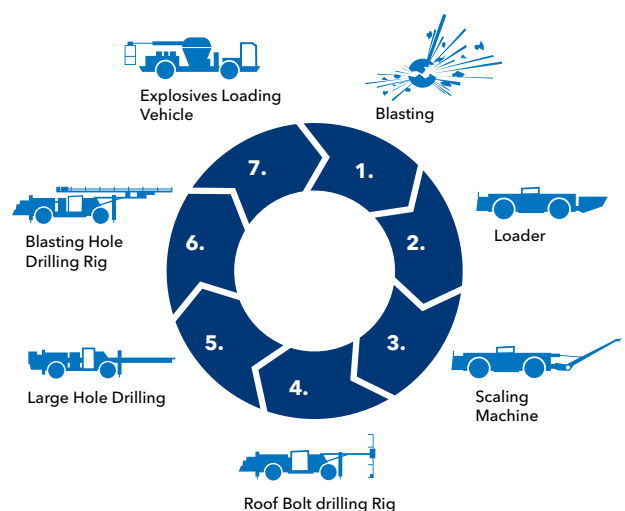
### Extraction of brine through solution mining

1. Fresh water is pumped into the salt deposit, creating caverns.
2. The water dissolves the salts, creating a salt solution (brine).
3. The brine is pumped above ground.
4. The brine is evaporated in a factory, the minerals crystallize and are processed into products.



### Underground mining of sodium, potassium and magnesium salts

1. During the shift change, the salt rock is loosened and crushed through blasting.
2. During the next shift, the blasted salt is loaded and transported.
3. Loose rock slabs are removed from ridges, joints, ceilings, and walls using stripping machines.
4. Roof bolts are then inserted into specified grids to secure the resulting cavities.
5. Large boreholes are drilled at the center of the tunnel advance. These boreholes are up to seven meters long, are not filled with explosives, and form an open space for the next blast.
6. Blast holes are drilled around the large boreholes.
7. The blast holes are loaded with explosives and detonators according to a specified pattern. The blasts are then detonated from a central location.



# FROM RAW MATERIAL TO PURITY

## **Manufacturing and refining processes for premium industrial products**

The first step in producing high-quality industrial products is extracting mineral raw materials. Naturally occurring raw salts contain valuable components, such as potassium chloride, sodium chloride, and magnesium compounds. However, these components are found in a complex mixture with other minerals and substances.

Specialized manufacturing and processing methods are required to make these valuable ingredients usable in a targeted manner, and we are continuously developing these methods. These methods enable us to efficiently isolate the desired components and produce materials with precisely defined properties, ranging from fertilizers to high-purity grades for the food, animal nutrition and pharmaceutical industries.



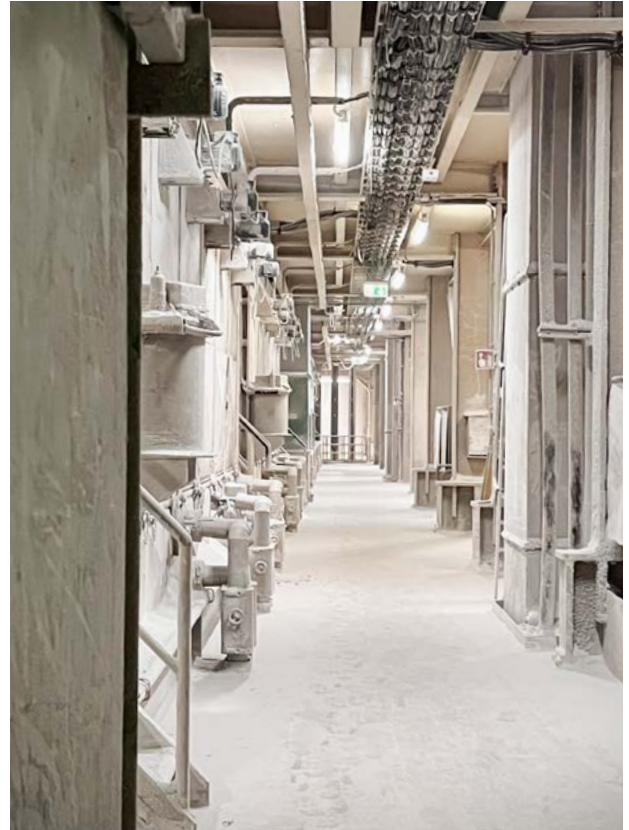
# Our key production and separation processes at a glance

## ESTA® process - electrostatic technology as a key technology

The ESTA process (electrostatic separation process) is a patented, in-house development by K+S. It is characterized by exceptional energy efficiency. Compared to water-based treatment processes, ESTA eliminates the need for salt solutions, process water, and energy-intensive drying. This significantly reduces energy consumption because water does not need to be heated, and large quantities of material do not need to be dewatered. Unlike wet chemical processes, ESTA does not require saline solutions or high thermal energy consumption. Instead, it uses the physical principle of triboelectric charging—a phenomenon familiar to most people, such as when a balloon becomes electrostatically charged through friction.

The ESTA process is ideal for dry, efficient mineral mixture separation and produces fertilizer-quality products. ESTA Kieserit can be used as a raw material to manufacture other products.

- **Epsom salt (magnesium sulfate):** Obtained through a process of dissolution and crystallization.
- **Anhydrous magnesium sulfate:** Obtained from ESTA Kieserit, which is washed and then calcined to achieve the desired purity and composition of the final product.



### Process overview

#### 1. Processing:

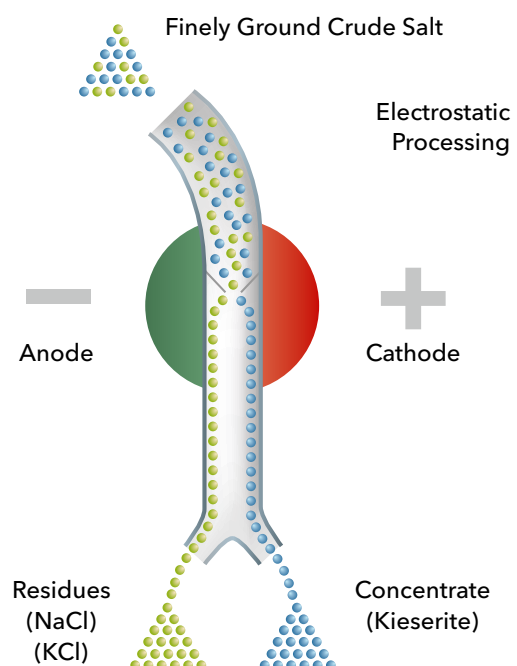
First, the crude salt is finely ground, precisely tempered, and processed. Each crystal becomes electrically charged through friction during this process.

#### 2. Separation in an electric field:

Charged particles fall freely through a separation chamber in which a high-voltage field is generated between two electrodes. Depending on their charge, the crystals are drawn to the corresponding pole. This process is repeated several times.

#### 3. Product recovery:

The minerals, such as potassium chloride or kieserite, are collected separately from the unwanted residues, such as rock salt, in the collection containers below the chamber.



## Thermal solution and recrystallization: A step-by-step purifying process for maximum quality

First, potassium chloride is extracted through temperature-controlled salt separation. This process uses the salts' different solubility characteristics at various temperatures to efficiently separate the components.

Recrystallization is used to meet high-purity requirements in industries such as food and animal nutrition.

### Process overview

#### 1. Saturated solution:

Crude salt is dissolved in water until a saturated solution is formed.

#### 2. Selective solution through heating:

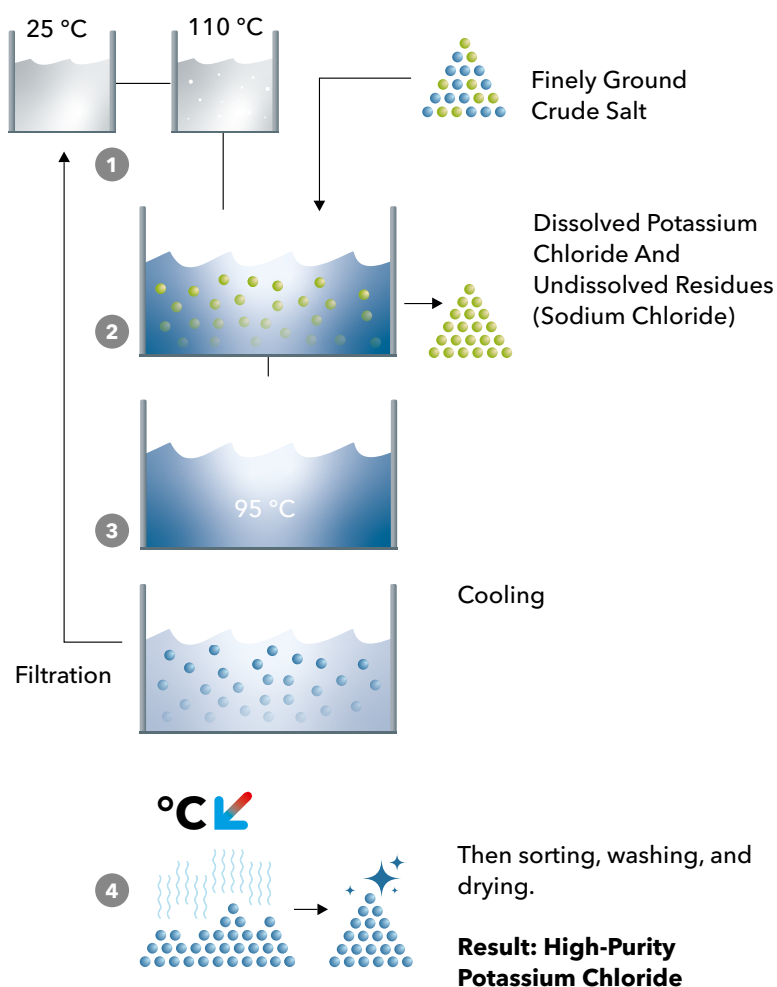
As the temperature rises, more potassium chloride dissolves while the rock salt remains undissolved. The solid components are then removed by filtration or centrifugation.

#### 3. Vacuum crystallization:

During cooling, potassium chloride crystallizes out of the solution and can be separated. The mother brine is then returned to the process.

#### 4. Further processing:

The resulting high-purity potassium crystals are washed and dried. This yields high-purity potassium chloride, which is used in the food and animal nutrition industries.



**In addition to the previously described method of extracting potassium chloride through thermal dissolution and recrystallization, another process exists for producing potassium sulfate.**

**Potassium sulfate:** ESTA Kieserit and potassium chloride are dissolved together to produce potassium sulfate. During this process, the potassium sulfate crystallizes and the magnesium chloride is produced as a byproduct.

**High-purity potassium sulfate in FCC quality and potassium chloride in pharmaceutical quality:** For applications requiring particularly high purity, such as in the pharmaceutical industry, an additional recrystallization step is performed. This post-treatment improves the quality of the final product and achieves the highest purity.

## Vacuum salt extraction

An established process for salt production in which crude salt is dissolved in water, purified, and processed through crystallization to produce particularly pure final products.



### Process overview

#### 1. Brine production:

Crude salt is dissolved in water to create a concentrated salt solution (brine). The brine is then purified to remove impurities, such as clay or gypsum.

#### 2. Salt crystallization:

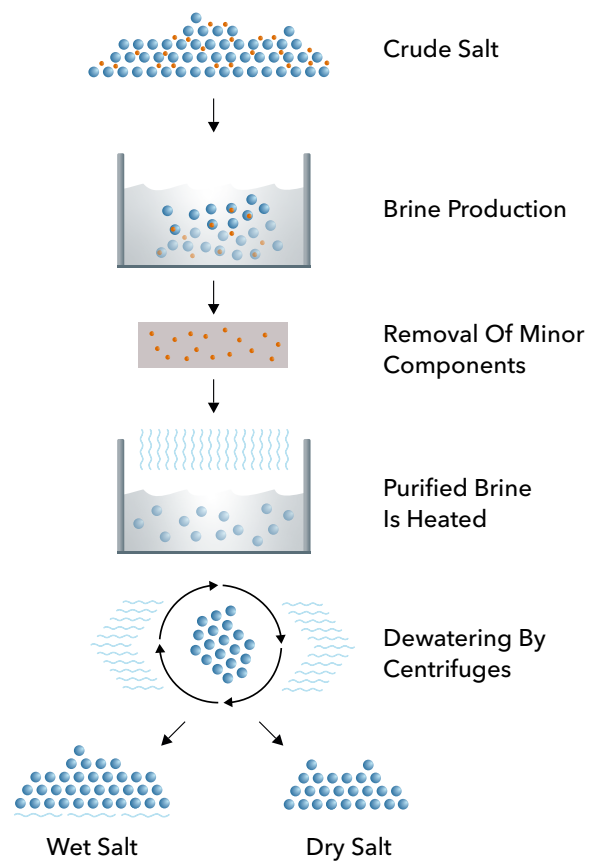
The purified brine is heated until the water evaporates and the salt crystallizes.

#### 3. Forming wet salt and dry salt:

The wet crystal salt is dewatered in centrifuges.

#### 4. Storage and delivery:

Depending on the product requirements, wet salt is either stored or shipped directly, or dry salt is produced by drying and packaging it. Finally, the finished salt is prepared for delivery in silos or bags.



# Optical sorting - high-purity rock salt without chemical treatment

In addition to chemical and physical-thermal separation processes, we use purely mechanical processing technologies for selected products. One example is the refinement of rock salt to food-grade quality. Sophisticated optoelectronic sorting technology reliably removes foreign matter without the use of solvents or chemical additives.



## Process overview

### 1. Salt stream separation:

Coarse-grained rock salt is separated on a distribution chute, ensuring that the crystals lie next to each other rather than on top of each other. This orderly stream of product then falls as a thin veil through an illuminated shaft.

### 2. Camera technology for analysis:

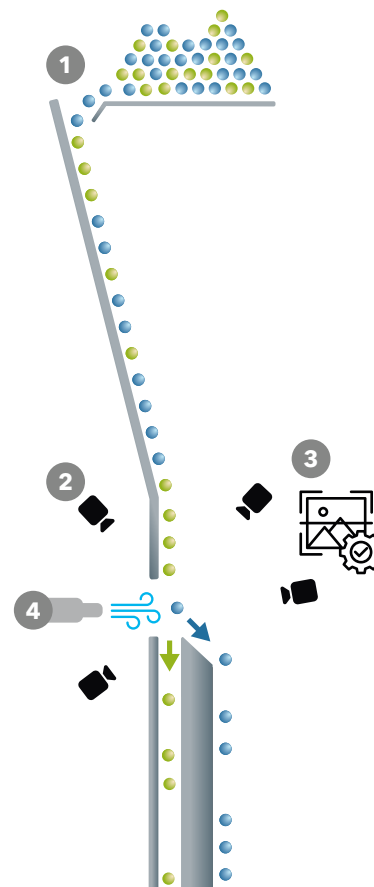
During the fall, up to ten high-resolution RGB color cameras positioned on both sides capture the crystals in real time. Each pixel is analyzed based on its color and brightness.

### 3. Software-controlled detection:

Specialized image processing software compares recorded brightness and color values with target values. Deviations caused by foreign substances, such as anhydrite, wire insulation, or plastic particles, are automatically identified.

### 4. Ejection by compressed air pulses:

Deviating particles are removed from the product flow via precisely directed compressed air nozzles with an approximate diameter of 1 mm. Depending on the size and position of the detected foreign object, activation takes place in fractions of a second.





# RESEARCH AND QUALITY

## **Reliable product expertise for industrial challenges**

The development of sophisticated industrial products requires reliable processes, in-depth expertise, and close coordination between product development, process engineering, and quality management. At K+S, we systematically link these areas to provide high-performance, safe, and market-oriented solutions for industrial applications.

# Holistic quality management throughout the product life cycle

Our quality strategy encompasses every stage of a product's life cycle, from development and procurement to production and application at the customer's site. We ensure that our products are manufactured in accordance with the strictest quality, safety, and process standards. Technical advice, practical support, and certified processes guarantee the products' smooth use in industrial environments.

Our customers benefit from our in-depth expertise in safely handling and using our products. We provide support through training courses, documentation, and direct access to our technical experts. Product certifications and continuous monitoring are integral to our quality philosophy.

## Research network: From idea to industrial solution

The K+S Analytics and Research Center (ARC) is the central point of contact for product and process development. Here, we combine our technological expertise in processing sodium, potash, and magnesium raw salts, developing application-oriented products, and performing related analytics.

Innovations in process engineering, particularly in mining and geology, are driven forward in a decentralized manner at our mine sites. We conduct operational trials to optimize new processes directly at our production sites, supported by ARC experts. We also test the implementation of advanced manufacturing and processing methods internally. Our goal is to enhance the morphology and flowability of our salts and increase production efficiency. Our research teams also engage in active dialogue with universities and external research institutions. This allows us to translate scientific findings into practical developments early on.



*The ARC's technical center repeatedly tests the procedures for new steps in processing.*

# Some of our research examples

Our research demonstrates our ability to transform scientific collaborations into practical solutions. In partnership with universities, institutes, and industry leaders, we generate new insights that we immediately integrate into our products. The result is scientifically sound solutions that provide our customers with tangible added value.

## Reducing salt in the food industry - Harmony of health, taste, and technology

A central focus of our research work is combining health, taste, and technology in a meaningful way. In close collaboration with external partners and scientific institutions, we develop solutions that support health-conscious nutrition and can be implemented in industrial production.

For instance, our research on reducing sodium chloride in food is scientifically sound and is widely used.

### Why reducing salt intake matters

Excessive salt consumption can lead to high blood pressure and other health issues. The German Nutrition Society (DGE) recommends no more than 6 grams per day, while the WHO recommends a maximum of 5 grams—significantly less than is currently common. Since most salt is consumed in processed foods, our efforts are focused there.

More information on salt consumption can be found here: (German language only)



### Successfully tested: Less sodium, same quality – potassium chloride as an alternative

In collaboration with numerous international research and development institutions, including the German Institute of Food Technology (DIL) and the Food Innovation & Resource Centre (FIRC) in Singapore, extensive trials were conducted across various product categories. The trials focused on replacing sodium chloride with potassium chloride, a salt very similar to classic table salt in taste and function.

The sodium content in baked goods, such as toast and mixed bread, as well as in meat products, such as salami and mortadella, was reduced by approximately 25%, with no noticeable change in taste. Important properties such as dough processing, volume, and texture also remained stable. Similar results were observed in tests with potato chips, instant soups, and cheese.

### Acceptance confirmed

Consumer surveys showed that sodium-reduced products were widely accepted. The taste remained familiar. This is a decisive factor in marketability.

### Potassium chloride: Functional and healthy

Salt plays an important role in food. Potassium chloride provides these functions and can positively affect blood pressure. Using a reduced-salt product improves the Nutri-Score rating because a lower salt content positively impacts the nutritional quality rating. This creates clear added value without compromising taste or quality.



### AT A GLANCE: SALT REDUCTION WITH ADDED VALUE

- Mineral salt blend with 25% less cooking salt
- No difference in taste, as confirmed by consumer tests
- Very high purity, homogeneity, and flowability
- Use of potassium chloride as a natural substitute
- Improvement of NUTRI-score possible through salt reduction

## Supply of magnesium in piglet rearing - Targeted mineral supply makes all the difference

A balanced supply of minerals is crucial, especially during sensitive life stages such as piglet rearing. In a practical trial, we compared the effectiveness of our high-purity magnesium sulfate, KaSa Mag98, to that of commercially available magnesium oxide under real agricultural conditions.

### Experimental setup: Practical and animal-friendly

This study was conducted as part of a master's thesis at Osnabrück University of Applied Sciences. A total of 384 piglets were examined over 48 days on a family farm. The piglets were divided into three groups. Depending on the group, the piglets received either magnesium sulfate, magnesium oxide, or no magnesium supplement in their feed. Their weight development, feed conversion, medication use, and stress levels were documented. Cortisol concentration in saliva was measured in an animal-friendly manner using cotton silk.

### Clear advantages for KaSa Mag98

After just 14 days, the piglets that received magnesium sulfate had significantly higher weights and showed a tendency toward better feed efficiency. Additionally, less medication was used, and lower stress levels were measured. These results are clear signs of increased well-being.

The approach was also economically viable: the contribution margin per piglet increased slightly while feed costs remained the same.

### Bioavailability as a success factor

The difference lies in their usability. Magnesium oxide is less easily absorbed. Depending on the species of animal, only around 10% is bioavailable in some cases.

KaSa Mag98, on the other hand, is completely water-soluble, making the magnesium directly available to the animal. This results in better outcomes in the barn, greater efficiency, and improved animal welfare.

Further information, including sources for the research project, can be found here:



### AT A GLANCE: KASA MAG98 IN PRACTICAL TESTING

- Faster weight gain in just 14 days
- Less stress, as measured by cortisol levels
- Lower medication use
- Improved feed conversion
- Higher bioavailability thanks to water-soluble magnesium
- Stable contribution margin with the same cost input

## The new shape of water softening - Salt blocks for greater efficiency and convenience

In industry, commerce, and households, soft water protects pipes, preserves appliances, and ensures cleanliness and hygiene. In contrast, hard water causes limescale deposits, energy losses, and increased maintenance costs. Reliable water softening is especially crucial in regions with high water hardness.

### **Ion exchange: proven technology, new solutions**

Water softening is based on the principle of ion exchange, whereby calcium and magnesium ions are replaced with sodium ions. Softening systems require regular regeneration to function continuously. For this purpose, salt is generally used in tablet or block shape.

Our innovation project focuses on developing high-performance salt blocks to meet the growing demand for efficient, user-friendly solutions

### **Developed by the K+S team – for greater convenience in water softening**

A team at K+S France came up with the idea of salt blocks with a wavy surface as a convenient alternative to tablets. In collaboration with the Frisia plant in Harlingen (Netherlands) they developed a product ready for series production that offers real added value.

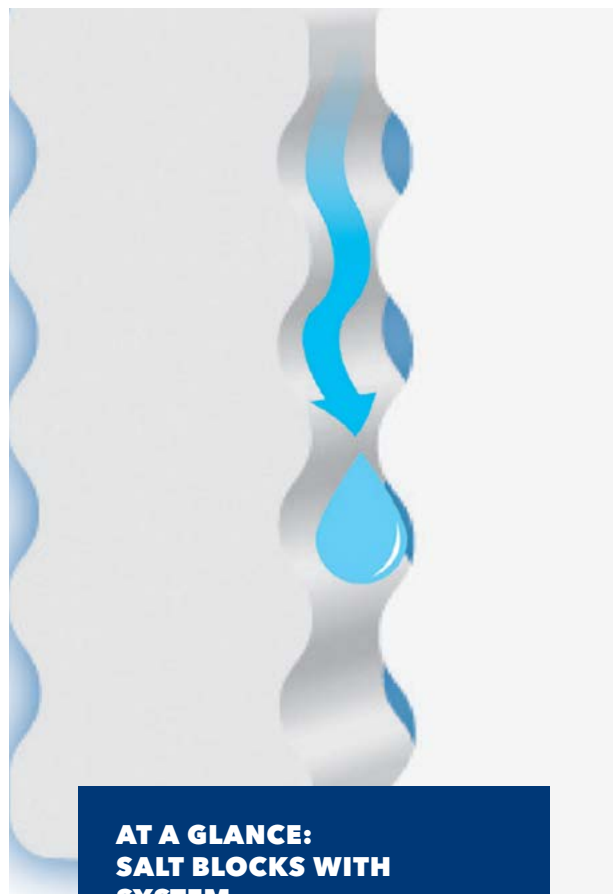
### **Technically sophisticated and practical in use**

The blocks' structured surface ensures even and efficient dissolution. This guarantees reliable system regeneration and improves handling. The block shape stabilizes storage in the salt tank and allows for controlled consumption.

### **Innovative manufacturing for modern applications**

With the expansion of block production and the addition of new press lines, we are paving the way for the future of water treatment. Our solutions are tailored to the needs of consumers and technology.

*The corrugated surface of the blocks allows for uniform and efficient dissolution*



#### **AT A GLANCE: SALT BLOCKS WITH SYSTEM**

- **Convenient use: No heavy bags or loose tablets**
- **Uniform dissolution due to the corrugated surface**
- **Reliable regeneration of the water softening system**
- **Stable storage and controlled consumption**
- **Product idea from France, technically optimized in Harlingen, Netherlands**
- **Efficient production on innovative press lines**

## New approaches to winter road maintenance – FS 100 – slippery roads: Preventive action is the key

Preventive de-icing measures are becoming increasingly important in modern winter road maintenance. This is because weather conditions that frequently alternate between rain, thaw, and frost are becoming more common. These conditions result in black ice and freezing wet surfaces, which pose a major hazard to road traffic.

### **FS 100: Liquid instead of solid**

The wet salt spreader 100 (FS 100) uses a new process that relies on pure brine, a mixture of salt and water. Brine spreading is primarily used for preventive purposes and has the advantage of a faster initial effect.

### **Better adhesion, longer lasting effect**

The brine adheres evenly to the road, so it is not blown away or displaced by traffic. This makes it effective for a long time, reducing the need for repeated gritting. It can also be applied at speeds of 60 km/h or higher.

### **Resource-saving use of materials**

Compared to dry spreading, the reduced salt content in the brine (22-26%) provides an economic advantage. With the same application technology, lower material consumption reduces environmental impact. FS 100 is already being used successfully, especially on busy roads and highways.

### **A plus for the future of winter road maintenance**

With its combination of immediate effectiveness, sustainable resource use, and long service life, FS 100 technology is an important component of modern winter road maintenance.



#### **AT A GLANCE: FS 100 LIQUID BRINE IN USE**

- Prevents ice and freezing wetness
- Provides even adhesion and prevents drifting by vehicles
- Environmentally friendly, as it reduces salt consumption compared to dry spreading.
- Proven effective on highways and busy roads

Our de-icing agents ensure safe and smooth travel in cities and towns. We offer highly effective, consistently high-quality products for efficiently removing snow and ice. Learn more about our winter service products from page 40.

# Quality management, product conformity, and certificates

Quality is firmly rooted in our company. Our work methods are based on recognized norms, standards, and certifications that provide guidance and ensure reliability. The following overview illustrates the most significant standards shaping our production and processes. It provides a concise framework without delving into the specifics of individual products. We are happy to provide more in-depth or product-specific information upon request.



## Chemicals



Our production sites for chemical products are among the most modern and meet the highest quality standards.

- ✓ ISO 9001
- ✓ ISO 50001\*

*\* All German sites are ISO 50001 certified and meet recognized standards in energy management.*



## De-Icing



Our de-icing salts and brines meet important standards. Our rock de-icing salt production plants in Germany are among the most modern of their kind.

- ✓ EN 16811-1
- ✓ EN 16811-2
- ✓ ISO 9001
- ✓ ISO 50001\*

*\* All German sites are ISO 50001 certified and meet recognized standards in energy management.*



## Pharma



Our production plants meet highest quality standards. The potassium and sodium chloride products for pharmaceutical applications meet the highest purity requirements.

- ✓ EEU-GMP Guide Part 2 and ICH Q7
- ✓ AMG and AMWHV
- ✓ Halal
- ✓ Kosher
- ✓ CEP-certified
- ✓ FDA-registered
- ✓ US Drug Master File
- ✓ ISO 9001
- ✓ ISO 50001\*

*\* All German sites are ISO 50001 certified and meet recognized standards in energy management.*



## Consumer



We meet a wide range of production standards and offer products that are tailored to consumers' needs.

### Culinary:

- ✓ IFS Food
- ✓ Suitable for organic production\*\*
- ✓ Kosher

### Water Treatment:

- ✓ EN 973 Type A
- ✓ EN 14805 Type 1
- ✓ NF Standard
- ✓ Codex Alimentarius
- ✓ IFS HPC

### De-icing:

- ✓ EN 16811-1

### All:

- ✓ ISO 9001
- ✓ ISO 50001\*

*\* All German sites are ISO 50001 certified and meet recognized standards in energy management.*

*\*\* In accordance with Regulations (EU) No. 2018/848*

Which certifications apply depends on the product in question. You can find more information from page 36 onwards.



## Animal Nutrition



All feed salts come from our own deposits. Our products and production plants are certified according to internationally recognized quality assurance standards.

- ✓ **GMP+ FSA**
- ✓ **A-Feed**
- ✓ **Kosher**
- ✓ **Pastus+**
- ✓ **QS**
- ✓ **Suitable for organic production\*\***
- ✓ **ISO 9001**
- ✓ **ISO 50001\***

\* All German sites are ISO 50001 certified and meet recognized standards in energy management.

\*\* Can be used in organic production in accordance with Regulation (EU) No. 2018/848.



## Food Processing



We prioritize quality and safety, and our production plants and products comply with numerous food standards, such as:

- ✓ **Kosher**
- ✓ **Halal**
- ✓ **FSSC 22000**
- ✓ **IFS Food**
- ✓ **Suitable for organic production\*\***
- ✓ **ISO 9001**
- ✓ **ISO 50001\***

\* All German sites are ISO 50001 certified and meet recognized standards in energy management.

\*\* in accordance with Regulation (EU) No. 2018/848



## Industrial Applications



We meet a wide range of production standards and offer products that are tailored to consumers' needs.

- ✓ **ISO 9001**
- ✓ **ISO 50001\***

\* All German sites are ISO 50001 certified and meet recognized standards in energy management.



## Water Treatment



Our production plants and special salts for regenerating water softening systems meet the highest quality requirements and ensure soft water.

- ✓ **EN 973 Type A and B**
- ✓ **EN 14805 Type 1 and 2**
- ✓ **EN 16370 Type 1 and 2**
- ✓ **EN 16401 Type 1**
- ✓ **DIN 19643**
- ✓ **NF Standard**
- ✓ **Codex Alimentarius**
- ✓ **ISO 9001**
- ✓ **ISO 50001\***

\* All German sites are ISO 50001 certified and meet recognized standards in energy management.

Which certifications apply depends on the product in question. You can find more information from page 36 onwards.

# LOGISTICS

## Quality with an impact

Not only do we extract and refine our natural raw materials, but we also ensure that our products reach their destination efficiently, safely, and on time. We provide worldwide delivery tailored to the needs of our industrial customers. Our logistics solutions are an integral part of our value chain, ensuring a reliable supply along complex delivery networks. With secured raw material sources until 2060, K+S guarantees long-term, reliable delivery.



# Customized logistics to global destinations

We oversee all relevant processes in the logistics chain, including storage, handling, order picking, and transportation organization. We connect production sites in the interior with global markets via rail, inland waterways, trucks, containers, and seagoing vessels. Our logistics experts manage, design, and optimize these processes. In doing so, we focus on the unique needs of each customer.

We develop customized logistics concepts for specific needs, such as our own railcar fleet. This allows us to ensure delivery, even under volatile market conditions, and provide our customers with planning security.

Our warehousing and transshipment facilities are at the heart of our transportation network. With the addition of reliable external capacities, we guarantee high-performance, flexible logistics. We can handle high volumes and short-term requirements.



*We ensure the reliable delivery of your products by truck.*



*The Kalikai terminal in Hamburg-Wilhelmsburg is at the heart of our logistics network and has been under our operation since 1927.*



ENVIRO



## **Sustainability is everyone's business**

We have set ambitious goals in three areas: Social Responsibility, Environment & Resources and Governance. By defining concrete sustainability goals and measurable performance indicators (KPIs), we can regularly review our progress. Individual KPIs are part of the management-level remuneration system.

# NMENT

# Transformation with vision – Projects for a future-proof industry

Our ambition is to reduce the K+S Group's global CO<sub>2</sub> emissions\* (CO<sub>2</sub>e) by 25% by the end of 2030, by 60% by the end of 2040, and by 100% by the end of 2045. We focus on combined heat and power, dry processing, and renewable energies. To achieve our goal of greenhouse gas neutrality, we focus on combined heat and power generation, dry processing, and renewable energy. At the same time, we are continuously working to further reduce our use of process water and tailings pile water. In this area as well, we are pursuing ambitious goals, which we outline transparently as part of our [2030 Sustainability Goals](#).

In addition, we are consistently advancing key future projects such as Werra 2060. You can find more [information about Werra 2060 here](#).

## Circular economy & new utilization concepts

Innovative concepts, such as covering tailings piles, underground farming, and using caverns to store hydrogen, are opening up new business opportunities. These concepts exemplify our commitment to developing intelligent infrastructure solutions.

## Responsibility for products, the environment, and people

We take responsibility for our products from the extraction of raw materials to waste prevention. More than 100 audits and 65 international certifications each year demonstrate our commitment to maintaining the highest standards. We continuously analyze the carbon footprints of our products to ensure maximum transparency and safety throughout the supply chain. This analysis enables us to develop targeted measures to reduce CO<sub>2</sub> emissions and track our progress toward achieving greenhouse gas neutrality by 2045. The carbon footprint includes greenhouse gas emissions generated during the extraction of raw materials and relevant upstream chains and preliminary products (cradle to gate). Specifically, this includes the steps involved in extracting the raw salt, processing it, and further processing the products, as well as the corresponding internal transport between the primary and secondary stages. We developed the methodology for calculating the carbon footprint in accordance with the international standards ISO 14040 and ISO 14044. Additionally, the methodology considers all

relevant life cycle phases and has been externally verified. At K+S, the health and safety of our workforce is a top priority. Our guiding principle is: "We always put safety first and act sustainably in everything we do."

## We act as a partner with our communities

K+S creates jobs in surrounding communities, strengthening the local economy and providing people with income opportunities and a better quality of life. We have long prioritized dialogue with environmental organizations, political decision-makers, municipalities, and the public, especially regarding current projects and plans.

## Transparent reporting

In our annual Sustainability Statement, which has been externally audited since 2024 and reported in accordance with the European Sustainability Reporting Standards (ESRS), we transparently present our sustainability activities and current target achievements. We use environmental, social, and governance (ESG) ratings and rankings to have our sustainability targets, KPIs, measures, and improvements assessed by external bodies. Additionally, K+S is committed to implementing the 17 UN Sustainable Development Goals (SDGs) and adheres to the EU principles for sustainable raw material extraction.

### EXTERNALLY RATED: ESG RATINGS AND RANKINGS OF K+S

K+S actively participates in the most important environmental, social, and governance (ESG) ratings and consistently achieves positive results.

Find the latest information [here](#):



### SUSTAINABILITY GOALS 2030

Further information about the K+S Sustainability goals 2030 can be found [here](#):



### WERRA 2060

Further information about Werra 2060 can be found [here](#):



\* Scope 1: Direct emissions

Scope 2: Indirect emissions from energy consumption



*The K+S Sustainability Wheel illustrates the key topics identified as the focus of our sustainability strategy. The outer ring lists the overarching areas of action in which K+S is involved.*



The background of the entire page is a photograph of a vast, deep salt mine shaft. The walls of the shaft are composed of light-colored, layered rock, showing signs of erosion and mining activity. Numerous small, dark, vertical markers or lights are visible along the upper rim of the shaft. In the upper right corner, there is a white wireframe graphic of a three-dimensional cube or polyhedron.

# OUR MINERALS

## **Versatile and powerful**

We extract valuable raw materials from the depths of the earth, providing for the needs of today and tomorrow. As Europe's largest salt producer, K+S has provided high-quality mineral raw materials from its own production for over 130 years. Our sodium chloride, potassium chloride, potassium sulfate, and magnesium sulfate are guaranteed to be pure, effective, and consistent.



## Sodium chloride

We offer high-purity sodium chloride in the form of natural rock salt, vacuum salt, and sea salt. It is used in the chemical and pharmaceutical industries, water treatment, food production, animal nutrition, winter road maintenance, and consumer products.

### Properties:

- Purity of up to 99.9% for optimal product quality
- Completely soluble for versatile use
- Optimal flowability ensures reliable and consistent processing
- Wide range of different grain sizes



## Potassium chloride

Potassium chloride is a versatile raw material used to make inorganic and organic potassium compounds. It provides high technical performance and exceptional effectiveness. It is used in industrial applications, as well as in the chemical, pharmaceutical, food production, and animal nutrition industries, among others.

### Properties:

- Technical grade with a minimum purity of 99%
- Available in high-purity grades of 99.3% and 99.9%
- Natural product with extremely low levels of minor salts and heavy metals
- Completely water-soluble



## Potassium sulfate

Potassium sulfate is a high-quality, chloride-free industrial raw material and an alternative source of potassium ions for applications with the highest quality requirements. It is an essential component in numerous industrial processes and in the chemical industry.

### Properties:

- Available in technical grades of 95% and higher-purity variants
- Consistently high specifications and reliable product purity
- Entirely manufactured from natural minerals without sulfuric acid



## Magnesium sulfate

There are two industrially relevant forms of magnesium sulfate: heptahydrate (Epsom salt) and anhydrous. It has a wide range of industrial applications.

### Properties:

- Epsom salt (heptahydrate) is a natural product with seven moles of bound crystal water. It is completely water-soluble and colorless. It is also significantly less corrosive than chloride compounds
- Anhydrous magnesium sulfate is a concentrated source of magnesium and sulfur. It dissolves quickly in water, generating heat in the process
- It contains low levels of secondary salts and heavy metals
- Both variants offer excellent technical qualities for a wide range of applications

## We enrich everyday life

Our minerals are indispensable for the smooth operation of numerous industries, ensuring safety in winter and enhancing the everyday lives of millions of people.

Our eight areas of application demonstrate the versatility of our products:



# INDUSTR





# CHEMICALS

## **We provide raw materials for the chemical and pulp industries**

The chemical industry places the highest demands on quality and supply reliability, whether for chlor-alkali electrolysis, pigment production, or viscose production. Our sodium and potassium chloride, as well as our potassium and magnesium sulfate, consistently meet these requirements with high purity and reliable availability.



# Our products for the chemical industry

## Quality

Our production plants for chemical products are among the most modern and meet the highest quality standards.



**ISO 9001**



**ISO 50001\***

*\* Our German sites are ISO 50001 certified and meet recognized standards in energy management.*

## Potassium chloride

Potassium chloride is a base product used in chlor-alkali electrolysis in the membrane process. It is also the basis for producing potassium hydroxide.

Potassium hydroxide is a versatile raw material with a wide range of applications, for example in the food, agricultural, and glass industries, or as a de-icing agent for airport runways.

- **99,9% high purity**, controlled quality specially developed for the chemical industry's needs

With our C:LIGHT product line, we are now offering this product in a CO<sub>2</sub>-reduced version for the first time.



## Sodium chloride

Sodium chloride is used in chlor-alkali electrolysis to produce chlorine and caustic soda. The obtained chlorine serves as a starting material for the production of isocyanates, which are precursors for polyurethane products such as PVC, MDI, and TDI, which are used in construction, for example.

We offer high-purity sodium chloride:

- **Vacuum salt is typically 99.9% pure**, completely water-soluble, and specially tailored to the requirements of chlor-alkali electrolysis
- **Rock salt 99%**, a reliable and cost-effective alternative to vacuum salt for suitable processes and ideal for chlor-alkali electrolysis requirements.

## Magnesium sulfate

Anhydrous magnesium sulfate is a versatile additive. In pulp and paper production, for instance, it reliably and efficiently produces high-quality white paper.

We offer the highest quality anhydrous magnesium sulfate:

- **Calcined anhydrous magnesium sulfate is >98% pure MgSO<sub>4</sub>**, with low levels of secondary salts and heavy metals. It is rapidly soluble in water with heat generation and binds water up to 100% of its own weight

## Chemische Fabrik Kalk

Through our subsidiary CFK, we provide high-quality basic chemicals for a wide range of applications in the chemical industry and other sectors. With its deep roots in the chemical industry and excellent network, CFK is a strategic supplier to key industries in the German economy. Our customers trust in the consistently high quality of our products and benefit from transparently documented and flexibly designed supply chains. The portfolio includes essential raw materials such as caustic soda, hydrochloric acid, sulfuric acid, soda (sodium carbonate), and nitric acid, which are indispensable for a wide range of industrial processes. Our personal contact with our customers allows us to work closely with them, respond more quickly and directly to their individual requirements, and better meet their needs than other suppliers.

Learn more about our products, areas of application, and CFK: [www.cfk-gmbh.com](http://www.cfk-gmbh.com)





## **We provide clear and safe roads**

Our high-quality de-icing salts are effective agents for winter weather. Our product is a particularly pure and effective mixture of fine and coarse salt crystals. Additionally, we offer ready-to-use brines for winter road maintenance.

Compared to abrasive agents, the use of de-icing salt, especially in the form of resource-saving wet salt spreading, is an economical and environmentally friendly method for ensuring safe roads, cycle paths, and footpaths.

# DE-ICING



# Our products for winter road maintenance



## De-icing salt, bulk and packaged

Our de-icing salt from Germany is consistently high quality. Due to its precise conditioning with an anti-caking agent, it has optimal storage properties, even over long periods of time. In accordance with DIN EN 16811-1, the de-icing salts of grain classes F and M impress with their high NaCl content and thawing mixture of fine and coarse salt crystals. The fine crystals provide an immediate thawing effect, while the coarse crystals guarantee a long-term effect on thick layers of ice and snow. In addition to the loose variants, the de-icing salt is available in packaged form.

## NaCl brine: 22.5% and 26%

This ready-to-use, concentrated sodium chloride (NaCl) brine solution meets the requirements of DIN EN 16811-1 and supports efficient wet salt spreading. It ensures quick and thorough de-icing in nearly all weather conditions. Since the brine quickly and effectively adheres to surfaces, there is minimal loss of effectiveness. Compared to loose de-icing salt, the brine impresses with its long-lasting effect and efficiency in preventive spreading.

## DI-MIX®

### Fast-acting de-icing salt

DI-MIX is a valuable blend of 30-35% calcium chloride and 65-70% coarse rock salt (sodium chloride). Due to its unique composition, DI-MIX remains free-flowing. At very low temperatures, it is more effective than road salt, ensuring fast and efficient thawing of ice and snow.

### Quality

Our de-icing products comply with important standards. The plants are among the most modern of their kind, meeting the highest quality standards in accordance with ISO 9001 standards. Our German sites are ISO 50001 certified and, therefore, meet international standards for effective energy management.



## Deutscher Straßen-Dienst GmbH - Your strong partner for winter road maintenance

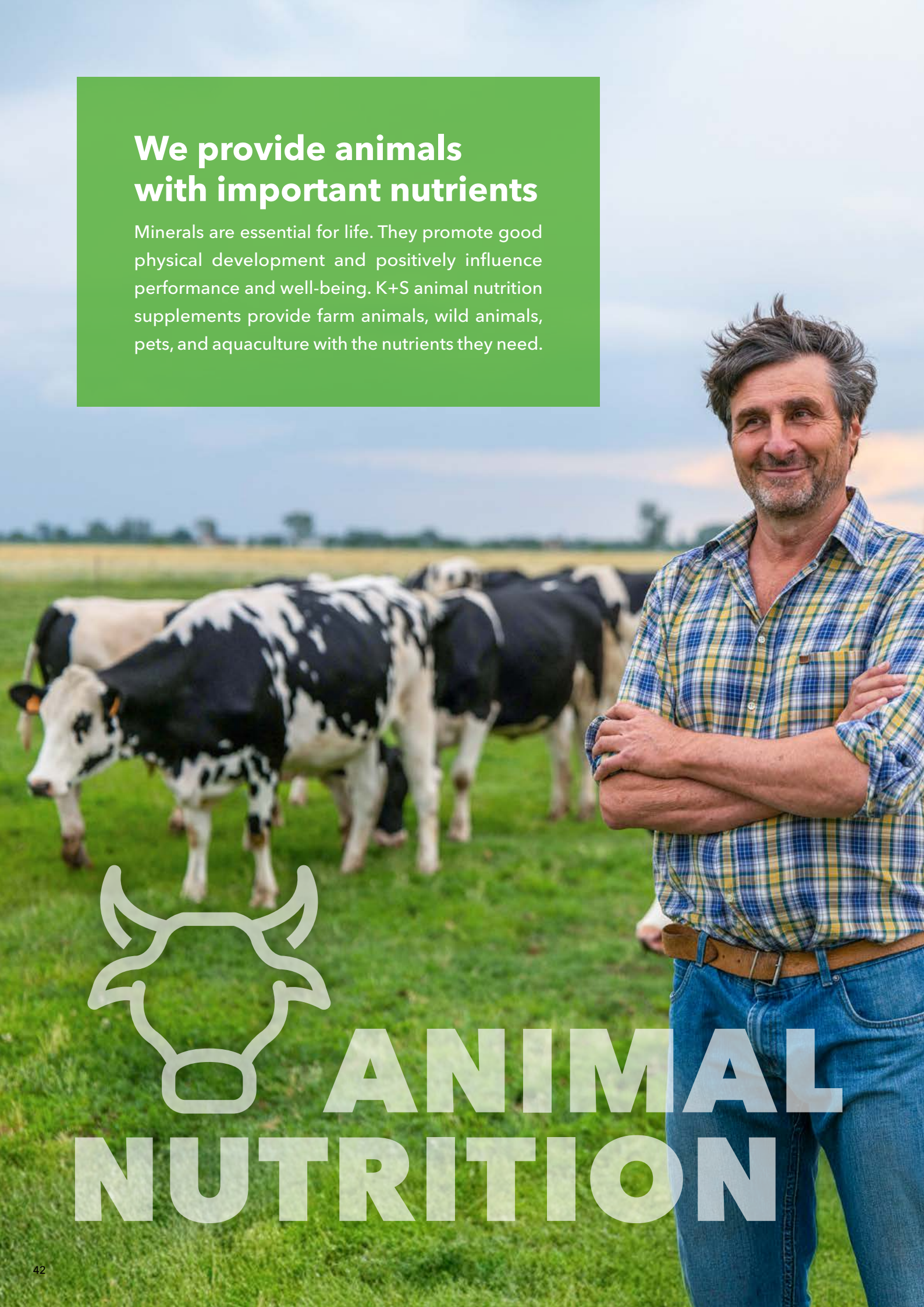
DSD, a subsidiary of K+S, is the central point of contact for public clients in Germany for all matters related to winter road maintenance. With our powerful logistics network and clear focus on quality and supply security, we have been a reliable winter road maintenance partner for many years.

More information about DSD: [www.dsd-winterdienst.de](http://www.dsd-winterdienst.de) (German language only)



## We provide animals with important nutrients

Minerals are essential for life. They promote good physical development and positively influence performance and well-being. K+S animal nutrition supplements provide farm animals, wild animals, pets, and aquaculture with the nutrients they need.

A man with grey hair and a beard, wearing a blue and yellow plaid shirt and blue jeans, stands with his arms crossed in a grassy field. In the background, several black and white cows are grazing. The sky is overcast.

**ANIMAL  
NUTRITION**



## Quality

We are more than just a raw material supplier. All K+S animal nutrition salts originate from our own deposits. As a trusted global partner to the animal nutrition industry, we are committed to providing the highest quality products to ensure the safety and health of your animals.

Our production plants are among the most modern of their kind. All of our sites are certified according to ISO 9001. Our German sites are ISO 50001 certified and, therefore, meet international standards for effective energy management.

✓ **GMP+ FSA  
assured**

✓ **Kosher**

✓ **A-Feed\***

✓ **Pastus+**

✓ **QS**

✓ **Suitable for organic  
production\*\***

*\* Applicable to our mineral lick blocks*

*\*\* In accordance with Regulation (EU) No. 2018/848. Applicable to our NaCl products and Kasa Mag98.*

# Health and performance through self-service

# SOLSEL®

Pure by nature.

Suitable  
for organic  
production



Modern animal husbandry means optimal feeding. SOLSEL lick blocks provide farm and wild animals with the essential minerals they need for a healthy, natural diet. Healthy, high-performance animals require a balanced mineral intake.

## SOLSEL Natural

SOLSEL's pure, natural salt lick blocks, made from rock salt, are suitable for all animal species as a single feed.

## SOLSEL Universal

These copper-free mineral lick blocks are specially formulated for sheep. They provide a targeted supply of trace elements, including zinc, manganese, iron, iodine, and selenium.

## SOLSEL Multi

These copper lick blocks are ideal for farm and wild animals, supporting balanced trace element intake. However, they are not suitable for sheep.

## SOLSEL Extra

These mineral lick blocks are specially formulated for high-performance animals or those with increased requirements, such as in mineral-poor environments. They provide approximately one-third of the daily trace element requirement.

## SOLSEL Wild

The lick blocks provide a balanced formula of essential minerals specifically tailored to the needs of game. They are not suitable for wild sheep. We recommend SOLSEL Universal for sheep.

More about SOLSEL products and application advice: [www.solssel.com](http://www.solssel.com)

# Feed-grade potassium chloride and magnesium sulfate



**KaSa<sup>®</sup>**  
**K99**

## Potassium chloride in animal nutrition

High-purity potassium chloride of natural origin is specifically used to enrich cat, dog, and poultry feed with potassium, which is an important component of a balanced nutrient supply.

As an essential electrolyte, potassium supports cell function, nerve and muscle activity, and a stable heart rhythm. It also helps regulate the body's fluid balance.



**KaSa<sup>®</sup>**  
**Mag98**

## Magnesium sulfate in animal nutrition

This magnesium sulfate anhydrous is of tested quality and is designed to meet the magnesium needs of farm animals such as cattle, horses, sheep, goats, and poultry.

Magnesium promotes bone formation, muscle function, and healthy nerve activity. It promotes muscle relaxation, enhances stress tolerance, and improves overall animal health and well-being.

As certified feed supplements containing potassium and magnesium, KaSa products support the nutrition of healthy, productive animals. They serve as an important source of minerals for the mixed feed industry.

Since the body cannot produce these essential minerals, they must be supplied daily through feed.



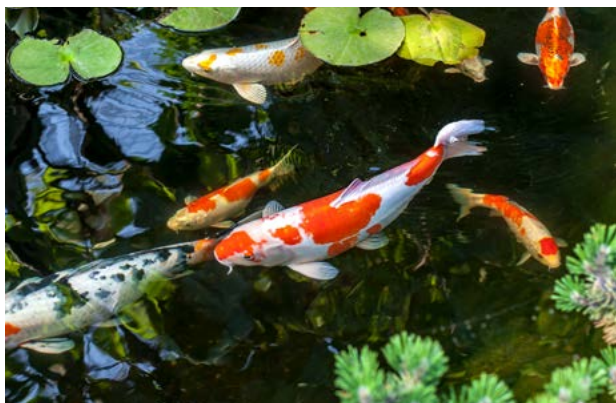
# Sodium chloride for animal nutrition



## Livestock salt

Livestock salt is an important nutrient source for the animal nutrition industry and helps maintain animals' sodium balance. Iodized salt is also available. There are specially tailored grain sizes available for specific requirements.

## Other product



## Pond salt

This pure, natural salt contains no additives and can be used in various ways at different concentrations. It helps fish cope with stress, strengthens their mucous membranes, prevents disease, inhibits parasites, and reduces algae growth. It is particularly suitable for sensitive species, such as koi carp.

### **KALI Academy® – The knowledge platform for plant nutrition**

From professionals, for professionals: As plant nutrition experts, we provide valuable information and practical advice through the KALI Academy. Benefit from our collective knowledge to achieve success!

More about the KALI Academy: [www.kali-academy.com](http://www.kali-academy.com)





# FOOD PROCESSING

## **We provide for tasty and safe food**

Our products enhance the flavor of food and naturally meet the highest quality standards of the food industry. We offer a wide range of potassium, magnesium, and sodium products. Whether you need a spice, preservative, or food enrichment agent for sausage products, baked goods, snacks, or cheese production - we have the right solution for your application.



# Our products for the food processing industry

## Quality

Our production plants adhere to a variety of food standards. Our production plants are among the most modern of their kind. All of our sites are certified according to ISO 9001. Our German sites are ISO 50001 certified and, therefore, meet international standards for effective energy management.

✓ **Kosher**

✓ **Halal**

✓ **FSSC 22000**

✓ **IFS Food**

✓ **Suitable for organic production\***

\* in accordance with Regulations (EU) No. 2018/848

## High-quality and essential: Rock salt and vacuum salt food grade



**NUTRIKS<sup>®</sup>**  
PRIME



Protected by  
Nature.

### The gold standard for the purest table salt

Naturally pure rock salt from unique deposits in Germany, formed millions of years ago from the primordial sea and protected at depths exceeding 400 meters. With its high concentration of pure white salt crystals, NUTRIKS Prime is authentic and a gift from the earth. It is available in two high-quality variants: one with anti-caking agents and one enriched with iodine:

- NUTRIKS Prime
- NUTRIKS Prime Pretzel Salt



**NUTRIKS<sup>®</sup>**  
PURE

### High-purity vacuum table salt, completely soluble

NUTRIKS Pure is high-purity, vacuum table salt with complete solubility. It is obtained through a crystallization process from particularly pure brine. With a sodium chloride purity of at least 99.8%, NUTRIKS Pure meets the highest quality standards. It is available in four variants, including one with added iodine, for a wide range of food processing applications:

- NUTRIKS Pure Vacuum Table Salt
- NUTRIKS Pure Fine Grains
- NUTRIKS Pure Compacted Vacuum Table Salt
- NUTRIKS Pure Vacuum Nitrite Curing Salt

# Potassium, sodium, and magnesium products for a variety of applications



**NUTRIKS®**  
KALISEL+



## Premium-purity potassium chloride for applications with the highest demands

Potassium chloride of exceptional purity - certified according to FSSC 22000 - is ideal for sensitive applications such as the production of baby food. KaliSel+ is suitable for enriching foods and as a processing aid. It is also ideal for sodium-reduced recipes and wherever maximum product safety and purity are required.



**NUTRIKS®**  
KALISEL

## For a balanced diet with high-purity potassium chloride

High-purity potassium chloride is ideal for enriching foods, serving as a processing aid, and replacing sodium in reduced-sodium diets. It has also been proven effective in producing carrageenan from red algae.



**NUTRIKS®**  
BALANCE

## The solution for sodium reduction

This mineral salt blend, made from high-quality vacuum salt and potassium chloride, reduces sodium content by up to 25% without compromising the taste or technological properties of the product.



## NUTRIKS<sup>®</sup> EPSOM

### **A highly pure product containing magnesium in sulfate form**

High-purity magnesium sulfate with an extremely low level of secondary salts. It was developed specifically for use as an auxiliary material in the food industry, where maximum purity is required. For example, it is used in fermentation for vinegar production.

More information about our NUTRIKS salt brands: [www.nutri-ks.com](http://www.nutri-ks.com)



## Potassium Sulfate

Our potassium sulfate (99.9% FCC) is a high-purity mineral salt. This colorless, crystalline powder impresses with its excellent flowability and clear solubility in water. It complies with the Food Chemicals Codex (FCC) and contains an exceptionally low amount of secondary salts.

In the food industry, it is primarily used as an acidity regulator due to its neutral to slightly acidic pH value in aqueous solution. The pH value of products such as lemonade or instant coffee can be optimally adjusted by adding potassium sulfate.

Additionally, potassium sulfate acts as a firming and thickening agent. It affects the consistency of food and helps maintain the desired shape and texture. This high-purity product is also ideal for enriching food with potassium as a dietary supplement.

A large industrial ladle is tilted, pouring a bright orange molten metal stream into a container below. A worker in protective gear is visible in the background. The scene is filled with sparks and industrial lighting.

## **We supply natural raw materials for numerous industries and industrial applications**

We support industrial processes around the globe with our extensive selection of high-purity, reliable products. Our solutions are precisely tailored to the unique needs of different industries and have proven their value in countless applications.

# **INDUSTRIAL APPLICATIONS**

A stylized white icon of an industrial building with a sawtooth roof, positioned to the right of the main title.



# Our products for industrial applications

## Quality

Our production plants for industrial applications are among the most modern in the world and meet the highest quality standards.

✓ **ISO 9001**

✓ **ISO 50001\***

\*Our German sites are ISO 50001 certified and, therefore, meet international standards for effective energy management.



## Potassium chloride

### High-performance product of natural origin

We offer potassium chloride of various grades of purity for demanding industrial processes:

- **99%**, it is used in many processes, including metalworking (as a hardening, soldering, and melting salt), electroplating (as a conductive salt), drilling fluids (for borehole stabilization), pigment and titanium dioxide production, zeolite production, and more
- **99,3% | 99,9% technically or chemically pure**, raw material for technical applications such as biotechnology, metallurgy, cosmetics, and much more

Our potassium chloride products are pure white and finely crystalline. They have low levels of secondary salts and heavy metals and are fully water-soluble.

## k-Drill®

We supply specialized drilling technology solutions with K-Drill C6, C7, and C9. These solutions prevent clay swelling, improve cement bonding, and ensure safe and efficient drilling processes.

## Potassium sulfate

### Special solution for chloride-sensitive applications

We offer potassium sulfate in various grades for industrial processes that require low chloride content and consistent solubility:

- **95% - virtually chloride-free** with special industrial qualities
- **Ultra-fine** - the finest potassium sulfate, specially developed for the building materials industry

**99,6% | 99,9% - technically or chemically pure**, ideal for optimal nutrition of microorganisms, e.g., in insulin production

Our products are free-flowing, highly soluble, and made from natural raw materials—produced without sulfuric acid.



# More products for industrial applications



## Magnesium sulfate

### Versatile source of magnesium and sulfur

We offer magnesium sulfate in various forms, which are optimally tailored to industrial processes involving heat, moisture, or high-purity requirements:

- **Epsom salt (heptahydrate)** - Magnesium sulfate heptahydrate, the most important hydrate form of this magnesium salt used in industry
- **Fine-crystalline Epsom salt** - Magnesium sulfate heptahydrate, the fine alternative
- **Anhydrous magnesium sulfate** - Calcined magnesium sulfate, the anhydrous alternative

All variants are characterized by low levels of impurities, good solubility, and free-flowing properties. They are ideal for chemical processes and fermentation, as well as for use as functional additives in technical applications. They can be used as coagulants in ABS and EPS production, in spinning baths for viscose production, in titanium dioxide production, and as mild drying agents for organic solvents in laboratories.

## Sodium chloride

### Versatile in use, reliable in effect

Our sodium chloride, available as rock salt and vacuum salt, meets a wide range of industrial requirements. It is used as a raw material in the production of plastics (e.g., PVC and polycarbonate), as an additive in the production of dyes, in drilling fluids for oil and gas drilling, in metallurgical processes, in the processing of leather, in the production of food, and for many other purposes.

- **Industrial rock salt** – natural, highly pure (approx. 99%), with a wide range of grain sizes. Particularly economical due to its good flowability
- **Industrial vacuum salt** – highly pure, white salt (99.9%) with complete solubility
- **Hides salt** – coarse-grained rock salt for preserving and preparing animal hides with a special moist preparation containing soda
- **Fishing salt** – dry rock salt for preserving fish. It improves taste, appearance, and shelf life and dissolves particularly well in brine



# Our liquid products at a glance

Our liquid products are suitable for a variety of applications, including winter road maintenance, water softening, and industrial manufacturing processes. They are certified, high-quality, and available in flexible quantities for delivery.



## NaCl brine 22.5% and 26%

### For winter service or for regenerating ion exchangers

Our ready-to-use brine solutions are made from pure rock salt and offer the highest quality and safety. Whether you need it for regenerating ion exchangers or as an effective winter service agent, you will be impressed by this colorless to slightly yellowish solution's powerful effect and ease of use. It is available in 22.5% and 26% concentrations.

## MgCl<sub>2</sub> solution

### For winter road maintenance or dust suppression

Our ready-to-use magnesium chloride solutions are impressive for their versatility and reliability. Available in 20%, 27%, 30%, and 33% saturation levels, they are slightly hygroscopic depending on their concentration, making them particularly effective. This solution is an efficient, ready-to-use alternative for various applications.

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## Quality

Our liquid products meet important standards. Our production plants are among the most modern in the industry and meet the highest quality standards. All of our sites are certified according to ISO 9001. Our German sites are ISO 50001 certified and, therefore, meet international standards for effective energy management.

✓ **EN 16811-1\***

✓ **EN 16811-2\*\***

\* For NaCl brine 22.5% and 26%

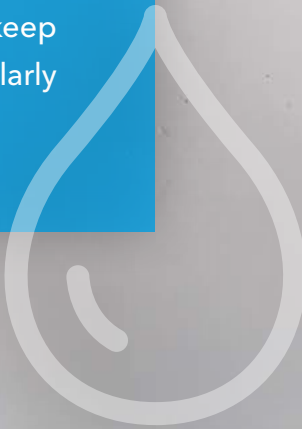
\*\* For MgCl<sub>2</sub> solution in winter service

A photograph of a water treatment system installed in a utility room. The system includes a blue pump, a white pressure tank, and a large vertical cylindrical tank. Various pipes and valves are visible, connected to a wall-mounted manifold. A blue semi-transparent box is overlaid on the lower left of the image, containing text.

## **We soften the water, providing effective protection against limescale deposits**

Soft water is indispensable in many areas. From restaurants and car washes to hospitals, our products prevent limescale buildup and keep water softening systems running smoothly. They also ensure a particularly skin-friendly disinfection of swimming pools.

# **WATER TREATMENT**

A large, stylized white outline of a water drop is positioned on the right side of the image, partially overlapping the blue text box and the main title.



# Our products for soft water



## AXAL<sup>®</sup> PRO

### Vacuum salt tablets and blocks

AXAL PRO salt products optimize the performance of water softening systems. The result? Soft water and less limescale. Cleaning agent and detergent consumption is reduced, and appliances last longer. Vacuum salt tablets and blocks are synonymous with maximum purity (99.9% NaCl), residue-free solubility, and optimal circulation. This ensures that the ion exchange material can effectively regenerate the water softening system.

For over 50 years, AXAL PRO has been a reliable choice for water softening in industries such as manufacturing, hospitality, healthcare, and laboratories.

[www.axal-pro.com](http://www.axal-pro.com)

## Regenit<sup>®</sup>

### Vacuum salt tablets

Regenit salt tablets are made from the purest vacuum salt and are completely free of anti-caking agents. Regenit salt tablets are ideal for producing brine to regenerate ion exchangers in water softening systems. The result is reduced limescale deposits, a longer service life, and increased efficiency of installations and appliances.

### Purity in perfect shape

The salt tablets' patented convex shape and low content of fine particles offer optimized solubility and dissolution speed. The tablets contain no harmful ingredients, dissolve completely, and resist disintegration.

### Quality

Our vacuum salt products are specially formulated for use in water softening systems and meet the highest quality standards to ensure optimal soft water production. Our production facilities comply with ISO 9001 standards. Our German sites are ISO 50001 certified and, therefore, meet international standards for effective energy management.



**EN 973 Type A**



**EN 14805 Type 1**



**Codex Alimentarius**



**NF Standard**

## Other products for water softening



### ***Regesal®***

#### **Vacuum salt granules**

Regesal vacuum salt granules are made of pure, fully soluble salt with a sodium chloride content of 99.7%. No anti-caking agents are added. This is achieved through a complex crystallization process and the use of pure, original brine. The specially graded grain size ensures good solubility and dissolution speed. These granules are ideal for medium to large water softening systems and are specifically used for producing brine for regeneration.

### **REGENERATION SALT**

#### **Pure rock salt**

K+S Regeneration Salt is made from pure, untreated rock salt. Its specially graded grain size ensures good solubility and dissolution speed. It is ideal for use in large commercial water softening systems and specifically for producing brine in large brine preparers.

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#### **Quality**

Both Regesal and the Regeneration Salt meet the purity and testing criteria of European standards. Our production plants adhere to ISO 9001 standards. Our German sites are ISO 50001 certified and, therefore, meet international standards for effective energy management.

- ✓ **EN 973 Type A**
- ✓ **EN 14805 Type 1**
- ✓ ✓ **Codex Alimentarius**
- ✓ **EN 973 Type B**
- ✓ **EN 14805 Type 2**



# Our products for swimming pools

In recent years, the importance of disinfecting swimming pools and other pools using salt electrolysis systems has grown, as it is particularly skin-friendly. Our salt products are specially formulated to meet the rigorous demands of electrochlorination in swimming pools. They are also ideal for preparing pool brine.



## Marina®

### Salt tablets for electrochlorination (Private swimming pools)

Marina salt tablets are used to produce active chlorine for disinfecting and treating swimming pool water through flow electrolysis in private pools such as hotels and wellness facilities. Consisting of high-purity, fully soluble vacuum salt, they guarantee the efficient and trouble-free operation of chlorine electrolysis systems due to their high purity. Their optimal shape ensures optimal solubility and dissolution speed.

## Marina® plus

### Salt tablets for electrochlorination (Public pools)

Marina Plus salt tablets are made of high-purity, fully soluble vacuum salt, which guarantees the trouble-free operation of chlorine electrolysis systems. When used in membrane electrolysis, they enable the production of the highest-purity, most stable sodium hypochlorite with effective disinfecting action. This ensures that the drinking water is free of pathogenic microorganisms. Marina Plus is used in public swimming pools, advanced adventure and therapy pools, drinking water plants, and sensitive facilities such as hospitals and schools.

## Quality

Both Marina and Marina Plus meet the purity and testing criteria of European standards. Our production plants are certified according to ISO 9001 standards. Our German sites are ISO 50001 certified and, therefore, meet international standards for effective energy management.

- |                        |                   |
|------------------------|-------------------|
| ✓ ✓ Codex Alimentarius |                   |
| ✓ ✓ DIN EN 16401       |                   |
| ✓ ✓ EN 973 Type A      | ✓ EN 14805 Type 1 |
| ✓ EN 16370 Type 1      | ✓ EN 16401 Type 1 |
| ✓ EN 16370 Type 2      | ✓ DIN 19643       |

A photograph of a hospital room. In the foreground, a patient bed with white linens and a pillow is visible. To the right, a large medical machine, likely a dialyzer, is shown with various tubes and a digital display screen. In the background, there is a window with blinds and another medical device on a stand.

## **We supply high-purity sodium and potassium salts for pharmaceutical applications**

We supply essential minerals to the pharmaceutical and medical industries. Our high-purity salts are used in dialysis, infusion, and electrolyte solutions, such as oral rehydration salts (ORS).

As the world's only primary producer with our own sources of sodium chloride (NaCl) and potassium chloride (KCl), we are independent of upstream suppliers and can consistently provide high-quality products. Pharmaceutical manufacturers worldwide trust the quality and safety of our salts. All of our raw salts are of natural origin and undergo complex processes to become products of the highest purity. These salts are certified and exceed the purity requirements specified in numerous pharmacopoeias.

# PHARMA





# Our products for the pharmaceutical industry



## APISAL®

### Highest-purity pharmaceutical salt (API)

APISAL is a premium-quality API. It is obtained from a particularly pure brine using a sophisticated evaporative salting process and is ideal for use in dialysis, enteral, and parenteral solutions.

APISAL is produced from high-quality sodium chloride and offers exceptional chemical purity. It contains no additives. APISAL exceeds the purity requirements of various pharmacopoeias.

## HD-NaCl

### Sodium chloride in pharmaceutical excipient quality

HD NaCl is a pharmaceutical excipient suitable for hemodialysis, oral rehydration therapy (ORS), and dietary supplements that do not require Good Manufacturing Practice (GMP) or Certificate of Analysis (CEP) certification. Other applications include skin care and cosmetics.

## Potassium chloride

### For many different pharmaceutical applications

Potassium chloride (99.9% KCl, Ph. Eur., USP) is an ideal pharmaceutical active ingredient for use in dialysis, enteral, and parenteral solutions, as well as other applications. Manufactured from high-quality potassium chloride, it is of exceptional chemical purity. It meets the strict purity requirements of pharmacopoeias.

### Quality

Our potassium and sodium chloride products for pharmaceutical applications meet the highest purity requirements. Our production plants are among the most modern in the industry. All of our sites are certified in accordance with ISO 9001. Our German sites are ISO 50001 certified and, therefore, meet international standards for effective energy management.

- ✓ EU GMP Guide Part II and ICH Q7\*
- ✓ AMG and AMWHV\*
- ✓ Halal
- ✓ Kosher

- ✓ CEP certified\*
- ✓ FDA registered\*
- ✓ US Drug Master File\*

\*APISAL and Potassium Chloride



# CONSUMER

## Salt for home use

Our salt range meets all your needs at home at the highest standard. Use it to season food, as dishwasher salt to protect against limescale stains, for water softening to ensure soft water, or as de-icing salt to keep paths and driveways safe. The quality, versatility, and reliability of our branded and private label products make them an integral part of everyday life.





# Culinary – premium products for culinary enjoyment

Our table salts are known for their quality and taste. They are specially formulated to meet the needs and preferences of our consumers, adding just the right amount of seasoning to a wide variety of dishes. The type of salt is also important – we offer vacuum, sea, and rock salt. We monitor local and international trends and adapt our brands accordingly.

## International brands

Our international brands are based on overarching trends and address the diverse needs and expectations of consumers from different countries. At the same time, we introduce new products to the market in a targeted manner to ensure variety on the salt shelf.



Deep beneath the mighty rock layers of Northern Germany lies a valuable natural treasure: Saldoro rock salt. Formed over millions of years and untouched by external influences, this salt is pristine and pure. It is naturally white or pink and does not contain any additives. Saldoro also offers a special pink rock salt product that inspires new moments of enjoyment.

[www.saldoro.com](http://www.saldoro.com)



Good ingredients are genuine and honest – that's what Salinas d'Algarve stands for. The brand offers sea salt that is 100% natural and combines transparency with authentic origins. Created solely from seawater, sun, and wind, the salt is harvested in the Algarve region using traditional methods and carefully by hand. Salinas d'Algarve remains as natural as possible, with no additives.

[www.salinasdalgarve.com](http://www.salinasdalgarve.com)



Saltissimo table salt is positioned in the entry-level price segment and is aimed at buyers who are price-conscious.

Saltissimo offers reliable quality at a fair price. The table salt is available in various package sizes and types.

# Culinary – premium products for culinary enjoyment

## Local brands

Salt is more than just a staple food; it's also part of cultural diversity and culinary identity. With our strong local brands, we focus on country-specific market conditions and adapt accordingly. This proximity and authenticity establish our brands as key players in the salt industry.



**Cérébos**  
DEPUIS 1902

Since 1902, the traditional French brand has delighted customers with its high-quality table salt and is the second-largest player in the French table salt market (source: Circana, table salt market, food retail, sales, 2024).

With its strong roots in France and widespread popularity in Belgium, Cérébos is a trusted brand for everyday use.

[www.cerebos.fr](http://www.cerebos.fr)

(French language only)



Since 1921, Solné mlýny Olomouc has shaped the salt tradition in the Czech Republic. As the market leader, according to Nielsen's 2024 data on table salt sales in food retail, Solné mlýny Olomouc stands for reliability, high quality, and its iconic blue and white checkered design, which has accompanied generations. The main focus of the product range is rock salt.

**Vatel**  
Desde 1915

Vatel has been a part of Portuguese cuisine since 1915, representing tradition, quality, and trust. The company focuses on sea salt, an essential ingredient in the daily lives of many Portuguese families. Vatel is the market leader in table salt in Portugal (source: Nielsen, table salt, food retail sales, 2024), and is, therefore, a symbol of quality and proximity to consumers.

[www.vatel.pt](http://www.vatel.pt)



# Water softening – salt for soft water

Water quality makes all the difference because soft water benefits the household and everyday life. It prevents limescale buildup and provides noticeable comfort. Our specially developed salt products for water softening systems protect pipes, heaters, and appliances, extending their service life. Soft water also plays an important role in dishwashers. It protects the appliance from limescale buildup and leaves glasses and dishes sparkling clean. When used in pools for chlorine electrolysis, our salt product ensures reliable disinfection, clear, hygienic water, and a pleasant bathing experience. Our products contribute to the longevity of appliances and installations, as well as to hygiene and cost-effectiveness in the home.



**AXAL<sup>®</sup> PRO** **AXAL<sup>®</sup>**

AXAL is the market leader in France, according to GfK's 2024 Water Softening Market report, and our strong international brand offers first-class water softening solutions. AXAL provides consumers with optimal solutions for their homes, including classic tablets and innovative, practical wave-shaped blocks that ensure ideal water circulation and solubility. The high quality of our products ensures the reliable operation of water softening systems. The resulting soft water extends the service life of heating systems and household appliances, reduces energy consumption, and improves living comfort.

[www.axal-pro.com](http://www.axal-pro.com)



**Regesoft**

Regesoft dishwasher salt is priced at the entry level and is aimed at shoppers who are price-conscious. This high-quality, completely soluble evaporated salt guarantees consistent anti-limescale protection for all dishwashers. It is available internationally.



**SOLEA**

Solea is a regional brand for the French market. Solea salt tablets are ideal for keeping your pool water clean and hygienic. Specially developed for use in chlorine electrolysis systems, they ensure reliable, clean operation. Thanks to their unique pressing process, they dissolve evenly, ensuring optimal results with minimal dust formation.



# De-icing salt – safety around the house in winter

When snow and ice make everyday life difficult, de-icing salt ensures safety. Our de-icing salts quickly and efficiently combat slippery conditions, keeping sidewalks, driveways, and roads around your home passable for pedestrians and vehicles.



## De-icing salt, packaged

K+S de-icing salt is available in standard packaging and is ready for immediate use. Its balanced mixture of fine and coarse salt crystals provides a dual effect: the fine crystals immediately thaw ice and snow, while the coarse crystals ensure a long-lasting effect on thicker layers.

## Private labels – tailor-made solutions for retailers

Along with our own international and local brands, we develop and produce private label products for retailers. In the culinary sector, this includes high-quality table salt offered in a variety of grades and packaging options. For water softening, we offer dishwasher salt in various forms. This allows us to support our partners in developing individual product ranges that optimally meet consumer needs.



## Quality

Our production plants are among the most modern of their kind. All sites are certified according to ISO 9001 and meet a wide range of other standards. Our German sites are ISO 50001 certified and, therefore, meet international standards for effective energy management. These certifications allow us to offer high-quality products that are tailored to consumer needs.

### Culinary

- ✓ IFS Food
- ✓ Suitable for organic production\*
- ✓ Kosher

### Water Treatment

- ✓ EN 973 Type A
- ✓ EN 14805 Type 1
- ✓ NF Standard

### De-icing

- ✓ Codex Alimentarius
- ✓ IFS HPC
- ✓ EN 16811-1

\* In accordance with Regulations (EU) No. 2018/848

# DISCOVER OUR WORLD

in three short films –  
just take a look!



**K+S Group**

[www.youtube.com/watch?v=r4c65WxGNGE](http://www.youtube.com/watch?v=r4c65WxGNGE)



**Industry+**

[www.youtube.com/watch?v=CMg-4bQEhYU](http://www.youtube.com/watch?v=CMg-4bQEhYU)



**Agriculture**

[www.youtube.com/watch?v=gIY\\_aqj5DI](http://www.youtube.com/watch?v=gIY_aqj5DI)





# CONTACT

## **Globally available, locally anchored, and tailored to your requirements**

K+S has modern production sites in Europe and North America, as well as a global distribution network spanning Europe, Central and South America, Africa, and Asia. Our products are successfully used in more than 100 countries. We guarantee reliable, efficient, needs-based supplies with individually tailored quantities and packaging solutions. Through our central sales team or regional K+S offices, we offer personalized service and direct contact worldwide.



Chemicals



De-Icing



Animal  
Nutrition



Food  
Processing



Industrial  
Applications



Water  
Treatment

We look forward to receiving your inquiry. Please use the following contact options for questions regarding Chemicals, De-Icing, Animal Nutrition, Food Processing, Industrial Applications, and Water Treatment.

#### **BENELUX**

K+S Benelux NV/SA · Diegem, Belgium

✉ [customer.service.benelux@k-plus-s.com](mailto:customer.service.benelux@k-plus-s.com)

🌐 [www.ks-benelux.com](http://www.ks-benelux.com)

#### **BRAZIL**

K+S Brasileira Fertilizantes e Produtos Industriais Ltda. · São Paulo

✉ [ksbrasileira@ksbrasileira.com.br](mailto:ksbrasileira@ksbrasileira.com.br)

🌐 [www.ks-brasileira.com](http://www.ks-brasileira.com)

#### **GERMANY**

K+S Minerals and Agriculture GmbH · Kassel

✉ [industry@k-plus-s.com](mailto:industry@k-plus-s.com)

🌐 [www.kpluss.com](http://www.kpluss.com)

#### **FRANCE**

K+S France S.A.S. · Reims

✉ [kali@ks-france.com](mailto:kali@ks-france.com)

🌐 [www.ks-france.com](http://www.ks-france.com)

#### **GREAT BRITAIN**

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#### **ITALY**

K+S Italia S.r.l. Unipersonale · Verona

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🌐 [www.ks-italia.com](http://www.ks-italia.com)

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🌐 [www.kpluss.com](http://www.kpluss.com)

#### **MIDDLE EAST/NORTH AND EAST AFRICA**

K Plus S Middle East FZE DMCC · Dubai, UAE

✉ [industrymena@k-plus-s.com](mailto:industrymena@k-plus-s.com)

🌐 [www.ks-middleeast.com](http://www.ks-middleeast.com)

#### **NORTH AMERICA**

K+S North America Corporation · Aurora, IL

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🌐 [www.ks-northamerica.com](http://www.ks-northamerica.com)

#### **POLAND**

K+S Polska sp. z o.o. · Poznań

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🌐 [www.ks-polska.com](http://www.ks-polska.com)

#### **PORTUGAL**

Vatel – Companhia de Produtos Alimentares S.A. · Sobralinho

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#### **SOTHEAST ASIA/AUSTRALIA**

K+S Asia Pacific Pte Ltd. · Singapore

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🌐 [www.ks-asiapacific.com](http://www.ks-asiapacific.com)

#### **CZECH REPUBLIC**

K+S Czech Republic a.s. · Prague

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🌐 [www.ks-cz.com](http://www.ks-cz.com)

If your country is not listed in the overview, please direct your inquiry to our team via email at [industry@k-plus-s.com](mailto:industry@k-plus-s.com) or through our website, [www.kpluss.com](http://www.kpluss.com).



Pharma

We look forward to receiving your inquiry. Please use the following contact details for any questions you have about Pharma.

✉ [pharma@k-plus-s.com](mailto:pharma@k-plus-s.com)

🌐 [www.kpluss.com/pharma](http://www.kpluss.com/pharma)



Consumer

We look forward to receiving your inquiry. Please use the following contact details for any questions you have about Consumers.

✉ [consumers@k-plus-s.com](mailto:consumers@k-plus-s.com)

🌐 [www.kpluss.com/consumer](http://www.kpluss.com/consumer)

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