



# Product Portfolio



Dr. Paul Lohmann®

High value mineral salts

## Product Portfolio Mineral Salts

### Aluminium

Aluminium Citrate	Aluminium Lactate	Aluminium Acetotartrate
Aluminium Hydroxide Acetate	Aluminium Potassium Sulfate	

### Ammonium

Ammonium Acetate	Ammonium Lactate	Ferric Ammonium Oxalate
Ammonium Adipate	Ammonium Oxalate	Ferric Ammonium Sulfate
Ammonium Citrate	Ferric Ammonium Citrate	Ferrous Ammonium Sulfate

### Calcium

Calcium Acetate	Calcium Gluconate	Calcium Phospholactate
Calcium L-Aspartate	Calcium Glycerophosphate	Calcium L-Pidolate
Calcium Bisglycinate	Calcium Hydroxide	Calcium Propionate
Calcium Carbonate	Calcium Lactate	Calcium Saccharate
Calcium Chloride	Calcium Lactate PLUS	Calcium Stearate
Calcium Citrate	Calcium Lactate Gluconate	Calcium Succinate
Calcium Citrate Malate	Calcium Malate	Calcium Sulfate
Calcium Copper EDTA	Calcium Nitrate	Calcium Tartrate
Calcium Disodium EDTA	Calcium Oxalate	Sodium Calcium Edetate
Calcium Formate	Calcium Phosphate	

### Copper

Copper(II) Acetate	Copper(II) Calcium EDTA	Copper(II) Oxalate
Copper(II) Hydroxide Carbonate	Copper(II) Formate	Copper(II) Pyrophosphate
Copper(II) Bisglycinate	Copper(II) Fumarate	Copper(II) Sulfate
Copper(II) Citrate	Copper(II) Gluconate	Copper(II) Tartrate
Copper(II) Sodium Citrate	Copper(II) Glycerophosphate	

### Iron

Ferric Albuminate	Ferric Glycerophosphate	Ferric Pyrophosphate, soluble with Ammonium Citrate
Ferrous L-Ascorbate	Ferrous Lactate	Ferric Pyrophosphate, soluble with Sodium Citrate
Ferrous Bisglycinate	Ferrous Oxalate	Ferric Sodium Pyrophosphate
Ferrous Carbonate with sugar	Ferric Ammonium Oxalate	Ferric Saccharate
Ferric Subcarbonate	Ferric Sodium Oxalate	Ferrous Succinate
Ferric Choline Citrate	Ferric Peptonate	Ferric Sulfate
Ferric Citrate	Ferric Phosphate	Ferrous Sulfate
Ferrous Citrate	Ferrous Phosphate	Ferric Ammonium Sulfate
Ferric Ammonium Citrate	Ferric Phosphate, soluble with Ammonium Citrate	Ferrous Ammonium Sulfate
Ferric Manganese(II) Citrate	Ferric Phosphate, soluble with Sodium Citrate	Ferric Subsulfate
Ferric Sodium Citrate	Ferric Polymaltose Complex	Ferric Tartrate
Ferrous Sodium Citrate	Ferric Pyrophosphate	Ferrous Tartrate
Ferric Sodium EDTA		
Ferrous Fumarate		
Ferrous Gluconate		

### Lithium

Lithium Acetate	Lithium Citrate	Lithium Sulfate
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### Magnesium

Magnesium Acetate	Magnesium Carbonate	Magnesium Fumarate
Magnesium L-Ascorbate	Magnesium Chloride	Magnesium Gluconate
Magnesium DL-hydrogen Aspartate	Magnesium Citrate	Magnesium Glutamate
Magnesium L-hydrogen Aspartate	Magnesium Citrate Malate	Magnesium Glycerophosphate
Magnesium Aspartate PLUS	Magnesium Potassium Citrate	Magnesium Hydroxide
Magnesium Bisglycinate	Magnesium Formate	Magnesium Lactate

### Magnesium

Magnesium Nitrate	Magnesium Phosphate	Magnesium Stearate
Magnesium Oxalate	Magnesium Hydrogen Phosphate	Magnesium Sulfate
Magnesium Oxide	Magnesium L-Pidolate	Magnesium Tartrate
Magnesium Peroxide	Magnesium Propionate	Magnesium Trisilicate

### Manganese

Manganese Carbonate	Manganese Gluconate	Manganese Phosphate
Manganese Citrate, soluble with Sodium Citrate	Manganese Glycerophosphate	Manganese Pyrophosphate
	Manganese Lactate	Manganese Sulfate

### Potassium

Potassium Acetate	Potassium Chloride	Potassium Malate
Potassium Adipate	Potassium Citrate	Potassium Oxalate
Potassium DL-hydrogen Aspartate	Potassium Magnesium Citrate	Potassium Phosphate
Potassium L-hydrogen Aspartate	Potassium Formate	Potassium Propionate
Potassium Magnesium L-hydrogen Aspartate	Potassium Fumarate	Potassium Sulfate
Potassium Benzoate	Potassium Gluconate	Potassium Aluminium Sulfate
Potassium Carbonate	Potassium Glycerophosphate	Potassium Tartrate
Potassium Bicarbonate	Potassium Lactate	Potassium Sodium Tartrate

### Selenium

Sodium Selenate	Sodium Selenite
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### Sodium

Sodium Acetate	Sodium Calcium Edetate	Sodium Propionate
Sodium Diacetate	Sodium Formate	Sodium Pyrophosphate
Sodium Adipate	Sodium Fumarate	Ferric Sodium Pyrophosphate
Sodium Benzoate	Sodium Glycerophosphate	Sodium Selenite
Sodium Carbonate	Sodium Beta Glycerophosphate	Sodium Succinate
Sodium Citrate	Sodium Lactate	Sodium Sulfate
Ferric Sodium Citrate	Sodium Malate	Sodium Tartrate
Ferrous Sodium Citrate	Sodium Oxalate	Sodium Hydrogen Tartrate
Ferric Sodium EDTA	Ferric Sodium Oxalate	Sodium Potassium Tartrate
Calcium Disodium EDTA	Sodium Phosphate	

### Strontium

Strontium Acetate	Strontium Citrate	Strontium Lactate
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### Zinc

Zinc Acetate	Zinc Citrate	Zinc Peroxide
Zinc L-Ascorbate	Zinc Gluconate	Zinc L-Pidolate
Zinc DL-hydrogen Aspartate	Zinc Glycerophosphate	Zinc Pyrophosphate
Zinc L-hydrogen Aspartate	Zinc Lactate	Zinc Stearate
Zinc Bisglycinate	Zinc Oxalate	Zinc Sulfate
Zinc Hydroxide Carbonate	Zinc Oxide	

### Various

Calamine	Glycerophosphoric Acid
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### Triturations

Chromium Trit 5 % C	Iodate Trit 1 % C	Selenate Trit 0.5 % C
Chromium Trit 10 % C	Iodate Trit 5 % TCP	Selenate Trit 0.4 % M
Chromium Trit 1 % M	Iodide Trit 1 % M	Selenite Trit 0.85 % - 0.99 %
Cupromin 6	Molybdenum Trit 1 % C	Selohvita C
Cupromin 20	Molybdenum Trit 1 % M	

## Our Special Product Lines

### DC Granules

Directly compressible granules provide significant benefits for the production of medicines or dietary supplements in the form of tablets.

The biggest advantage of these products is the significant cost savings in production eliminating the need for wet granulation during the manufacturing process. This allows the fast and economical production of tablets.

Additionally our DC Granules can also be a great option for other dosage forms, such as sachets or stickpacks. "In a nutshell" the advantages of Dr. Paul Lohmann® DC Granules are:

- ✓ Reduced production costs and time by sparing the wet-granulation.
- ✓ Good tableting properties, which help to reduce the quantity and cost of binding agents.
- ✓ Good flowability and reduced agglomeration during transport and storage, which avoid additional processing costs.
- ✓ Easy dosing, making "carriers" unnecessary, thus helping to save costs.
- ✓ Reduced dust formation, therefore
  - Lower health risks at the workplace
  - Reduced loss of raw material during processing
  - Low-dust filling of sachets and sticks
  - High compressibility at low compression forces for harder tablets

### Micronized Mineral Salts

Micronized mineral salts are recommended for use in various foodstuffs and pharmaceutical products due to their exceptionally fine particle structure. The organoleptic properties and homogeneity of the salts used in the application are significantly improved. In addition, the special particle structure can also improve the absorption of these minerals.

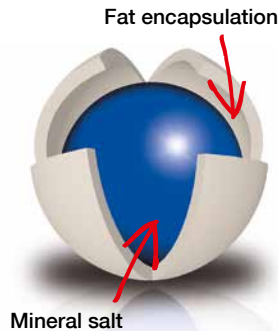
#### Advantages:

- ✓ Improved dispersion behavior in suspensions, and consequently better homogeneity
- ✓ Less sedimentation
- ✓ Optimal sensory properties (no grittiness)
- ✓ Potential enhancement of bioavailability



## Microencapsulated Mineral Salts Triturations

Through a uniquely developed coating procedure, mineral salts are covered with a layer of vegetable fat. Thanks to this encapsulation technology, the mineral salts are enclosed in microcapsules, while maintaining their natural function.



The microencapsulation of mineral salts offers formulators considerable advantages: Ingredients, which are usually not considered for food fortification or for dietary supplements (e.g. highly bio-available ferrous sulfate that is highly reactive) can now be used without adverse sensory implications, such as, a strong metallic taste or changes in the product color.

### Further advantages:

- ✓ Prevention of interactions with other components, e.g. fat oxidation
- ✓ Excellent taste masking properties
- ✓ Improved flowability and dosing control
- ✓ High level of bioavailability and stomach tolerance due to a controlled release of the mineral within the digestive tract

### Additional advantages of Micro2

#### Microencapsulated & micronized mineral salts

- ✓ Smaller particle size (d90: approx. 300 µm)
- ✓ Enlarged specific surface and therefore: Improved functionality (in liquid applications dispersible with reduced sedimentation) and improved bioavailability

The Dr. Paul Lohmann® product portfolio contains several trace elements dissolved in inert carrier substances. These can be used to fortify foodstuffs and also in various dietary supplements.

### Advantages:

- ✓ Cost savings in the process because products can be used and processed directly
- ✓ Easy dosing
- ✓ Safe handling
- ✓ Homogenous distribution of trace elements
- ✓ Reduced toxicity
- ✓ Odor-free

TRACE ELEMENT		DILUTED IN	INERT CARRIER
Selenium	RDA 55 µg	➔	e.g. • Calcium Carbonate • Maltodextrin • Sodium Citrate • Calcium Phosphate
Copper	RDA 1 mg		
Chromium	RDA 40 µg		
Molybdenum	RDA 50 µg		
Iodine	RDA 150 µg		

## Premixes

Besides pure mineral salts, Dr. Paul Lohmann® also offers mixtures of minerals. In these mixtures, mineral salts are optimally combined with regard to their particle size composition and stability. We will be pleased to work with you to develop tailored premixes for your applications.

## LomaSalt®

The Tasty Way  
of Sodium Reduction!

Our LomaSalt® products are ideal sodium-reduced replacements for table salt.



## Special Qualities with Specific Purity Criteria

### Mineral Salts low in Endotoxins

In order to help manufacturers of parenteral products comply with legal and quality requirements, Dr. Paul Lohmann® offers a range of mineral salts very low in endotoxins.



Our low-endotoxin mineral salts can be used for the production of parenteral products:

- Solutions for injection
- Solutions for infusion
- Solutions for:
  - Dialysis
  - Peritoneal dialysis
  - Haemofiltrations
- Ophthalmic preparations

Pharmaceutical manufacturers of preparations for infusion or injection are obliged to observe special regulations specified by the relevant pharmacopoeia and good manufacturing practices. We emphasize that our products are low in endotoxin content but not entirely free of endotoxins. Therefore, these products must be treated with special procedures prior to their use in finished pharmaceutical products. The pharmaceutical manufacturer must ensure that our products undergo special procedures and tests prior to being processed for infusion or injection preparations in order to induce their suitability for their intended purpose.

### Low Heavy Metal Content

The EU has defined limit values for lead, cadmium and mercury, which cannot be exceeded in dietary supplements in Europe:

- **Lead** (max. 3.0 mg/kg)
- **Cadmium** (max. 1.0 mg/kg)
- **Mercury** (max. 0.1 mg/kg)

To ensure that the final products do not exceed the legally defined maximum for these heavy metals, Dr. Paul Lohmann® offers a wide variety of mineral salts with particularly low levels of these substances.

#### Advantages:

- ✓ Simplified compliance with the increasingly stricter standards on limit values for heavy metal content in dietary supplements
- ✓ Controlled low lead, cadmium and mercury levels
- ✓ Complete traceability through reliably documented processes

### Low Aluminium Content

The Joint FAO/WHO Expert Committee for Food Additives (JECFA) has determined a new maximum limit for the weekly intake of aluminium, which is now 1 mg aluminium per kilogram of body weight.

Dr. Paul Lohmann® has the production know-how to offer a variety of mineral compounds as e.g. Calcium Citrates or Calcium Phosphates with a tightly controlled, low content of aluminium.

These products are particularly suitable to be used in food or pharmaceutical applications.

#### Application areas:

- Infant and baby food
- Dietary supplements for children
- Dietetic foodstuffs
- Medicine



## High Purity Food Grade

Dr. Paul Lohmann® High Purity Food Grade products are particularly suitable for the production of sensitive applications and high value products:

- Infant formula and baby food
- Formula for special medical purposes (e.g. clinical nutrition)
- Dietary products
- Nutritional supplements

### Advantages:

- ✓ Simplified compliance with increasingly stricter standards, for example, on limit values for microbiological parameters, heavy metals, trace elements and any other potential contaminants, such as, melamine
- ✓ Savings in time and cost
- ✓ Complete traceability is ensured by documented processes



With over 125 years of producing and providing mineral salts that meet only the highest quality standards, we have established ourselves as a leading global supplier to the pharmaceutical, nutritional supplement, food, and personal care industries.

Based on this experience, we can offer the following:

- GMP and DIN EN ISO 9001:2008 certified production sites
- Products in compliance with the most relevant pharmacopoeias (Ph.Eur., USP, BP), food codices (FCC, E-numbers, etc.) and customer specific requirements
- A wide range of more than 350 various mineral salts
- Regulatory documentation (CEP, ASMF, etc.)
- Tailor-made and innovative solutions for customer questions
- Joint product and application development together with our customers

Product modifications and customer orientated adaptations are possible with respect to:

PHYSICAL PROPERTIES	CHEMICAL PROPERTIES	PACKAGING	LABELING
<ul style="list-style-type: none"> <li>• milling</li> <li>• sieving</li> <li>• micronization</li> <li>• compaction</li> <li>• granulation</li> <li>• bulk density variation</li> <li>• wettability</li> <li>• flowability</li> <li>• blending</li> <li>• dissolving properties</li> <li>• solubility</li> </ul>	<ul style="list-style-type: none"> <li>• purities</li> <li>• pH-values</li> <li>• concentration</li> <li>• microencapsulation</li> <li>• premixes</li> </ul>	<ul style="list-style-type: none"> <li>• bags</li> <li>• big bags</li> <li>• containers</li> <li>• cartons</li> <li>• drums</li> <li>• tanker trucks</li> </ul>	<ul style="list-style-type: none"> <li>• H- and P-phrases</li> <li>• text</li> <li>• code number</li> <li>• color</li> <li>• coding</li> <li>• bar code</li> </ul>

The information given in the document corresponds to our current knowledge. We warrant in the frame of our General Terms and Conditions of Sale that our products are manufactured in accordance with the specifications. However, we disclaim any liability with regard to the suitability of our products for a particular purpose or application or their compatibility with other substances. Tests have to be performed by the customer who also bears the risk in this respect. Nothing herein shall be construed as a recommendation to use our products in conflict with third parties' rights.

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