



# Mineral Bisglycinates



**Dr. Paul Lohmann®**

**High value mineral salts**

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# Mineral Bisglycinates

Bisglycinates are salts of the endogenous amino acid Glycine. Here, the central element is surrounded by two organic Glycine molecules. Chemically, this fully reacted complex constitutes a chelate. The term chelate derives from the Greek word “chele” for crab scissors, which allegorizes the protecting properties of Bisglycinates. The chelate structure has a positive effect on the solubility which improves the bioavailability of this organic compound<sup>1,2</sup>.

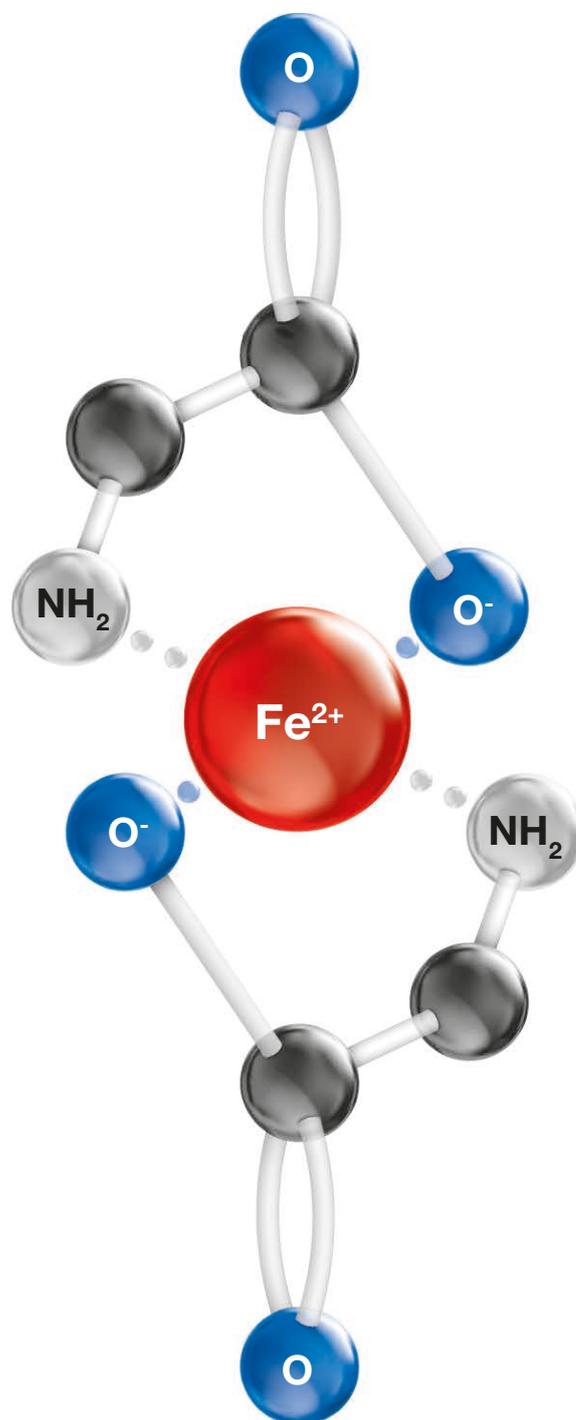
## Bioavailability

The amino acid chelate is digested only in the intestine, which optimizes the absorption<sup>3</sup>.

Ferrous Bisglycinate is absorbed intact into the mucosal cells of the intestine where it is hydrolyzed into its Iron and Glycine components<sup>1,2</sup>. Structure and size of the compound is of importance in determining its absorption<sup>2</sup>. Since Glycine is the smallest amino acid molecule it can be effectively absorbed by the intestine. The absorption rate of Mineral Bisglycinates is increased in comparison to common Mineral Salts<sup>4,5,6</sup>. The absorption rate of Ferrous Bisglycinate for example is up to 5 times higher than Ferrous Sulfate<sup>1,2,3</sup>.

Mineral Bisglycinates are highly stable chelates developed to provide a safe product with improved bioavailability for food fortification or food supplements<sup>1</sup>. The use of Mineral Bisglycinates decreases the occurrence of gastro-intestinal side effects like epigastric pain, nausea, vomiting, abdominal cramps, diarrhea and constipation<sup>1</sup>.

Dr. Paul Lohmann® is the first manufacturer in the world to provide Ferrous Bisglycinate as an API (active pharmaceutical ingredient). We are glad to develop further Bisglycinate APIs upon request.



# Our Product Line

Product	Product No.	Quality	Physical appearance	Color
Calcium Bisglycinate	505082002*	food supplement	powder	white to off-white
Copper(II) Bisglycinate	505084001	food supplement   chem. pure	powder	blue
	505084002	food supplement		
Ferrous Bisglycinate	505085001*	food supplement   chem. pure   JECFA	powder	greenish-brown
	505085002*	API grade		
Ferrous Bisglycinate DC 100	505085003* <b>NEW</b>	food supplement	granules, directly compressible	greenish-brown
Magnesium Bisglycinate	505083001*	food supplement   chem. pure	powder	white
Manganese(II) Bisglycinate	505088001*	food supplement	powder	beige
Zinc Bisglycinate	505081001*	food supplement   chem. pure	powder	white to off-white
	505081002*			

\* Citric acid is used as a stabilizing agent during processing

++ > 100 g/l    
 + 10 – 100 g/l    
 — 1 – 10 g/l    
 — — < 1 g/l

The solubility specified here was measured in water.  
The solubility is influenced by many factors in the application.



## Benefits

- ◆ Excellent bioavailability<sup>1</sup>
- ◆ Well tolerated<sup>1</sup>
- ◆ Fully reacted mineral

Product	Flavor	Metal content (per 100 g)	Solubility 20 °C	pH (1 % solution)
Calcium Bisglycinate	slightly sweet, slightly bitter, slightly sandy	approx. 13.5 % Ca	--	approx. 9
Copper(II) Bisglycinate	metallic	approx. 29 % Cu	-	approx. 8
Ferrous Bisglycinate	slightly metallic, sweetish	approx. 21 % Fe(II)	+	approx. 8
Ferrous Bisglycinate DC 100	slightly metallic, sweetish	approx. 21 % Fe(II)	+	approx. 8
Magnesium Bisglycinate	exothermic, sweet, fishy	approx. 10.5 % Mg	+	approx. 10
Manganese(II) Bisglycinate	sweet	approx. 20 % Mn	+++	approx. 9
Zinc Bisglycinate	slightly bitter, slightly astringent	approx. 27 % Zn	+	approx. 8

## Legal Considerations

In the EU, six different Mineral Bisglycinates are mainly approved for the fortification of food supplements, as well as for the fortification of food, infant formula and follow-on formula, processed cereal-based food and baby food, food for special medical purposes, and total diet replacement for weight control.

Bisglycinates	Food <sup>7</sup>	Food Supplements <sup>8</sup>	Infant formula and follow-on formula <sup>9</sup>	Processed cereal-based food and baby food for infants and young children <sup>9</sup>	Food for special medical purposes <sup>9</sup>	Total diet replacement for weight control <sup>9</sup>
Calcium bisglycinate		✓			✓	✓
Copper bisglycinate		✓				
Ferrous bisglycinate	✓	✓	✓	✓	✓	✓
Magnesium bisglycinate		✓			✓	✓
Manganese bisglycinate		✓				
Zinc bisglycinate	✓	✓			✓	✓

blue = in the Dr. Paul Lohmann® portfolio

### References

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- Regulation (EC) No 1925/2006 of the European Parliament and of the Council on the addition of vitamins and minerals and of certain other substances to foods
- Directive 2002/46/EC of the European Parliament and of the Council on the approximation of the laws of the Member States relating to food supplements
- Regulation (EU) No 609/2013 of the European Parliament and of the Council on food intended for infants and young children, food for special medical purposes, and total diet replacement for weight control

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.

german manufacturer  
since 1886



Dr. Paul Lohmann® –  
Your Partner for high  
value Mineral Salts

With over 130 years of producing Mineral Salts that meet the highest quality standards we have been established as the leading global supplier to the pharmaceutical, biopharmaceutical, nutritional supplement, food and cosmetic industries.

## Our expertise

- ◆ GMP and DIN EN ISO 9001:2015 certified production sites
- ◆ FSSC 22000/ISO 22000 certified
- ◆ Processes according to HACCP
- ◆ Successfully inspected production site in Emmerthal by FDA (U.S. Food and Drug Administration) in the context of FSMA (food safety modernization act)
- ◆ Tailor-made and innovative solutions according to customer requirements
- ◆ Highly qualified experts in R&D lab and application technology with long-term experience and a wide variety of possibilities to develop new products and applications
- ◆ Joint product and application development together with our customers
- ◆ Our manufactured products are exclusively Made in Germany
- ◆ A wide range of more than 400 different Mineral Salts
- ◆ Products in compliance with the most relevant pharmacopoeias (Ph.Eur., USP, BP), food codices (FCC, E-numbers, etc.) and customer specific requirements
- ◆ Regulatory documentation (CEP, ASMF, etc.)
- ◆ REACH compliance on request
- ◆ Wide range of production equipment
- ◆ Social and environmental standards (DIN EN ISO 50001, EcoVadis, Sedex)
- ◆ High purities can be realized according to specific requirements

## Modification

- ◆ Physical properties
- ◆ Chemical properties
- ◆ Packaging
- ◆ Labeling

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