

Librel®

Highly soluble chelates
for plant nutrition



 **BASF**

The Chemical Company

A great mixer, tackling micronutrient deficiencies effortlessly

Microgranular Librel® range dissolves rapidly and completely and offers unrivalled compatibility with other crop care products. Proven chelate chemistry guarantees outstanding performance and effectiveness. It's because at BASF, we create chemistry.

Higher Yield. Librel® chelates enhance plant development and maximise yield by improving plant nutrition and soil fertility. BASF micronutrients replace key soil elements that major N-P-K fertilisers usually do not replenish.

Effective. Librel® is based on well-established EDTA and DTPA chelate chemistry which provides highly stable and bioavailable micronutrient sources. Stability leads to rapid crop absorption and optimum biological performance. Librel® chelates are proven in trials and by over twenty years' successful field use throughout the world.

Quality. All Librel® products are manufactured and marketed under a system approved to ISO 9001:2008 quality standards. Many Librel® micronutrient products conform to the definition EC FERTILISER, another measure of quality and suitability of purpose. All Librel® micronutrients are manufactured with BASF high performance Trilon® chelating agents.

Compatible. All Librel® chelates are compatible with a wide range of herbicides, fungicides, insecticides and other crop care products. This enables convenient and economical tank mixing. Comprehensive, up-to-date and fully endorsed recommendations with the latest products are published regularly. Librel® products are also completely stable in the presence of soluble phosphates found in foliar and soluble fertilisers.

Soluble. Supplied as free-flowing, dustless microgranules, Librel® chelates dissolve rapidly and completely, even in hard or cold water. There are no insoluble impurities to cause filter or nozzle blockages. They are suitable for addition to spray tanks through filter baskets or modern induction bowl systems.



Crop Safe. Because Librel® chelates are not caustic at recommended rates there is minimal risk of leaf scorch or root damage, problems often associated with inorganic formulations.



Single Element Chelates

| Product | Description | Physical form | EC Fertiliser | Principal uses | | | |
|------------------|---|---------------------------|---------------|----------------|--------|-------------|-----------|
| | | | | Soil | Foliar | Hydroponics | Pot plant |
| Librel® Fe-LO | EDTA chelate, containing 13.2% iron, as Fe ³⁺ | micro crystalline granule | ■ | ■ | ■ | ■ | |
| Librel® Fe-HI | EDDHA / EDTA chelate, containing 7.0% iron, as Fe ³⁺ | agglomerated microgranule | | ■ | | | |
| Librel® Fe-DP | DTPA chelate, containing 7.0% iron, as Fe ³⁺ | agglomerated microgranule | ■ | ■ | ■ | ■ | |
| Librel® Fe-DP 6L | DTPA chelate, containing 6.0% iron, as Fe ³⁺ | liquid | ■ | | | ■ | ■ |
| Librel® Ca | EDTA chelate, containing 9.5% calcium, as Ca ²⁺ | agglomerated microgranule | | | ■ | | |
| Librel® Co | EDTA chelate, containing 13.0% cobalt, as Co ²⁺ | agglomerated microgranule | ■ | ■ | ■ | ■ | |
| Librel® Cu | EDTA chelate, containing 15.0% copper as Cu ²⁺ | agglomerated microgranule | ■ | ■ | ■ | ■ | |
| Librel® Mg | EDTA chelate, containing 5.5% magnesium, as Mg ²⁺ | agglomerated microgranule | | | ■ | | |
| Librel® Mn | EDTA chelate, containing 13.0% manganese, as Mn ²⁺ | agglomerated microgranule | ■ | ■ | ■ | ■ | |
| Librel® Zn | EDTA chelate, containing 15.0% zinc, as Zn ²⁺ | agglomerated microgranule | ■ | ■ | ■ | ■ | |

Rates of Use. The effectiveness of Librel® chelates enables much lower rates of use compared to traditional inorganic micronutrients and even liquid chelate formulations.



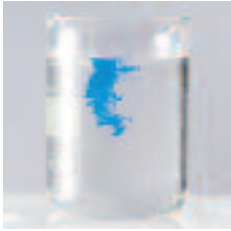
Mixed Element Chelates

| Product | Description | Physical form | EC Fertiliser | Principal uses | | | |
|------------------|---|---------------------------|---------------|----------------|--------|-------------|-----------|
| | | | | Soil | Foliar | Hydroponics | Pot plant |
| Librel® BMX | EDTA chelate mixture containing 1.7% Cu, 3.35% Fe, 1.70% Mn, 0.60% Zn, and inorganic salts of B (0.875%), Mo (0.023%) | agglomerated microgranule | ■ | ■ | ■ | ■ | |
| Librel® RMX 8 | EDTA chelate mixture containing 2.6% Cu, 5.6% Fe, 2.6% Mn, 2.6% Zn | agglomerated microgranule | ■ | ■ | ■ | ■ | |
| Librel® RMX 13 | EDTA chelate mixture containing 0.75% Cu, 6.8% Fe, 3.4% Mn, 1.0% Zn, and inorganic salts of Mo (0.457%) | agglomerated microgranule | ■ | ■ | ■ | ■ | |
| Librel® RMX 26 | EDTA chelate mixture containing 1.5% Cu, 4.0% Fe, 2.0% Mg, 4.0 Mn, 1.5% Zn, and inorganic salts of B (0.5%), Mo (0.1%) | agglomerated microgranule | ■ | ■ | ■ | ■ | |
| Librel® RMX 27 | EDTA chelate mixture containing 0.6% Cu, 4.0% Fe, 0.75% Mg, 3.0% Mn, 4.0% Zn, and inorganic salts of B (1.5%), Mo (0.05%) | agglomerated microgranule | ■ | ■ | ■ | ■ | |
| Librel® RMX 29 | EDTA chelate mixture containing 0.6% Cu, 4.0% Fe, 3.0% Mn, 4.0% Zn, and inorganic salts of B (1.5%) and Mo (0.05%) | agglomerated microgranule | ■ | ■ | ■ | ■ | |
| Librel® Mix-AL | EDTA chelate mixture containing 0.3% Cu, 7.5% Fe, 4.0% Mn, 0.5% Zn, and inorganic salts of B (0.5%), Mo (0.2%) | agglomerated microgranule | ■ | ■ | ■ | ■ | |
| Librel® TMX AP01 | EDTA chelate mixture containing 0.25% Cu, 6.0% Fe, 2.0% Mn, 5.0% Zn, and inorganic salts of B (0.5%), Mo (0.05%) | agglomerated microgranule | ■ | ■ | ■ | ■ | |
| Librel® TMX AP02 | EDTA chelate mixture containing 1.0% Cu, 3.0% Fe, 1.0% Mn, 5.0% Zn, and inorganic salts of B (1.0%), Mo (0.1%) | agglomerated microgranule | ■ | ■ | ■ | ■ | |
| Libremix® B | EDTA chelate mixture containing 1.6% Cu, 3.0% Mn, 0.6% Zn and inorganic salts of B (0.8%), Mo (2.5%) | agglomerated microgranule | ■ | ■ | | ■ | ■ |

Convenience. Librel® mixed element chelates are specifically designed for convenience and provide all necessary metals in one single product. Thus it is assured that the plant takes up all required metals for a healthy growth. Our broad range of mixed element micronutrients makes it easy for the farmer to provide adequate plant nutrition. He can pick one of the Librel® mixes above that best suits the plant requirements and soil deficiencies.

Storage. No special precautions are necessary. Most liquid micronutrient formulations need to be protected from frost by storing in heated warehouses. Compared to equivalent liquid formulations, less than half the weight is needed to treat a given area.

Economical. Librel® chelates offer excellent value for money. Moreover, when the advantages of multiple tank mixing are taken into account, giving savings in application costs for example, their full value becomes apparent.



Photographs taken at one-second intervals showing rapid dissolving Librel® Cu when added to water

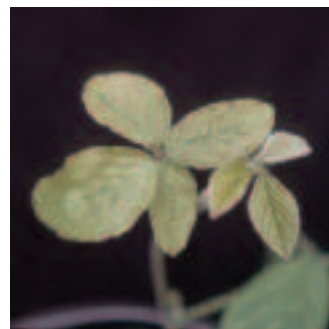


Librel® has always offered you quality and effectiveness. With its easy-to-use and convenient microgranular formulation, it provides a more cost-effective solution to all your micronutrient needs.

Librel® Applications:

- Arable crops
- Horticultural
- Orchards
- Ornamentals
- Hydroponic systems
- Fertiliser Formulations

Soyabean leaves with spotlight necroses due to Mn deficiency



Necroses on cereal due to Mn deficiency



Europe

BASF SE
Home Care & Formulation Technologies
Europe
Carl-Bosch-Straße 38
67056 Ludwigshafen · Germany
Phone: +49 621 60-0
Fax: +49 621 60-42525
e-mail: industrial-formulators-eu@basf.com
www.basf.com/care-chemicals

North America

BASF Corporation
100 Campus Drive
07932 Florham Park, NJ · USA
Phone: 800 526-1072
+1 973 245-6000
Fax: +1 973 245-6002
e-mail: industrial-formulators-na@basf.com

South America

BASF S.A.
AV. Faria Lima, 3600
04538-132 São Paulo – SP · Brazil
Phone: +55 11 3043-2629
Fax: +55 11 3043-6989
e-mail: industrial-formulators-sa@basf.com

Asia Pacific

BASF East Asia
Regional Headquarters Ltd.
45th Floor, Jardine House
1 Connaught Place
Central Hong Kong · China
Phone: +852 273 10111
Fax: +852 273 49631
e-mail: industrial-formulators-hk@basf.com

Safety

We know of no ill effects that could have resulted from using our products for the purpose for which they are intended and from processing them in accordance with current practice. According to the experience we have gained up to now and other information at our disposal, our products do not exert any harmful effects on health, provided that they are used properly, due attention is given to the precautions necessary for handling chemicals, and the information and advice given in our safety data sheet are observed.

Labeling

Details about the classification and labeling of our products and further advice on safe handling are contained in the current safety data sheets.

Note

This document, or any answers or information provided herein by BASF, does not constitute a legally binding obligation of BASF. While the descriptions, designs, data and information contained herein are presented in good faith and believed to be accurate, it is provided for your guidance only. Because many factors may affect processing or application/use, we recommend that you make tests to determine the suitability of a product for your particular purpose prior to use. It does not relieve our customers from the obligation to perform a full inspection of the products upon delivery or any other obligation. NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH, OR THAT THE PRODUCTS, DESIGNS, DATA OR INFORMATION MAY BE USED WITHOUT INFRINGING THE INTELLECTUAL PROPERTY RIGHTS OF OTHERS. IN NO CASE SHALL THE DESCRIPTIONS, INFORMATION, DATA OR DESIGNS PROVIDED BE CONSIDERED A PART OF OUR TERMS AND CONDITIONS OF SALE.