Dissolvine® E-Zn-15

Dissolvine® E-Zn-15 is a product developed for usage on zinc deficient soils, in hydroponic systems and for zinc deficient crops through foliar application. Foliar application is recommended when the soil is highly alkaline or when soil application is impossible for other reasons. For other applications and products please ask for our other Akzo Nobel Micronutrients products.

Dissolvine® E-Zn-15 contains 148 grams zinc per kg of product as **Zn-disodium-EDTA** derived from ethylenediaminetetraacetic acid.

Crops and Soils Susceptible to Zinc Deficiency

Cereal crops, especially maize (corn), and fruit trees are most commonly susceptible to zinc deficiency. This is of commercial importance in fruit trees like apple, pear, peach, citrus and grape. Other crops susceptible to zinc deficiency include bean, pecan, tomato, cotton, olive and rubber. Also in intensive wetland rice cultures zinc deficiency is problematic. Zinc has to be applied to most high productive crops and soilless media for productive and economic growth. Zinc is often deficient in high phosphate soils and in alkaline and calcareous soils, e.g. coastal and geological shell sands. Prone to deficiency are also highly leached acid sand soils and soils derived from granite as parent rock material. Although zinc might be present it can be immobilized in soils containing a high organic matter content, e.g. (acid) peat soils, and in clay soils with low silicon and magnesium contents. High iron concentrations can have a competitive effect on zinc availability.

Effects and Symptoms of Zinc Deficiency

Zinc is a component of several enzymes. Deficiency symptoms are expressed in a disturbance of respiration, photosynthesis and protein synthesis. Also the production of the growth hormone auxine fails. This causes dwarf growth mainly in fruit crops: short internodes (rosetting) and small leaves (little leaf disease). Zinc plays a key-role in the formation of pigments, which have a critical effect on fruit coloring. In maize, zinc deficiency appears as yellowish-white stripes and spots. Necrotic symptoms are hard to distinguish from Fe or Mn chlorosis. Competition by Cu and Fe at the Zn-complex is possible, while in the leaves Ca, Mg and Cu are antagonistic.

These are the most frequent symptoms of zinc (Zn) deficiency:

- Symptoms appear in young leaves since zinc can not be mobilized from old to new tissue
- Dwarf growth: short internodes (rosetting) and small leaves ("little leaf disease")
- In Maize and Rice yellowish-white striping occurs in the lower half of the leaves.
- In citrus yellowish interveinal areas develop (mottle leaf). Twigs die back and fruit quality and quantity is reduced
- Chlorotic symptoms are similar to Mn or Fe deficiency, and can be necrotic in final stage.

Directions for Use

Dissolvine® E-Zn-15 is meant for application to plants, after diluting with water.

Application of the Product

The product can be applied by foliar feeding or by soil application and in hydroponic systems.

A. Soil Application

EDTA from Zn-EDTA prevents precipitation of zinc phosphates and hydroxides, which makes fertilization combined with NPK fertilizers possible. Soil application gives best results when soil pH is below 7-7.5. Consider foliar application for high pH soils.

Dissolve in water and apply to the soil close to the plants or trunks. After each application water carefully to enhance nutrient uptake. Application must be made in a way that ensures the solution to reach the roots. **Dissolvine® E-Zn-15** is totally water soluble and therefore very suitable for fertigation.

B. Hydroponics

In hydroponics **Dissolvine® E-Zn-15** improves the efficacy of Fe-chelates. Though the pH in the irrigation water is around pH 6, the pH in the fertilizer tank can be very low. **Dissolvine® E-Zn-15** is stable from pH 2 onwards. Never bring **Dissolvine® E-Zn-15** in direct contact with concentrated acids.

Correct **Dissolvine® E-Zn-15** doses for natural zinc concentration in the water used. Vegetable crops (tomato, cucumber etc.) do need 4-5 µmol Zn/l (0.26-0.33 mg/l) continuously, flower crops 3-4 µmol Zn/l (0.20-0.26 mg/l). Consult table A for equivalents in grams of product.

C. Foliar Application

Foliar feeding provides a rapid response and is recommended when fast correction is necessary or soil application is expensive and impractical, or impossible, for example if the soil is extremely wet. Repeated applications might be necessary. For improving leaf coverage it is advisable to add a wetting agent, efficacy may be further increased by adding urea.

Dissolve the product to a suitable concentration, and apply with spraying equipment. The pH of final concentration should be lower than 6.5, the final EC lower than 1. Dose rates for a specific crop should be tested first on a small scale. When zinc deficiency is severe, a repeat application should be made after 10-14 days.

Start treatment in early growth stage, but end before blossoming. To reduce the risks of leaf scorching avoid application during hot, sunny days. Treatments in the early morning are preferred.

Compatibility

The product can be mixed with most other fertilizers and agrochemicals without inactivation, precipitation or scorching problems. Do not mix with chemicals based on copper. With liquid fertilizers use the mixture without delay. Test mixed product first on a small scale.

Mixing

Add the required amount of product to a half filled sprayer tank, then complete the filling process. Ensure that sprayer nozzles are adequate for 200-1000 liters water/ha. Use the higher volume under dry conditions, when treating larger crops and at dense foliage.

Precautions

- √ Store in original container, keep tightly closed and store in cool dry place.
- √ Store away from children, pets, livestock and foodstuff.
- √ Wash hands after application and before meals.

No health hazards are involved in normal handling of **Dissolvine® E-Zn-15** but it is advisable to follow the above precautions.

Packing

The product is packed 25 kg net in cardboard boxes with an inside polyethylene bag. Shelf life of the product is more than 3 years.

Dose Rates

The following dosages can be used as guidance. Always adapt to the crop and cultivar involved and to the local circumstances.

A. Glass house Crops:

Crop	Zn deficient soil / compost	Soilless culture*	Foliar application
	For every watering		2 weeks interval
Vegetables	4 g/1000 l	1.7-2.2 g/1000 l	0.2-0.7 g/l
Cut flowers	3 g/1000 l	1.3-1.7 g/1000 l	0.2-0.7 g/l
Potted flowers, pot plants		1.3 g/1000 l	0.2-0.6 g/l

*) For the dose rate of a 1m^3 tank, 100 times concentrated: multiply the amount of grams mentioned with 100.

B. Arable Crops and Open Field Horticultural Crops:

Soil application, arable crops	2-8 kg/ha	Apply pre-drilling or pre-planting to bare soil in a convenient volume of water, cultivate after spraying.
Maize, Rice	4-15 kg/ha	
Soil application, horticultural crops	2-5 kg/ha	Apply through the watering system. Use enough water to wet the top 10 cm of the soil. Use clean water immediately afterwards to wash the zinc chelate from the foliage. Or use the last 5 minutes the foliar application rate.
Citrus	15-50 g/pl	
Apple, Pear	10-40 g/pl	
Grape	5-15 g/pl	
Foliar application	1-1.5 kg/ha	Apply in a water volume that gives adequate coverage of the crop (200-1000 L). Do not exceed a concentration of 0.1%.
Citrus	1-2 kg/ha	
Apple, Pear	1-1.5 kg/ha	
Grape	1 kg/ha	

1 kg/ha = 0.9 lbs/acre 1 g/l = 0.13 oz/gal

Main characteristics

- Solubility in water**:** 1,000 g/l (20 ºC)
- EC (1 g/l): 0.38 mS/cm
- Chloride free