



Zincubor®

Guaranteed analysis: 14.5% B, 29% Zn
 $2ZnO \cdot 3B_2O_3 \cdot 3.5H_2O$
 Zinc borate

Zinc and boron, essential plant nutrients

Zinc and boron are two of the seven micronutrients essential for proper plant nutrition and growth. The deficiency of these two micronutrients is widespread across several regions in the world with several crops susceptible to deficiencies.

Correcting zinc and boron deficiency

Zinc and boron deficiencies can be remedied by the correct application of fertilizer materials in solid or liquid forms. The rate, method, and time of application depends upon the crop and management practices. Consult an agronomist before applying *Zincubor*® fertilizer.

Boron deficiency in crops

Boron deficiency shows in clearly defined ways in certain crops. Generally, by the time visible symptoms are seen, yields will already have been adversely affected. The best way to assess the need for boron fertilization is through soil testing and tissue analysis. In this way, boron supplementation can form part of a 'balanced nutrition' approach to crop fertilization.

Certain crops are known to be more susceptible to lack of boron than others (Table 1). There are several factors that need to be

taken into account when boron deficiency may be suspected:

- High rainfall
- Recent liming (pH over 6.6)
- Previous cropping
- No boron nutrition
- Sandy soils
- High organic matter

Zinc deficiency in crops

Zinc deficiency is widespread in the world. It can be identified by visual symptoms in leaves and sometimes in fruits. Zinc deficiency causes characteristic 'rosetting' or clustering of small leaves at the top of the plant. U.S. Borax recommends soil testing and tissue analysis to assess the status zinc available in the soil for crops.

Certain crops are known to be more susceptible to lack of zinc than others (Table 2). Several factors affect zinc availability in soils such as:

- Increasing soil pH
- Zinc adsorption
- Soil organic matter
- Interaction with other nutrients
- Climatic conditions

Table 1. Crops with high sensitivity to B deficiency

Alfalfa	Chrysanthemums	Peanuts
Apples	Coffee	Pine
Broccoli	Cotton	Red beets
Carnations	Eucalyptus	Rutabaga
Cauliflower	Grapes	Sugar beets
Canola (oilseed rape)	Mangold	Sunflowers
Carrots	Oil palm	Swedes
Celery	Olive	Turnips

Table 2. Crops with high sensitivity to Zn deficiency

Apples	Flax	Pecans
Beans, lima beans	Fruit trees (deciduous)	Pine
Castor bean	Grapes	Rice
Citrus	Hops	Soybean
Corn	Onions	Sweet corn



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Additional reading

Boron Deficiency—Its Prevention and Cure, by V.M. Shorrocks (available from U.S. Borax on request).

Mineral Nutrition of Higher Plants, by Horst Marschner, Academic Press.

Soil Fertility and Fertilizers: An Introduction to Nutrient Management, by John Haviln et al, Pearson.

Advantages of Zincubor

Ease of a two-in-one product

Because zinc and boron deficiency are widespread around the world, a product with both nutrients is a good fit in many regions. *Zincubor* brings these two important micronutrients together in one product. Perfectly formulated with a 2:1 zinc-to-boron ratio that exactly meets most crop demands.

Bulk density		
	kg/m ³	lb/ft ³
Loose pack	649	41
Tight pack	1000	65

High quality production

Zincubor is produced at U.S. Borax's California facility in the United States. It is a synthetic fertilizer material made out of high-quality raw materials from our world-class boron and zinc sources. *Zincubor* is a consistent product with little to no impurities.

Main uses

- Micronutrient coating: *Zincubor* is designed to coat granular/compacted fertilizers giving flexibility on the micronutrient rate and assuring an even distribution in the field. U.S. Borax recommends the use of a binder material during the coating process.
- Compound fertilizer: *Zincubor* can be used as a raw material to produce compound or fortified fertilizers
- Direct soil application: Depending upon the cropping system, *Zincubor* can be applied directly to soil as a standalone application
- Suspension fertilizer: *Zincubor* can be used as a raw material to produce suspensions

Typical <i>Zincubor</i> properties	
Refractive index	1.58
Solubility	Less than 0.28% in water at 20°C
Thermal stability	Up to 290°C
Specific gravity	2.77
Median particle size	8 μ
Appearance	White, powder
pH in aqueous solution at 20°C	6.8 – 7.5
Moisture loss @ 160°C	≤0.5%



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