



# MANGANESE CHELATE 5%

## ORGANIC CHELATE *With 2% SULFUR*

- **Assists In Enzyme Formation**
- **For Correction Of Deficiencies**

**GUARANTEED ANALYSIS:**

Sulfur (S) Combined ..... 2%  
 Manganese (Mn) ..... 5%  
     5% Chelated Manganese (Mn)

Derived From: Manganese Sulfate.

Chelating Agent: Glucoheptonate.

Weight per gallon ..... 10.42 lb.

Weight per litre ..... 1.24 kg

Each gallon contains ..... 0.52 lbs Mn

Each litre contains ..... 0.062 kg Mn

pH ..... 6.5

**PRODUCT DESCRIPTION:**

Manganese Chelate 5% is an organic chelate, which keeps the manganese in soluble form for plant uptake. This chelate is ideal for both soil and foliar uptake, since this chelate is absorbed through foliar spray. Manganese Chelate 5% is made from organic sugars that are easily absorbed intact along with the chelated metal. The pH of Manganese Chelate 5% is 7.5, making it ideal for mixing with pH acid sensitive products. It is not affected by soil conditions, other nutrients or technical grade materials. Manganese Chelate 5% will remain in a soluble form for plant uptake since it remains as a negative charge ion and is not attracted to negatively charged soil particles. Manganese Chelate 5% is compatible with all Growth Products professional fertilizers and can be combined in all tank mix solutions for spoon feeding. Be sure to read mixing instructions and do a jar test before use. University studies indicate that Glucoheptonates are ideal for foliar applications and are more efficient than EDTA chelates in high pH soils.

**MANGANESE DEFICIENCIES:**

Manganese plays an important role in enzyme formation in plant cells, and carbon dioxide assimilation. Manganese deficiencies will often occur in water bogged soils and low temperatures. Inadequate amounts of manganese in soil will result in interveinal chlorosis first in older leaves. Continued deficiency will also affect younger leaves, followed by formation of lesions.

Like all Growth Products, it is ideal for any type of fertigation system, drip irrigation or spray equipment. Use Manganese Chelate 5% on all types of bedding plants, perennials, cut flowers, plugs, ornamentals, nursery crops, trees, foliage and container plants.

**Direct Siphon:** Manganese Chelate 3% can be siphoned directly from the original container. This can be done with a variable proportioner that can be set to high ratios. This eliminates the need to mix stock concentrates or stir the mixing barrels. For 100 PPM manganese, set injector to 1:350; for 200 PPM, set injector to 1:175.

**Soil & Tissue Testing:** Have horticulturalists accurately identify

**CAUTION:** Keep out of reach of children. In case of contact with eyes, flush immediately with copious amounts of water. Contact a physician. Do not take internally.

- **Made From Organic Sugars**
- **Chelated and Ready For Immediate Uptake**

micronutrient deficiencies. Whenever possible, run these tests prior to micronutrients applications in order to prescribe the deficient micro.

**Parts Per Million:** Use the Parts Per Million chart to choose desired manganese ratio.

**Foliar Feeding:** When using overhead irrigation, Manganese Chelate 3% gives you dual efficiency because the nutrients will be absorbed by both the leaves and roots. For tender plants and greenhouse foliar spray applications, use one-half the rate (PPM) you would normally use for drip irrigation feeding.

Landscape Plantings	
	1 - 2 quarts in 100 gallons of water (78 ml in 400 L)
<b>Foliar Spray:</b>	2 tsp - 4 tsp in 1 gal of water 1/3 to 2/3 oz per gal of water
<b>Soil Drench:</b>	2 - 3 ounces per gallon of water. Thoroughly drench soil around area (60 - 90 ml per 4 L water)

Nursery Applications		
Application	Rate	Notes
Containerized Crops, Woody Ornamentals, Flowering Ornamentals in Shadehouse or Greenhouse, Foliage, Field-Grown Nursery Stock And Trees	Spray: 1-2 quarts per 100 gal of water (1-2 L in 400 L water) Rate Per Gallon: 2-4 tsp per gal water	Thoroughly spray to point of run-off. Apply every 2-4 weeks.
Palms	Spray: 1 quart per 100 gal of water (1 L in 400 L water)	

Manganese Chelate 5%				
Fluid Oz. of Manganese Chelate per Gallon of Stock Tank Water				
PPM Manganese	25	50	75	100
1:500	26	52	78	104
1:300	16	31	47	62
1:200	10	21	31	42
1:100	5	10	16	21
1:50	3	5	8	10
1:15 Ratio for Hozon Proportioner				
1:15	0.78	1.56	2.33	3.11

**Hand Watering:** Mix 1 to 1 ¼ teaspoons Manganese Chelate 3% per gallon of water. Saturate soil with mix.

**Storage & Handling:** Mixing: Manganese Chelate 5% is not compatible with phosphate fertilizers, and must be mixed and

Manufactured in the USA By:

