



# MANGANESE CHELATE 5%

## GLUCOHEPTONATE CHELATE

*With 2% SULFUR*

- **ASSISTS IN ENZYME FORMATION**
- **FOR TURF AND ORNAMENTALS**

**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 liter ..... 1.24 kg  
 pH ..... 6.5  
 Each gallon contains ..... 0.52 lbs Mn  
 Each liter contains ..... 0.062 kg Mn

**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. Mn is available for microbial activity in the soil. 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.

**TURF APPLICATIONS:**

Soil testing is necessary to determine manganese levels. Where manganese levels are deficient or marginal apply manganese throughout the growing season. It may be added to any fertilizer spray solution.

**STORAGE & HANDLING:**

**Mixing:** Manganese Chelate 5% is not compatible with phosphate

**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.

- **FOR FOLIAR AND ROOT APPLICATIONS**
- **FOR CORRECTION OF DEFICIENCIES**

fertilizers, and must be mixed and applied separately.

Foliar Turf Applications		
Application	Rate / 1,000 FT <sup>2</sup> (100 m <sup>2</sup> )	Frequency
All Types of Cool Season and Warm Season Grasses	2 - 4 oz. (127 - 159 ml)	Apply 4 to 6 times during growing season or as needed to maintain color
Bermudagrass	4 - 6 oz (159-177 ml)	

Landscape Plantings, Trees, Shrubs & Ornamentals	
<b>Foliar Spray:</b>	1-2 quarts in 100 gallons of water (250-500 ml in 100 L)
<b>Soil Drench:</b>	2 - 3 ounces per gallon of water. Thoroughly drench soil around area (59 - 88 ml per 4 L water)

Programs		
Application	Rate	Notes
Nurseries: Containerized Crops, Woody Ornamentals, Foliage Plants, Field-Grown Trees	1-2 quarts per 100 gallons of water (60-125 ml in 100 L water)	Thoroughly spray to point of run-off
Hand Watering	1- 1.25 tsp per gallon of water (2 ml per liter water)	Saturate soil
Palms	Spray 1 qt per 100 gal water (250 ml per 100 L water)	Spray on leaves to run-off

Greenhouse & Nursery Injection Ratio		
1:100	100 PPM Mn	19 oz. per gallon water (150 ml per liter water)

