



MANGANESE CHELATE 5%

GLUCOHEPTONATE CHELATE *With 2% SULFUR*

- **ASSISTS IN ENZYME FORMATION**
- **FOR TURF AND ORNAMENTALS**
- **FOR FOLIAR AND ROOT APPLICATIONS**

F106

GUARANTEED ANALYSIS:

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

Derived From: Manganese Sulfate.
 Chelating Agent: Glucoheptonate.

PRODUCT SPECIFICATIONS:

Weight per gallon 10.42 lb.
 Weight per liter 1.24 kg
 pH 6.5
 Each gallon contains052 lbs Mn
 Each liter contains0062 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.

- **FOR CORRECTION OF DEFICIENCIES**
- **CHELATED TO INCREASE MOBILITY THROUGHOUT PLANT**

Foliar Turf Applications		
Application	Rate / 1,000 FT ² (100 m ²)	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	
Foliar Spray	1 - 2 quarts in 100 gallons of water (250 - 500 ml in 100 L)
Soil Drench	2 - 3 ounces per gallon of water. Thoroughly drench soil around area (59 - 88 ml per 4 L water)

Nursery 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)

MIXING:

Manganese Chelate 5% is not compatible with phosphate fertilizers, and must be mixed and applied separately. Store in heated area to prevent crystalization.

FIRST AID	
IF SWALLOWED:	Call a poison center or doctor if you feel unwell: Rinse mouth.
IF IN EYES:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor.
IF ON SKIN:	Remove contaminated clothing and wash skin with plenty of soap and water. If skin irritation occurs, get medical advice/attention.
IF INHALED:	Call a poison center or doctor if you feel unwell.
You may also contact 1-800-992-5994 day or night for emergency treatment information. If medical advice is needed, have product container or label at hand (P101), Keep out of reach of children (P102), Read label before use (P103).	
STORAGE: Keep container tightly closed. May be stored in unheated area, but keep from freezing. Store in areas inaccessible to children and pets.	
DISPOSAL: Dispose of contents/container in accordance with local/regional/national/international regulations. Do not reuse container.	

The following precautionary statements and pictograms are based on The Globally Harmonized System of Classifications and Labeling of Chemicals (GHS) and are mandated by the Occupational Safety and Health Administration (OSHA)

WARNING



H335 May Cause Respiratory Irritation
H413 May Cause Long Lasting Harmful Effects to Aquatic Life

Condition of Sale and Warranty: Growth Products, Ltd. warrants that the product conforms to its chemical description and is reasonably fit for the purpose stated on the label only when used in accordance with label directions under normal conditions of use. Handling, storage and use of the product by Buyer or User are beyond the control of Growth Products, Ltd. and Seller. Risks such as crop injury or other unintended consequences resulting from, but not limited to, weather or soil conditions, presence of other materials, disease, pests, drift to other crops or property, or failure to follow label directions will be assumed by Buyer or User. **IN NO CASE WILL GROWTH PRODUCTS, LTD. OR SELLER BE HELD LIABLE FOR CONSEQUENTIAL, SPECIAL, OR INDIRECT DAMAGES RESULTING FROM THE HANDLING, STORAGE OR USE OF THIS PRODUCT.**

Manufactured in the USA By: 

