



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.

TECHNICAL DATA:

Weight per gallon 10.42 lbs.
 Weight per liter 1.24 kg
 Each gallon (liter) contains 0.52 lbs (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 6.5, making it ideal for mixing with pH acid sensitive products. It is not affected by soil conditions, other nutrients or technical grade materials. It will remain in a soluble form for plant uptake since it remains as a negatively charged ion and is not attracted to negatively charged soil particles. Manganese Chelate 5% is compatible with all G.P. Solutions 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 G.P. Solutions, it's 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 5% can be siphoned directly from the original container. This can be done with a variable proportioner that can be set to high ratios and 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.

- **Made from Organic Sugars**
- **Chelated and Ready for Immediate Uptake**

Nursery Applications		
Application	Rate	Notes
Containerized and Field Grown Crops (including but not limited to): Deciduous and Evergreen Trees, Foliage, Ornamental Grasses, Perennials, Tropicals, Woody Ornamentals	Spray: 1 - 2 quarts per 100 gal of water (250 - 500 ml in 100 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 (250 ml in 100 L water)	

Landscape Plantings	
Foliar Spray:	1- 2 quarts in 100 gallons of water (250-500 ml in 100 L water) For smaller applications mix 2 - 4 tsp in 1 gal of water
Soil Drench:	2 - 3 ounces per gallon of water. Thoroughly drench soil around area (16-23 ml per liter water)

Soil & Tissue Testing: Have horticulturists accurately identify micronutrient deficiencies. Whenever possible, run these tests prior to micronutrients applications in order to prescribe the deficient micros.

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

Foliar Feeding: When using overhead irrigation, Manganese Chelate 5% 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.

Hand Watering: Mix 1 to 1 ¼ teaspoons Manganese Chelate 5% per gallon of water. Saturate soil with mix.

Mixing: Manganese Chelate 5% is not compatible with phosphate fertilizers, and must be mixed and applied separately.

Crop Programs	
Plant / Crop	Application Rate per Acre
Berries	Use 1 - 2 quarts per acre. Thoroughly wet leaves to run off. (2 - 5 liters per hectare)
Citrus Trees	Use 1 - 2 quarts per acre. Thoroughly wet leaves to run off. (2 - 5 liters per hectare)
Fertigation	Apply 1 - 2 quarts per acre via drip tape or low volume irrigation. (2 - 5 liters per hectare)
Foliar Spray: Tomatoes, Small Fruit, Grapes and Other Vegetables	Use 1 - 2 quarts ,in a minimum of 50 gallons of water, with ground spray equipment. Apply at least 6 times per season to correct minor nutrient deficiencies. Wet leaves to run off. (2 - 5 L per 200 L water)
Greenhouse & Shadehouse	Apply 1 - 2 quarts per 100 gal water as a foliar spray. Repeat every 1 - 2 months or as needed. (250 - 500 ml per 100 liters water)
Liners and Plugs	Apply 8 oz - 1 qt per 100 gallons water as foliar spray (63 - 250 ml per 100 liters water)
Nut Trees	Use 1 - 2 quarts per acre. Thoroughly wet leaves to run off. (2 - 5 liters per hectare)
Tropical Fruits	Use 1 - 2 quarts per acre. Thoroughly wet leaves to run off. (2 - 5 liters per hectare)

Manganese Chelate 5% PPM Rates				
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

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 By:

