

MATERIAL SAFETY DATA SHEET

GENERAL HYDROPONICS FLORAMICRO™

1/5/05

Cu and Zn chelates

SECTION 1. MATERIAL IDENTIFICATION

Product Name: FloraMicro™ Advanced Nutrient System

Chemical Family: A mixture of plant nutrition minerals in aqueous solution.

Product Use: Hydroponic plant nutrient.

Manufactured by: General Hydroponics, 3789 Vine Hill Rd. Sebastopol CA 95472. (707) 824-9376 Fax: (707) 824-9377

SECTION 2. INGREDIENTS AND OCCUPATIONAL EXPOSURE LIMITS

Ingredients: FloraMicro™ Advanced Nutrient System is an especially formulated mixture of chemicals that are mixed in proportions to assure excellent plant nutrition. The product is an aqueous, inorganic, nitrate solution. The chemical identity of the compounds and exact proportions used in the mixture are a trade secret, however, they are derived from ammonium molybdate, calcium nitrate, cobalt nitrate, copper nitrate, potassium chelate, zinc chelate, potassium borate, potassium sulfate, calcium carbonate, manganese EDTA, iron EDDHA, iron DTPA.

Exposure Limits: Some of the chemicals used in FloraMicro™, when inhaled in a powder form, are known to be irritants to the upper respiratory tract. OSHA has established a PEL for an eight hour time-weighted average of 5 mg/m³ (respirable fraction) or 15 mg/m³ eight hour time-weighted average (total dust). ACGIH has established a 10 mg/m³ eight hour time-weighted average threshold limit value for exposure to chemicals in this category. As long as these chemicals remain in aqueous solution and do not become aerosolized, they are not an inhalation hazard.

SECTION 3. HAZARDS IDENTIFICATION

*** Emergency Overview ***

General Hydroponics FloraMicro™ is a dark brown aqueous solution of chemicals mixed in concentrations to assure plant nutrition in hydroponic cultivation. Ingredients in this mixture are considered hazardous when ingested and a hazardous irritant to skin and eyes. Ingestion can result in gastro-intestinal distress, with abdominal pain, nausea, vomiting, and watery or bloody diarrhea. Ingestion at higher doses can result in dizziness, headaches, weakness, and shortness of breath. If these symptoms develop, do not induce vomiting, loosen the victim's clothing and seek medical help immediately.

After contact with skin, wash immediately with plenty of water. For eye contact, remove contact lenses, and immediately flush eyes with running water for at least 15 minutes.

Inhalation can theoretically result in similar symptoms to that of ingestion, yet in aqueous solution the risk is very low.

Potential Health Effects

Primary Entry Routes: Ingestion, inhalation, and skin contact.

Target Organs: Gastrointestinal system, blood system, skin, mucous membranes.

Ingestion: Ingestion can cause irritation to the gastro-intestinal tract with headaches, nausea, vomiting, and diarrhea.

Eye: Irritation, redness and pain.

Skin: Irritation, redness, itching, and pain.

Inhalation: Irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

Carcinogenicity: IARC, NTP, and OSHA do not list as a carcinogen.

Medical Conditions Aggravated by Long- Term Exposure: Unknown.

Chronic Effects: Repeated or prolonged exposure to some ingredients can produce target organ damage.

Other: None.

Section 4. FIRST AID MEASURES

Ingestion: Induce vomiting with large amounts of water or milk. Loosen tight clothing, such as collar, tie, belt and waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention immediately.

Eye Contact: Do not allow victim to rub or keep eyes tightly shut. Remove contact lenses; then gently lift eyelids, and flush immediately and continuously with flooding amounts of water for at least 15 minutes. Consult a physician or ophthalmologist if pain or irritation develops.

Skin Contact: Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.

Inhalation: Remove exposed person to fresh air and support breathing, if necessary. Consult a physician as soon as possible.

After First Aid: Get appropriate community medical support.

SECTION 5. FIRE AND EXPLOSION DATA

Flash Point: Unknown.

Auto-ignition Temperature: Unknown.

LEL: Unknown.

Flammability Classification: FloraMicro™ is not combustible. However, it contains powerful oxidizers and can initiate and intensify combustion of flammable materials.

Burning Rate: Unknown.

Extinguishing Media: Use dry chemical, carbon dioxide, water spray, fog, or foam.

Unusual Fire or Explosion Hazards: Can accelerate burning. Container may explode in heat of fire.

Hazardous Combustion Products: Can decompose explosively in a fire.

Fire-Fighting Instructions: Contains oxidizing material. Do not use water jet. Keep fire exposed containers cool with water spray. Remove containers from the fire area, if it can be done safely. Avoid contact with organic materials. Do not release run-off from fire control methods to sewers or waterways.

Fire Fighting Equipment: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full-face piece.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Spill /Leak Procedures: Wipe up with absorbent towels or mop. Avoid contact with organic materials.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

SECTION 7. HANDLING AND STORAGE

Handling Precautions: Avoid ingestion, skin contact, eye contact, and inhalation

Storage Requirements: Separate from flammable and combustible materials. Keep in tightly closed containers stored in a cool, dry, ventilated area. Do not store on wooden shelf or floor.

Regulatory Requirements: Follow applicable OSHA regulations

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Provide general or local exhaust ventilation systems to maintain airborne concentrations as low as possible.

Administrative Controls: Avoid breathing mist.

Respiratory Protection: If this product is used as directed, respiratory protection is not required. Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/ NIOSH-approved respirator. If respirators are used, OSHA requires a written respiratory protection program that includes, at least: medical certification, training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Eye Protection: When handling FloraMicro™, protective eyewear or goggles should be worn per OSHA regulations (29 CFR 1910.134). Contact lenses pose a special hazard. Soft lenses may absorb irritants, and all contact lenses concentrate irritants. Particles may adhere to contact lenses and cause corneal damage.

Protective Clothing: Wear when the possibility of skin or clothing contamination may exist. Wear neoprene or nitrile gloves when directly handling the product.

Safety Stations: Eye wash stations, quick drench showers, and washing facilities should be readily accessible to workers handling large quantities of FloraMicro™.

Contaminated Equipment: Remove this material from shoes and equipment. Launder contaminated clothing before wearing.

Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this product, especially before eating drinking, smoking, using the toilet, or applying cosmetics.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Aqueous solution.

Density: 1.25

pH: 5.8

Appearance and Odor: Dark brown liquid with no odor.

Odor Threshold Range: Unknown.

Vapor Pressure: Unknown.

Water Solubility: Soluble.

Other Solubilities: Unknown.

Freezing Point: 30° F

Viscosity: Unknown.

SECTION 10. STABILITY AND REACTIVITY

Stability: Unstable at high temperatures. A strong oxidizer reacts violently upon contact with many organic substances.

Polymerization: Polymerization does not occur.

Chemical Incompatibilities: FloraMicro™ contains chemicals that are strong oxidizing agents that react with strong alkalis to liberate ammonia. They may also react vigorously with reducing materials, powdered metals, oil, and organic solvents.

Conditions to Avoid: Mixture with combustible materials, high temperatures, shock, and incompatibles.

Hazardous Decomposition Products: Oxides of nitrogen.

SECTION 11. TOXICOLOGICAL INFORMATION

Most of the chemicals in FloraMicro™ are toxic by ingestion, inhalation, or dermal contact.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity: Unknown

Environmental Fate: Not expected to be significant.

Environmental Degradation: Unknown.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal: Follow Federal, State, and local regulations.

SECTION 14. TRANSPORTATION INFORMATION

DOT Transportation Data (49 CFR 172.101): Nitrates, Inorganic aqueous solution. Concentrations of FloraMicro™, at the minimum temperature encountered during normal transportation, will not exceed 80% of the saturation limit. It is exempt from labeling (see code 58 of . 49 CFR 172.102).

SECTION 15. REGULATORY INFORMATION

EPA Regulations: Not listed

SECTION 16. OTHER INFORMATION

General Hydroponics FloraMicro™ is a plant nutrition product. Information assembled for this Material Safety Data Sheet is for the use of this product as intended by the manufacturer. Users should take all precautions recommended herein while working with this product.

General Hydroponics provides the information contained herein in good faith, but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in using this product.