Material Safety Data Sheet

Hardwater FloraMicro

1. Product and compagny identification:

Product name : FloraMicro Advanced Nutrient System
Chemical Family : A mixture of plant nutrition minerals in aqueous solution
Material uses: Hydroponic plant nutrient for use in hard water
Supplier/Manufacturer: GENERAL HYDROPONICS Europe
boulevard du Biopole
32500 Fleurance
Tel: 05 62 06 08 30

2. Hazards identification

Emergency overview

Physical state : Liquid (Aqueous solution)
Color: Brown (Dark)
Odor: Odorless
Hazard statements: STRONG OXIDIZER.

CAUSES EYE AND SKIN IRRITATION. MAY BE HARMFUL IF SWALLOWED. MAY CAUSE RESPIRATORY TRACT IRRITATION. CAN CAUSE TARGET ORGAN DAMAGE.

Precautionary measures: Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep away from clothing and other combustible materials. Store in tightly-closed container. Keep container tightly closed. Wash thoroughly after handling.

Routes of entry: Dermal contact. Eye contact. Inhalation. Ingestion

Potential acute health effects

Inhalation: Irritating to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion: Harmful if swallowed.

Skin: Irritating to skin.

Eyes: Irritating to eyes.

Potential chronic health effects

Chronic effects: Can cause target organ damage.
Carcinogenicity: No known significant effects or critical hazards
Mutagenicity: No known significant effects or critical hazards
Teratogenicity: No known significant effects or critical hazards
Developmental effects: No known significant effects or critical hazards
Fertility effects: No known significant effects or critical hazards

Target organs: Causes damage to the following organs: blood, mucous membranes, cardiovascular system, skin.
Contains material which may cause damage to the following organs: upper respiratory tract.

Over-exposure signs/symptoms

Inhalation: Adverse symptoms may include the following:
respiratory tract irritation coughing

Ingestion: No specific data.

Skin: Adverse symptoms may include the following: irritation redness

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Eyes: Adverse symptoms may include the following:
pain or irritation
watering
redness

Medical condition
aggravated by overexposure Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

3. Composition/information on ingredients

FloraMicro™ is an especially formulated mixture of chemicals that are mixed in proportions to assure excellent plant nutrition. The chemical identity of the compounds and exact proportions used in the mixture are a trade secret, however, they are derived from : Potassium Nitrate, Magnesium Nitrate, Nitric Acid, Cupric Nitrate, Ammonium Sulfate, Ammonium nitrate, Potassium Borate, EDDHA chelate of iron, EDTA chelates of Manganese and Zinc, Sodium Molybdate, Calcium Nitrate, Urea and Cobalt Sulfate.

4. First aid measures

Eye contact: Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 20 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact: In case of contact, immediately flush skin with plenty of water for at least 20 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation: Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion: Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Notes to physician: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5. Fire-fighting measures

Flammability of the product: This material increases the risk of fire and may aid combustion. In a fire or if heated, a pressure increase will occur and the container may burst.

Extinguishing media

Suitable: Use an extinguishing agent suitable for the surrounding fire.

Not suitable: None known.

Special exposure hazards: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Hazardous thermal decomposition products: Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
metal oxide/oxides

Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or

walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Do not absorb in sawdust or other combustible material. It may lead to a fire risk when it dries out. Use spark-proof tools and explosion-proof equipment. Dispose via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Do not absorb in sawdust or other combustible material. It may lead to a fire risk when it dries out. Use spark-proof tools and explosion-proof equipment. Dispose via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7. Handling and storage

Handling : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Recommended monitoring procedures: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures: Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory: Use a properly fitted, air-purifying or supplied air respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eyes: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

Physical State: Liquid (Aqueous solution)

Color: Brown. (Dark)

Odor: Odorless

pH: 5.6

Boiling/condensation point : 102.778°C (217°F)

Melting/freezing point: -1.11°C (30°F)

Relative density: 1.108

Solubility: Easily soluble in the following materials: cold water and hot water.

10. Stability and reactivity

Chemical Stability: The product is stable.

Conditions to avoid: Mixture with combustible materials. High temperatures and flame.

Incompatible material: Oil, organic solvents.

Hazardous Decomposition Products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Possibility of hazardous reactions: Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following:
contact with combustible materials
Reactions may include the following:
risk of causing or intensifying fire

11. Toxicological information

Acute toxicity:

Product/ingredient name	Result	Species	Dose	Exposure
Ammonium nitrate Potassium nitrate Urea	LD50 Oral LD50 Oral LD50 Oral	Rat Rat RAt	2217 mg/kg 3540 mg/kg 8471 mg/kg	

Chronic toxicity: There is no data available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Exposure
Urea	Skin - Mild irritant Skin - Moderate irritant	Human Human	72 hours 22 mg Intermittent 24 hours 20%

Skin: There is no data available.

Respiratory: There is no data available.

Sensitizer

Skin: There is no data available.

Respiratory: There is no data available.

Carcinogenicity: There is no data available.

Mutagenicity: There is no data available.

Teratogenicity: There is no data available.

Reproductive toxicity : There is no data available.

12. Ecological information

Ecotoxicity: No known significant effects or critical hazards.

Aquatic ecotoxicity:

Product/ingredient name	Result	Species	Exposure
Ammonium nitrate Potassium nitrate Urea	LC50 >9100 mg/l Chronic NOEC >6 mg/L Fresh water Acute LC50 490 mg/L Fresh water Acute LC50 22500 ug/L Fresh water Acute EC50 6573.1 mg/L Fresh water Acute EC50 3910000 ug/L Fresh water Acute LC50 5000 ug/L Fresh water	Fish Crustaceans - Cladocera Daphnia - Daphnia magna Fish - Gambusia affinis - Adult Crustaceans - Ceriodaphnia dubia - Neonate - <24 hours Daphnia - Daphnia magna - Neonate - <24 hours Fish - Colisa fasciata - Fingerling	96 hours 21 days 48 hours 96 hours 48 hours 48 hours 96 hours

Persistence/degradability: There is no data available.

13. Disposal considerations

Waste disposal: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

14. Transport information

Regulatory information	Un number
DOT classification	Not regulated
IMDG Class	Nog regulated
DATA-DGR Class	Not regulated

15. Regulatory information

HCS Classification : Oxidizing material
Irritating material
Target organ effects

16. Other information

GHE's Hardwater FloraMicro is a plant nutrition product. Information assembled for this MSDS is for the use of this product as intended by the manufacturer. Users should take all precautions recommended herein while working with this product. GHE 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 judgement in using this product.

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