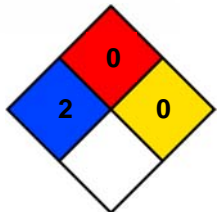




SAFETY DATA SHEET HUMA GRO® Manganese



| HMIS | |
|-----------------|---|
| HEALTH | 2 |
| FLAMMABILITY | 0 |
| PHYSICAL HAZARD | 0 |
| PPE | A |

SECTION 1: CHEMICAL PRODUCT & COMPANY IDENTIFICATION

| | | |
|---------------------------------|--|---|
| PRODUCT IDENTIFIER: | HUMA GRO® Manganese | Product# 090 |
| GENERAL USE: | Used as a part of a plant nutrition program. | |
| PRODUCT DESCRIPTION: | A clear, very light yellow liquid having no characteristic odor. | |
| SUPPLIER INFORMATION: | Bio Huma Netics 1331 W Houston Avenue Gilbert, AZ 85233 | EMERGENCY PHONE NUMBERS |
| For Additional SDS call: | PHONE: (480) 961-1220 | CHEMTREC: (In the USA) 800-424-9300 (International) 703-527-3887 |

SECTION 2: HAZARDS IDENTIFICATION

HAZARDS OVERVIEW:

A clear, very light yellow, moderately acidic liquid having no characteristic odor. The liquid and mists may cause irritation to the eyes, skin and respiratory tract. This product may be toxic by ingestion or inhalation of high mist concentrations. **The NIOSH I.D.L.H. for Manganese compounds is: 500 mg/m³ (as Mn).**

CLASSIFICATION: HAZARD CATEGORY 5 - MAY BE HARMFUL IF SWALLOWED

SIGNAL WORD: WARNING

HAZARD STATEMENT: H303 - WARNING – may be harmful if swallowed

PRECAUTIONARY STATEMENT: P312; Call a poison center/doctor/physician if you feel unwell

CLASSIFICATION: HAZARD CATEGORY 3 - MILD SKIN IRRITATION

SIGNAL WORD: WARNING

HAZARD STATEMENT: H316 - WARNING - causes mild skin irritation

PRECAUTIONARY STATEMENT: P332+P313; If skin irritation occurs: Get medical attention/advice.

SECTION 3: COMPOSITION & INFORMATION ON INGREDIENTS

| COMPONENT | CAS # | OSHA HAZARD | WT % | ACGIH | | OSHA | |
|--------------------|-----------|---|--------|--|------|--|------|
| | | | | TLV _(TWA) | STEL | PEL _(TWA) | STEL |
| Manganese Sulfate | 7785-87-7 | Eye, Skin & Respiratory Irritant; Central Nervous System toxin; Moderately Toxic by Ingestion | 19 ± 3 | 0.2 mg/m ³ Proposed: 0.02 mg/m ³ Respirable fraction | None | None Ceiling 5 mg/m ³ | None |
| Diammonium Citrate | 3012-65-5 | Eye, Skin & Respiratory Irritant | 9 ± 2 | None | None | None | None |

NDA = No Data Available

N/A = Not Applicable

SECTION 4: FIRST AID MEASURES

| | |
|----------------------------|--|
| INHALATION: | If inhaled, immediately move to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician. |
| EYE CONTACT: | In case of contact, immediately flush eyes with plenty of clean running water for at least 15 minutes, lifting the upper and lower lids occasionally. Remove contact lenses, if worn. Get medical attention if irritation persists. |
| SKIN CONTACT: | In case of contact, flush skin with plenty of clean running water. Remove contaminated clothing and shoes and wash before reuse. If irritation occurs and persists, get medical attention. |
| INGESTION: | If swallowed, get medical attention immediately. DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. |
| NOTE TO PHYSICIANS: | Based on component information, this product may be slightly to moderately toxic by ingestion. If a large amount is ingested, consideration should be given to careful endoscopy as stomach or esophageal irritation may occur, with possible central nervous system effects following absorption into the blood stream. Careful gastric lavage with an endotracheal tube in place should be considered. Treat exposure symptomatically. |

SECTION 5: FIRE FIGHTING MEASURES

| | | | |
|---|--|------------------------------|--|
| Flashpoint and Method: | This product does not flash. | | |
| Flammable Limits (in air, % by volume) | Lower: Not applicable | Upper: Not applicable | |
| Autoignition Temperature: | Not applicable | | |
| GENERAL HAZARD: | This product is an aqueous solution of inorganic and organic salts that are in a moderately acidic solution. The Uniform Fire Code health hazard classification for this product is: Irritant . This product may produce hazardous mists or hazardous decomposition products. | | |
| FIRE FIGHTING INSTRUCTIONS: | EXTINGUISHING MEDIA: Water, foam, CO ₂ or dry chemicals. Use a water spray or fog to cool the containers exposed to the heat of a fire. | | |
| FIRE FIGHTING EQUIPMENT: | Fire fighters should wear full protective equipment, including self-contained breathing apparatus. | | |
| HAZARDOUS COMBUSTION PRODUCTS: | When heated to dryness and decomposition, it emits toxic Ammonia gas, carbon monoxide, carbon dioxide, manganese oxide, nitrogen oxides and sulfur oxides with trace or ultra-trace toxic oxide amounts of phosphorus, potassium, iron, magnesium, zinc, calcium and sodium. | | |

SECTION 6: ACCIDENTAL RELEASE MEASURES

| | |
|--------------------------|---|
| RELEASE TO LAND: | Wearing recommended protective equipment and clothing, dike the spill and pick up the bulk of liquid using pumps or a vacuum truck, or absorb the liquid in sand or a commercial absorbent. Place in approved containers for recovery, disposal, or satellite accumulation. Neutralize the acidity, of the remaining liquid, using sodium bicarbonate, limestone, or other agent appropriate for neutralizing acidic liquids, that will not release Ammonia gas. Flush the spill area with water; collect the rinsates for disposal or sewer, as appropriate. |
| RELEASE TO WATER: | Wear recommended protective equipment and clothing if contact with hazardous material can occur. Stop or divert water flow. Dike contaminated water and remove for disposal and/or treatment. As appropriate, notify all downstream users of possible contamination. |

SECTION 7: HANDLING AND STORAGE

| | | | |
|-----------------------------|---|--------------------------|---------|
| STORAGE TEMPERATURE: | Ambient | STORAGE PRESSURE: | Ambient |
| GENERAL: | Store in a cool, dry, well-ventilated area away from incompatible materials and products. Avoid getting this product in eyes, on skin or on clothing. Wear recommended personnel protective equipment when handling this product. Do not breathe mists, vapors, fumes or aerosols. Use with adequate ventilation. Do not take internally. Keep the container tightly closed when not in use. Wash thoroughly after handling this product. | | |

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL MEASURES: Use a local or general, mechanical exhaust ventilation system capable of maintaining emissions, in the work area, below the ACGIH-TLV, OSHA Ceiling level or levels that may cause irritation.

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

RESPIRATOR: For exposure above the ACGIH-TLV, OSHA Ceiling level or levels that may cause irritation, wear a NIOSH-approved full facepiece or half mask air-purifying cartridge respirator equipped with a good mist / particulate filter cartridge or supplied air. **Note:** Always consult the respirator manufacturer's data when determining the suitability of respiratory protective devices prior to use.

EYES: Wear chemical goggles (recommended by ANSI Z87.1-1979), unless a full facepiece respirator is worn. **Note:** Always consult the protective eyewear manufacturer's data when determining the suitability of protective eyewear prior to use.

GLOVES: Wear Neoprene, Nitrile, Butyl Rubber or Natural Rubber gloves. **Note:** Always consult the glove manufacturer's permeation data when determining the suitability of gloves prior to use.

CLOTHING & EQUIPMENT: Wear a Neoprene, Nitrile, Butyl Rubber or Natural Rubber apron, or full protective clothing when handling this product. An eye wash station and safety shower should be available in the work area. **Note:** Always consult the clothing/equipment manufacturer's permeation data when determining the suitability of clothing/equipment prior to use.

FOOTWEAR: Wear Neoprene, Nitrile, Butyl Rubber or Natural Rubber boots. **Note:** Always consult the footwear manufacturer's permeation data when determining the suitability of footwear prior to use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---------------------------------|--------------------------------|--|-------------------|
| Appearance: | Clear, very light yellow | Bulk Density (pounds/ft³): | Not applicable |
| Physical State: | Liquid | Vapor Pressure: | No data available |
| Odor: | No characteristic | Vapor Density (air=1): | No data available |
| Odor Threshold: | Not determined | Evaporation Rate (n-Butyl Acetate=1): | Less than 1 |
| Molecular Formula: | Mixture | VOC Content: | Nil |
| Molecular Weight: | Not applicable | % Volatile: | Approximately 65 |
| Boiling Point: | Greater than 100° C. (212° F.) | Solubility in H₂O: | Complete |
| Freezing/Melting Point: | Less than 0° C. (32° F.) | Octanol/Water Partition Coefficient: | No data available |
| Specific Gravity: | 1.15 – 1.30 @ 20° C. | pH (as is): | 1.4 - 2.0 |
| Density (pounds/gallon): | Approximately 10.3 | pH (1% solution): | No data available |

SECTION 10: STABILITY AND REACTIVITY

GENERAL: This product is stable and hazardous polymerization will not occur.

CONDITIONS TO AVOID: Do not store this product below 50° F (10° C) or above 90° F (30° C)

INCOMPATIBLE MATERIAL: Contact with caustics & alkali, sulfides, sulfites, cyanides and chlorine releasers.

HAZARDOUS DECOMPOSITION PRODUCTS: When heated to dryness and decomposition, it emits toxic Ammonia gas, toxic oxides of carbon, manganese, nitrogen and sulfur with trace or ultra-trace toxic oxide amounts of phosphorus, potassium, iron, magnesium, zinc, calcium and sodium.

SENSITIVITY TO MECHANICAL IMPACT: This product is not sensitive to mechanical impact.

SENSITIVITY TO STATIC DISCHARGE: This product is not sensitive to static discharge.

SECTION 11: TOXICOLOGICAL INFORMATION

| | | |
|---|--|--|
| Components: | Manganese Sulfate | Diammonium Citrate |
| Eye Contact: | No data available | No data available |
| Skin Contact: | No data available | No data available |
| Oral Rat LD₅₀: | 2,150 mg/kg | No data available |
| Dermal Rabbit LD₅₀: | No data available | No data available |
| Inhalation Rat LC₅₀: | No data available | No data available |
| Human Data: | No data available | No data available |
| Other Toxicological Data: | Oral Mouse LD ₅₀ : 2,330 mg/kg | Intravenous Mouse LD ₅₀ : 331 mg/kg |
| Carcinogenicity: | Intraperitoneal Mouse TD _{L0} : 660 mg/kg/8 Weeks; Tumorigenic – Neoplastic by RTECS criteria | No data available |
| Teratogenicity: | Intraperitoneal Mouse TD _{L0} : 34,356 ug/kg; (female 10 Days pregnant) Post-implantation mortality | No data available |
| Mutagenicity: | Bacteria B Subtilis DNA Repair: 50 mmol/ Liter | No data available |
| Synergistic Products: | None reported | None reported |
| Target Organs: | Eyes, Skin, Lungs & Central Nervous Systems | Eyes, Skin & Lungs |
| Medical Conditions Aggravated By Exposure: | Skin or Respiratory disorders | Skin or Respiratory disorders |

SECTION 12: ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE:

This product is soluble in water and may slightly affect the pH of water. No specific environmental fate data is available.

ENVIRONMENTAL CONSIDERATIONS:

The aquatic toxicity for this product has not been determined.

SECTION 13: DISPOSAL CONSIDERATIONS

RCRA 40 CFR 261 CLASSIFICATION: Non-RCRA Hazardous Waste

U.S. EPA WASTE NUMBER/DESCRIPTION: Not Applicable

If this product is disposed of as shipped, it does not meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of a hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D due to toxicity. As a non-RCRA hazardous liquid waste, it should be disposed of in accordance with all local, state, and federal regulations. Consult state or local officials for proper disposal method.

SECTION 14: TRANSPORTATION INFORMATION

| | | | |
|--|----------------------------|--|---------------------------|
| DOT PROPER SHIPPING NAME: | Not DOT Regulated | UN Number: N/A | Packing Group: N/A |
| | Hazard Class: N/A | Subsidiary Label(s): None | |
| | Primary Label: None | Primary/Subsidiary Placards: None | |
| DOT Reportable Quantity (RQ): | Not listed | RQ for Product: Not applicable | |
| Marine Pollutant: | No | | |
| 2012 North American Emergency Response Guidebook No.: | N/A | | |
| TDG PROPER SHIPPING NAME: | NOT RESTRICTED | UN Number: None | Packing Group: N/A |
| | Hazard Class: N/A | Subsidiary Label(s): None | |
| | Primary Label: None | Primary/Subsidiary Placards: None | |
| TDG Reportable Quantity (RQ): * | Not applicable | | |
| TDG Schedule XII: | Not listed | | |
| Regulated Limit (RL): ** | Not listed | RL for Product: N/A | |
| Other Shipping Information: | None | | |

* Canadian Transportation of Dangerous Goods Regulations (TDGR), Part IX, Table I, Quantities or levels for Immediate Reporting: releases of reportable quantities, RQ, that meet the definition of a "dangerous occurrence" (a threat to life, health, property, or the environment) must be reported to the appropriate authorities as outlined in TDGR 9.13(1) and 9.14(1). ** Reporting to Environment Canada is required for any releases exceeding the regulated limits, RL, of 9.2 materials (primary or secondary). The regulated limits are found in Schedule XIII of the TDGR.

SECTION 15: REGULATORY INFORMATION

| COMPONENTS: | <u>Manganese Sulfate</u> | <u>Diammonium Citrate</u> |
|---------------------------------------|---|---------------------------|
| <u>OSHA Target Organs:</u> | Eyes, Skin, Lungs & Central Nervous Systems | Eyes, Skin & Lungs |
| <u>Carcinogenic Potential:</u> | | |
| Regulated by OSHA: | No | No |
| Listed on NTP Report: | No | No |
| Listed by IARC: | No | No |
| IARC Group: | Not applicable | Not applicable |
| ACGIH Appendix A: | Not listed | Not listed |
| A1 Confirmed Human: | Not applicable | Not applicable |
| A2 Suspected Human: | Not applicable | Not applicable |

U.S. EPA Requirements

Release Reporting

CERCLA (40 CFR 302)

| | | |
|----------------------------|---------------------------|----------------|
| Listed Substance: | Yes (Manganese Compounds) | Yes |
| Reportable Quantity: | 1 pound | 5,000 pounds |
| Category: | Not listed | D |
| RCRA Waste No.: | Not listed | Not listed |
| Unlisted Substance: | Not applicable | Not applicable |
| Reportable Quantity: | Not applicable | Not applicable |
| Characteristic: | Not applicable | Not applicable |
| RCRA Waste No.: | Not applicable | Not applicable |

SARA TITLE III

Section 302 & 303 (40 CFR 355):

| | | |
|--------------------------|----------------|----------------|
| Listed Substance: | Not listed | Not listed |
| Reportable Quantity: | Not applicable | Not applicable |
| Planning Threshold: | Not applicable | Not applicable |

Section 311 & 312 (40 CFR 370):

| | | | | | |
|------------------------------|-----------------------|---|---------------------------|-------------------------------|---------------------------------|
| Hazard Categories (product): | Fire: <u>N</u> | Sudden Release of Pressure: <u>N</u> | Reactive: <u>N</u> | Acute Health: <u>Y</u> | Chronic Health: <u>N</u> |
| Planning threshold: | 10,000 pounds | 10,000 pounds | | | |

Section 313 (40 CFR 372):

| | | |
|-------------------------------|--------------------------|---------------------------|
| Listed Toxic Chemical: | Yes (Manganese Category) | Yes (Aqua Ammonium Salts) |
| Reporting Threshold: | 10,000 pounds | 10,000 pounds |

U.S. TSCA Status

| | | |
|-----------------------------|-----|-----|
| Listed (40 CFR 710): | Yes | Yes |
|-----------------------------|-----|-----|

State Regulations

State of California: Safe Drinking Water and Toxins Enforcement Act, 1986 (Proposition 65):

| | | |
|---------------------|----|----|
| Carcinogen: | No | No |
| Reproductive Toxin: | No | No |

Other Regulations

| | |
|----------------------------------|------------|
| State Right To Know Laws: | None known |
|----------------------------------|------------|

Canadian Regulations

Product Information:

| | |
|-------------------------|---|
| Controlled Product: | Yes |
| WHMIS Hazard Symbols: | Material Causing Other Toxic Effects |
| WHMIS Class & Division: | D.2B |

Ingredient Information:

| | | |
|--------------------|-----|-----|
| IDL Substance: | Yes | No |
| DSL or NDSL Lists: | DSL | DSL |

SECTION 16: OTHER INFORMATION

EPA Registration number: Not applicable

Approved Product Uses: Used as a part of a plant nutrition program.

Special Notes:

This product is not manufactured, or formulated to contain substances, which the State of California has found to cause cancer and/or birth defects or other reproductive harm. However, as it contains mined minerals, this product may contain trace (parts per million) or ultra-trace (parts per billion) of elements known to the State of California to cause cancer, birth defects or other reproductive harm.

Special Instructions:

When making dilutions, always add Manganese (090) to water, or aqueous solutions, with adequate mixing to ensure a uniform solution. Do not add this product to hypochlorite bleaches, chlorine sanitizers, or chlorinated cleaners as this can liberate toxic, corrosive Chlorine gas.

SDS Revision Information: Revision Date: 11/19/15

SDS Distributed by: Bio Huma Netics

| | | | |
|---------------------|--------------------------------|-----------------------|------------------|
| Prepared By: | Frank S. Pidgeon, EHS Director | Date Prepared: | October 20, 2014 |
|---------------------|--------------------------------|-----------------------|------------------|

This Material Safety Data Sheet is provided as an information resource only. It should not be taken as a warranty or representation for which Bio Huma Netics assumes legal liability. While Bio Huma Netics believes the information contained herein is accurate and compiled from sources believed to be reliable, it is the responsibility of the user to investigate and verify its validity. The buyer assumes all responsibility of using and handling the product in accordance with applicable federal, state, and local regulations.