



Rooted in Science

SAFETY DATA SHEET

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

1.1 Product Identifier

Trade Name Defense-Mag

SDS Date August 13, 2015

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Product Use: Soil Amendment

Uses Advised Against: To be used only where there is a recognized need. Do not exceed the appropriate dose rates.

1.3 Details of the Supplier of the Substance or Mixture

Manufacturer: **Floratine Products Group, Inc.**
355 East South Street
Collierville, TN 38017
+1 901-853-2898

1.4 Emergency Telephone Number

Emergency Spill Information 1(800) 424-9300 for US and Canada (CHEMTREC)
+1(703) 527-3887 for International Calls (call CHEMTREC collect)

Other Product Information: cs@floratine.com

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture

CLP/GHS Classification (1272/2008):

Eye Damage Category 1

Specific Target Organ Toxicity – Repeat Exposure Category 2

2.2 Label Elements

Danger!



Contains Manganese compound

Hazard Phrases

H318 Causes serious eye damage.

H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary Phrases:

P260 Do not breathe dust.

P264 Wash thoroughly after handling.

P280 Wear eye protection and face protection.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical attention.

P314 Get medical /attention if you feel unwell.

P501 Dispose of contents and container in accordance with local and national regulations.

2.3 Other Hazards: None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number / EINECS Number / REACH Reg. Number	% (w/w)	CLP/GHS Classification (1272/2008)
Magnesium salt	7487-88-9 / 231-298-2	40-80%	Not hazardous
Citric Acid	77-92-9 / 201-069-1	10-30%	Eye Irrit. 2 (H319)
Manganese compound	7785-87-7 / 232-089-9	1-5%	Eye Dam. 1 (H318) STOT RE 2 (H373)

See Section 16 for full text of GHS and EU Classifications.

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

First Aid

Eye contact: In case of contact with eyes, flush immediately with water for at least 15 minutes while lifting the upper and lower lids. Get immediate medical attention.

Skin contact: Wash with soap and water. Get medical attention if irritation develops or persists.

Inhalation: Remove victim to fresh air. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. If the person is alert, have them rinse their mouth with water and sip one glass of water. Call a poison center or physician for advice. Never give anything by mouth to an unconscious or drowsy person.

See Section 11 for more detailed information on health effects.

4.2 Most Important symptoms and effects, both acute and delayed: Causes severe eye irritation or damage. May cause skin irritation on prolonged or repeated use. Swallowing may cause nausea. Prolonged overexposure to manganese compounds may cause headache, apathy, muscle weakness and neurological effects such as euphoria, impulsiveness and insomnia.

4.3 Indication of any immediate medical attention and special treatment needed: If eye contact occurs, get immediate medical attention.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing Media: Use media appropriate for the surrounding fire. Cool fire exposed containers with water.

5.2 Special Hazards Arising from the Substance or Mixture

Unusual Fire and Explosion Hazards: None

Combustion Products: Oxides of carbon, sulfur, manganese and magnesium.

5.3 Advice for Fire-Fighters: Self-contained breathing apparatus and protective clothing should be worn in fighting fires involving chemicals. Determine the need to evacuate or isolate the area according to your local emergency plan. Use water spray to keep fire exposed containers cool.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures:

Wear appropriate protective equipment. Avoid direct contact with spilled material.

6.2 Environmental Precautions:

Prevent entry in storm sewers and waterways. Report spill as required by local and national regulations.

6.3 Methods and Material for Containment and Cleaning Up:

Sweep up and place in an appropriate container for disposal. Avoid creating dust. Wash spill site with water. Contain large spills and collect as much powder as possible into containers for use.

6.4 Reference to Other Sections:

Refer to Section 8 for personal protective equipment and Section 13 for disposal information.

SECTION 7: HANDLING and STORAGE

7.1 Precautions for Safe Handling:

Prevent contact with eyes. Avoid contact with skin and clothing. Use with adequate ventilation. Use reasonable care in handling. Do not eat, drink or smoke while using product. Wash thoroughly with soap and water after handling.

7.2 Conditions for Safe Storage, Including any Incompatibilities:

Protect containers from physical damage. Keep from freezing. Keep containers closed. Empty containers retain product residues. Follow all SDS precautions in handling empty containers. Store away from food and feed.

7.3 Specific end use(s):

Industrial uses: None identified

Professional uses: Soil Amendment

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters:

Chemical Name	US OEL	EU IOEL	UK OEL	Biological Limit Value
Manganese compound	0.2 mg/m ³ TWA (as Mn) ACGIH TLV 5 mg/m ³ Ceiling (as Mn) OSHA PEL	None Established	0.5 mg/m ³ TWA (as Mn)	None Established
Magnesium salt	None Established	None Established	None Established	None Established
Citric Acid	None Established	None Established	None Established	None Established

8.2 Exposure Controls:

Recommended Monitoring Procedures: None established.

Appropriate Engineering Controls: Good outdoor ventilation should be adequate under normal conditions of use.

Personal Protective Measurers

Eye/face Protection: Chemical goggles recommended to avoid eye contact.

Skin Protection: Impervious clothing is recommended if needed to avoid skin contact.

Hands: Impervious gloves are recommended if needed to avoid skin contact.

Respiratory Protection: None needed under normal use conditions with adequate ventilation. If dust or mists are excessive, an approved particulate respirator can be used. Use respirators in accordance with local and national regulations.

Other protection: Suitable washing facilities should be available in the work area.

SECTION 9: PHYSICAL and CHEMICAL PROPERTIES

9.1 Information on basic Physical and Chemical Properties

Appearance: White powder base with dark powder.

When mixed with water – Black liquid

Odor Threshold: Not available

Melting/Freezing Point: Not determined

Flash Point: Not flammable

Lower Flammability Limit: Not applicable

Upper Flammability Limit: Not applicable

Vapor Density(Air=1): Not applicable

Solubility: Complete

Autoignition Temperature: None

Viscosity: Not applicable

Oxidizing Properties: None

Molecular Formula: Mixture

Odor: No odor.

pH: Not applicable

Boiling Point: 100°C (212°C)

Evaporation Rate: Not applicable

Vapor Pressure: <1 @ 100°C

Relative Density: Not applicable

Octanol/Water Partition Coefficient: Not determined

Decomposition Temperature: Not determined

Explosive Properties: None

Specific Gravity (H₂O= 1): Not applicable

Molecular Weight: Mixture

9.2 Other Information: None available

SECTION 10: STABILITY and REACTIVITY

10.1 **Reactivity:** Not reactive under normal conditions.

10.2 **Chemical Stability:** Stable.

10.3 **Possibility of Hazardous Reactions:** None known.

10.4 **Conditions to Avoid:** None known.

10.5 **Incompatible Materials:** Incompatible with oxidizing agents and bases.

10.6 **Hazardous Decomposition Products:** Decomposition may produce oxides of carbon, sulfur, magnesium and manganese.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects:

Potential Health Effects:

Eye Contact: May cause irritation with redness, tearing and stinging. Eye damage may occur.

Skin contact: Prolonged skin contact may cause irritation.

Inhalation: Excessive inhalation of dust may cause upper respiratory tract irritation.

Ingestion: Swallowing may cause gastrointestinal effects including nausea and diarrhea

Acute toxicity: No toxicity data available for the product

Manganese compound: Oral rat LD50 2150 mg/kg, Inhalation rat LC50 >4.45 mg/L/4 hr,

Magnesium salt: Oral rat LD50 >2000 mg/kg

Citric Acid: Oral rat LD50 3,000 mg/kg,

Skin corrosion/irritation: Magnesium salt are not irritating based on data from structurally similar chemicals. Citric acid is not irritating to rabbit skin. Manganese compound is not irritating to rabbit skin.

Eye damage/ irritation: Citric acid is irritating to rabbits eyes. Manganese compound has been shown to cause irreversible eye irritation in rabbit eyes.

Respiratory Irritation: No data available. Expected to cause only temporary irritation.

Respiratory Sensitization: No data available.

Skin Sensitization: Magnesium salt was negative in a mouse local lymph node assay.

Germ Cell Mutagenicity: Magnesium salt was negative in an AMES test, in an in vitro mammalian cell gene mutation test using Chinese hamster lung cells and in an in vivo micronucleus assay. Citric acid was negative in the Ames test and in human and hamster cell culture assays. Manganese compound was negative in an in vitro mammalian chromosome aberration test with a structurally similar material.

Carcinogenicity: No data available. None of the components of this product are listed as carcinogens by IARC
Reproductive Toxicity: Magnesium salt is not toxic to reproduction based on studies with structurally similar chemicals. In a two-generation 90 days study with male and female rats fed 1.2 % citric acid, no adverse effect on reproductive parameters nor any teratogenicity were seen.

Specific Target Organ Toxicity:

Single Exposure: No data available.

Repeat Exposure: Overexposure to manganese compounds have been shown to cause headache, apathy, muscle weakness and neurological effects such as euphoria, impulsiveness and insomnia.

SECTION 12: ECOLOGICAL INFORMATION

- 12.1 Toxicity:** No toxicity data available for the product.
 Manganese compound: 48 hr LC50 daphnia magna 6.8 mg/L, 72 hr LC50 Desmodesmus subspicatus 61 mg/L
 Magnesium salt: 96 hr LC50 Oryzias latipes > 96.4 mg/L, 48hr daphnia magna > 88.7 mg/L, 72 hr EC50 Algae > 99.2 mg/L
 Citric Acid: 96 hr golden orfe 440 mg/L, 48 hr saltwater crab 160 mg/l
- 12.2 Persistence and degradability:** Citric acid is readily biodegradable (97% in 28 days).
12.3 Bioaccumulative Potential: The calculated BCF for citric acid is estimated to be 3.2.
12.4 Mobility in Soil: In the soil, product follows natural cycle to provide plant nutrients.
12.5 Results of PVT and vPvB assessment: Not required.
12.6 Other Adverse Effects: No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

- 13.1 Waste Treatment Methods:**
 Dispose in accordance with local/ and national regulations.

SECTION 14: TRANSPORTATION INFORMATION

	14.1 UN Number	14.2 UN Proper Shipping Name	14.3 Hazard Class(s)	14.4 Packing Group	14.5 Environmental Hazards
US DOT	None	Not Regulated			
IMDG	None	Not Regulated			
IATA/ICAO	None	Not Regulated			

- 14.6 Special Precautions for User:** None
14.7 Transport in Bulk According to Annex III MARPOL 73/78 and the IBC Code: Not determined.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

US Regulations

CERCLA Section 103: The normal application of fertilizers is exempt from CERCLA reporting. If an accidental release occurs, contact Floratine Products Group for information.

SARA Hazard Category (311/312): Acute Health Hazard, Chronic Health Hazard

SARA 313: Products used in routine agricultural operations and fertilizers held for resale by retailers is excluded from SARA 313 reporting. Contact Floratine Products Group for additional information.

California Proposition 65: This product contains the following substances known to the State of California to cause cancer and/or reproductive harm (birth defects): None known.

International Chemical Inventories

US EPA Toxic Substances Control Act (TSCA) Status: All of the components of this product are listed on the TSCA inventory or exempt.

SECTION 16: OTHER INFORMATION**CLP/GHS Classification and H Phrases for Reference (See Section 3)**

STOT RE 2 Specific Target Organ Toxicity – Repeat Exposure Category 2

Eye Dam 1 Eye Damage Category 1

Eye Irrit. 2 Eye Irritation Category 2

H318 Causes serious eye damage.

H319 Causes serious sys irritation.

H373 May cause damage to organs through prolonged or repeated exposure.

This safety data sheet provides health and safety information. The product is to be used in applications consistent with best farming practice. Individuals handling this product should be informed under COSHH of the recommended safety precautions and should have access to this information. The product information data sheet is to the best of Floratine's knowledge correct as at the date of publication. Neither Floratine, importer or local supplier accepts liability for any loss or damage resulting from reliance on this information. Further information on this product may be obtained from the supplier whose name, address and telephone number will be found on the product container. The information provided herein is offered solely for your consideration, investigation and verification. This information herein is provided by Floratine in good faith as accurate at the time of writing but without guarantee. This information includes information which has been generated by other parties and provided to Floratine and which Floratine has not independently verified. The information provided herein relates only to the specific product designated and may not be valid if the product is used in combination with any other materials or in any process