MATERIAL SAFETY DATA SHEET

AdvantEdge Replenisher

1. Product And Company Identification

Supplier
Micronutrients
1550 Research Way
Indianapolis, IN 46231

Company Contact: Ted Moore
Telephone Number: (317) 486-5880
Web Site: www.micronutrients.net

Manufacturer
Micronutrients
1550 Research Way
Indianapolis, IN 46231

Company Contact: Ted Moore
Telephone Number: (317) 486-5880
Web Site: www.micronutrients.net

Supplier Emergency Contacts & Phone Number
CHEMTREC: (800) 424-9300
Micronutrients: (317) 486-5880

Manufacturer Emergency Contacts & Phone Number
CHEMTREC: (800) 424-9300
Micronutrients: (317) 486-5880

Issue Date: 06/26/2007

Product Name: AdvantEdge Replenisher
Chemical Family: Ammoniacal Chloride Salt
MSDS Number: 450

Product Identification Text

This Material Safety Data Sheet covers the following products:

AdvantEdge 300 Replenisher
AdvantEdge 400 Replenisher
AdvantEdge 400 TF Replenisher

2. Composition/Information On Ingredients

Ingredient Name	CAS Number		Percent Of Total Weight
Ammonium Carbonate	506-87-6		1 - 4
Ammonium Chloride	12125-02-9		22 - 26
Ammonium Hydroxide	1336-21-6		18 - 28
Water	7732-18-5		<Balance>

Ingredients are those present at 1% or greater, or at 0.1% or greater if listed as potential carcinogens by OSHA, IARC, or NTP. Proprietary ingredients are available in accordance with 29 CFR 1910.1200.

EMERGENCY OVERVIEW

Corrosive alkaline solution that may cause irritation or burns to any area of contact. Harmful if swallowed, inhaled, or in prolonged contact with skin. Use this product in contained or closed systems to prevent generation of and exposure to, Ammonia gas.

3. Hazards Identification

Primary Routes(s) Of Entry

Skin contact and inhalation.

Eye Hazards

This product is strongly irritating to the eyes. Direct eye contact may cause blurred vision, tearing, and severe tissue damage leading to temporary or permanent injury, including blindness.

Skin Hazards

Causes irritation and burns to the skin.

3. Hazards Identification - Continued

Ingestion Hazards

Causes excessive salivation, nausea, vomiting, and corrosive burning of the gastrointestinal tract, including perforation. Lesser effects include sore throat, vomiting, and diarrhea.

Inhalation Hazards

Corrosive, overexposure causes burning, irritation and destruction of the mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, sneezing, mucous production, and sinus congestion. Other indications of overexposure are headache, nausea, vomiting, low-grade fever, and shortness of breath.

4. First Aid Measures

Eye

Immediately irrigate eyes with flowing water continuously for a minimum of 15 minutes while holding eyes open and washing beneath eyelids. Contacts must be removed before or during flushing. Speed in rinsing eyes after contact is essential to prevent serious injury. Obtain medical attention immediately.

Skin

Immediately flood affected skin area with water (safety shower is preferable) and remove clothing. Wash skin vigorously with flowing water and soap for at least 15 minutes. Do not apply salve or ointment. Continue washing in serious cases until medical help arrives, even for an hour or longer. Clothing should be discarded or washed before reuse. Obtain immediate medical attention.

Ingestion

If victim is alert and not convulsing, rinse mouthy with water and give large volumes of water to drink. If spontaneous vomiting occurs, have affected person lean forward with head down to avoid breathing in of vomitus. Rinse mouth again and give more water to drink. Obtain medical attention immediately.

Inhalation

Remove affected person from area to fresh air and provide oxygen if breathing is difficult. Give artificial respiration ONLY if breathing has stopped and give CPR ONLY if there is no breathing and no pulse. Obtain immediate medical attention.

Note To Physician

DO NOT induce vomiting. Dilution with milk or water may help.
Perform gastric lavage or attempt neutralization after ingestion. Endoscopic evaluation of the patient may be warranted

5. Fire Fighting Measures

Flash Point: None °F
Flammability Class: Non-flammable
Lower Explosive Limit: 15% (Ammonia vapor in air)
Upper Explosive Limit: 28% (Ammonia vapor in air)

Fire And Explosion Hazards

Flammable vapors may be given off when exposed to heat, especially in closed containers. Vapors may form an explosive mixture with air.

Extinguishing Media

Suitable for surrounding fire - dry chemical, carbon dioxide, water spray, or foam.

Fire Fighting Instructions

Avoid breathing vapors and keep upwind of fire. Move container from area of fire if safely possible. Spray or fog of water is effective on ammonia vapors. Firefighters should use NIOSH-approved self contained breathing apparatus (SCBA) with positive pressure full-face piece and wear impervious protective clothing.

6. Accidental Release Measures

Dike spills with sand or inert solid and place into drums or other containers that can be sealed. Very small spills may be flushed with large quantities of water and diluted. Keep unauthorized personnel away from the area.

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State, Local, and Provincial laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

7. Handling And Storage

Handling Precautions

Avoid contact with skin, eyes, and clothing. Wear proper protective clothing, gloves, and eye protection. Wash thoroughly after handling this product. Avoid breathing vapor or mist by using proper respiratory protective equipment.

Storage Precautions

This product should be stored in a cool, well ventilated, and dry location, isolated and protected from any physical damage, heat, or direct sunlight which may cause the product to partially decompose. Keep from freezing. Do not apply heat to thaw. If frozen, allow the product to thaw at room temperature and mix in drum before using.

8. Exposure Controls/Personal Protection

Engineering Controls

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Refer to documents such as "Industrial Ventilation, A Manual of Recommended Practices" by ACGIH.

Eye/Face Protection

Wear appropriate eye protection such as safety glasses and face shield or splash goggles.

Skin Protection

Use chemical resistant gloves made of suitable material to prevent skin contact. Chemical resistant clothing is recommended. It should be impervious to splash and penetration by this product.

Respiratory Protection

A NIOSH/MSHA-approved respirator is necessary if a worker may be exposed to airborne contaminant levels exceeding the exposure limits given. For concentrations of ammonia vapors up to 300 ppm, use an air purifying respirator (APR) with an ammonia cartridge. APRs must not be worn when there is insufficient oxygen in the workplace. Ammonia concentrations at or above 300 ppm require the use of a self-contained breathing apparatus (SCBA) or equivalent. It is the employer's responsibility to ensure that the proper respiratory protection is used and that the worker is properly trained in the use and maintenance of respirators.

Other/General Protection

Safety showers with quick opening valves which stay open, and eye wash fountains, or other means of washing the eyes with a gentle flow of cool tepid tap water, should be readily available in all areas where this material is handled or stored.

Ingredient(s) - Exposure Limits

Ammonium Carbonate
- OSHA PEL: Not established for this material.

Ammonium Chloride
- OSHA PEL: Not established for this material.
- ACGIH TLV (Fumes): 10 mg/m3 (8 hr TWA), 20 mg/m3 (STEL).

Ammonium Hydroxide
- OSHA PEL: 50 ppm (8 hr TWA for NH3)
- AGCIH TLV: 25 ppm (8 hr TWA for NH3), 35 ppm (15 min STEL for NH3)

9. Physical And Chemical Properties

Appearance

Colorless to slightly blue liquid.

Odor

Strong, irritating odor of Ammonia.

Chemical Type: Mixture
Physical State: Liquid
Boiling Point: >212 °F
Specific Gravity: 1.01 - 1.04
Vapor Pressure: 20 - 28 mm Hg
Vapor Density: <1
pH Factor: 9.5 - 10.2
Solubility: Soluble in water
Product components crystallize from solution when the temperature falls below 45 F.

10. Stability And Reactivity

Stability: Stable at room temperature.
Hazardous Polymerization: Will not occur.

Conditions To Avoid (Stability)

Do not heat Ammonium Hydroxide solutions. Avoid direct sunlight. Protect from freezing. Use in a closed and contained system with proper ventilation.

Incompatible Materials

Highly reactive with metals and metal compounds. Avoid strong acids, oxidizing agents, halogens, nitrites, and other nitrosating agents.

Hazardous Decomposition Products

Nitrogen oxides and Ammonia vapor. Ammonia vapors are emitted when liquid is exposed to air in an open vessel or by spraying.

11. Toxicological Information

Eye Effects

Significant potential for corrosive burns to the entire eye. Blindness may result.

Skin Effects

Acute exposure may cause redness and burning of the skin. Prolonged contact may lead to dermatitis.

Acute Oral Effects

Ammonium Hydroxide causes excessive salivation, nausea, vomiting, and corrosive burning of the gastrointestinal tract, including perforation. Lesser effects include sore throat, vomiting, and diarrhea. The oral LD50 (rat) for Ammonium Hydroxide is 350 mg/kg. The oral LD50 (rat) for Ammonium Chloride is 1,650 mg/kg).

Acute Inhalation Effects

Corrosive, overexposure causes burning, irritation, and destruction of the mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, sneezing, mucous production, and sinus congestion. Other indications of overexposure are headache, nausea, vomiting, and shortness of breath. Exposure to high concentrations of Ammonia (>5,000 ppm) can be life threatening, causing severe damage to the respiratory tract and resulting in bronchitis, chemical pneumonitis, and pulmonary edema, which can be fatal.

Subchronic (Target Organ Effects)

Respiratory system, kidney, liver, eyes

11. Toxicological Information - Continued

Chronic/Carcinogenicity

Chronic Inhalation Effects: Repeated exposure may result in permanent damage to the the upper respiratory tract, particularly the lungs. The LC50 (rat, one hour) for Ammonia is 7,338 ppm.

Carcinogenicity / Mutagenicity: Ammonium Hydroxide, Chloride, and Carbonate have no known or suspected carcinogenic activity.

Neurotoxicity

The neurotoxic effects of this product are not known.

12. Ecological Information

Ecotoxicological Information

The ecological toxicity of this product is not known. Due care should be taken to prevent uncontrolled releases of this product to surface water, soil, ground water, or the air.

13. Disposal Considerations

Material that cannot be used or chemically reprocessed and empty containers should be disposed in accordance with all applicable regulations. Product containers should be thoroughly emptied before disposal. Generators of waste material are required, and are solely responsible to evaluate all waste for compliance with RCRA and any local disposal procedures and regulations. State and local regulations may be more stringent than federal regulations.

14. Transport Information

Proper Shipping Name

Corrosive liquid, basic, inorganic, n.o.s. (Ammonium Hydroxide, Ammonium Chloride)

Hazard Class

8 (Corrosive) PG II

DOT Identification Number

UN3266

DOT Shipping Label

Class 8 (Corrosive)

Packaging Exceptions

173.154

Packaging Requirements

173.202, 173.242

Additional Shipping Paper Description

RQ (Reportable Quantity) notation may be required (Ammonium Hydroxide RQ = 1,000 pounds, Ammonium Chloride RQ = 5,000 pounds)

DOT Emergency Response Guidebook Guide Number 154.

15. Regulatory Information

U.S. Regulatory Information

TSCA: This product has been reported to the EPA Office of Toxic Substances in accordance with the requirements of the Toxic Substances Control Act (40 CFR 710).

EPCRA: The following ingredients of this product are subject to reporting under SARA Title III, Section 313:
Ammonia

15. Regulatory Information - Continued

U.S. Regulatory Information - Continued

For individual state requirements, check with appropriate state agencies.

SARA Acute Health Hazard determination based on Ammonia, Ammonium Hydroxide, and Ammonium Chloride.
SARA Chronic Helath Hazard determination based on Ammonia.

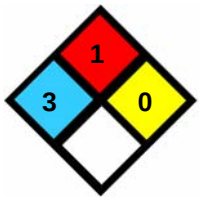
SARA Hazard Classes

Acute Health Hazard
Chronic Health Hazard

Other International Regulations

For regulatory requirements outside the United States of America, check with the appropriate regulatory agencies.

NFPA



HMIS

HEALTH	3
FLAMMABILITY	1
REACTIVITY	0
PERSONAL PROTECTION	H,X

16. Other Information

Precautionary Label

WARNING: Corrosive Material

Revision/Preparer Information

MSDS Preparer: Douglas A. Lozier
MSDS Preparer Phone Number: 317-872-6010

Reference Documentation

Information prepared from Material Safety Data Sheets for similar materials and MSDSs for individual components on file at Micronutrients.

Disclaimer

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