


1. Identification

Product identifier	BroadMan 20
Other means of identification	
SDS number	109500
Product code	109300, 109301, 109302, 109303, 109304, 109500, 109501, 109503
Recommended use	Soil additive, micronutrient.
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier	Advanced Micronutrient Products, Inc.
Address	2405 W. Vassar Road (M-15) Reese, MI. 48757
Contact person	Product Stewardship
Emergency	Chemtrec Ph # 800-424-9300 CCN 724829
Email	info@ampmicros.com

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, repeated exposure (inhalation)	Category 2 (central nervous system, lung)
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1
OSHA defined hazards	Not classified.	
Label elements		

Signal word Danger

Hazard statement Causes serious eye damage. Causes skin irritation. May cause damage to organs (central nervous system, lung) through prolonged or repeated exposure. Very toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention Wear protective gloves/protective clothing/eye protection/face protection. Do not breathe dust/fume. Avoid release to the environment.

Response If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Get medical advice/attention if you feel unwell. Collect spillage.

Storage Store away from incompatible materials.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Manganese sulfate	7785-87-7	30-50
Iron sulfate	7720-78-7	10-15
Manganese oxide	1344-43-0	10-15
Trimanganese tetraoxide	1317-35-7	10-15
Diiiron trioxide (ferric oxide)	1309-37-1	5-10
Urea	57-13-6	3-5
Calcium sulfate	7778-18-9	1-3
Zinc sulfate	7733-02-0	1-3
Zinc oxide	1314-13-2	0.1-1

4. First-aid measures

Inhalation	If symptomatic, move to fresh air. Get medical attention if symptoms persist.
Skin contact	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash contaminated clothing before reuse.
Eye contact	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention immediately.
Ingestion	Seek medical advice.
Most important symptoms/effects, acute and delayed	Causes serious eye damage. Causes skin irritation.
Indication of immediate medical attention and special treatment needed	Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Extinguish with foam, carbon dioxide, dry powder or water fog.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Cool containers exposed to heat with water spray and remove container, if no risk is involved.
Specific methods	Keep unnecessary personnel away.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Wear appropriate personal protective equipment (See Section 8).
Methods and materials for containment and cleaning up	Sweep up or vacuum up spillage and collect in suitable container for disposal.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Avoid release to the environment.

7. Handling and storage

Precautions for safe handling	Do not get in eyes, on skin, on clothing. Wear appropriate personal protective equipment. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
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Conditions for safe storage, including any incompatibilities

Store in tightly closed original container in a dry, cool and well-ventilated place. Store away from incompatible materials (See Section 10). Use appropriate container to avoid environmental contamination. Keep out of reach of children.

8. Exposure controls/personal protection**Occupational exposure limits****US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

Components	Type	Value	Form
Calcium sulfate (CAS 7778-18-9)	PEL	5 mg/m ³	Respirable fraction.
		15 mg/m ³	Total dust.
Diiron trioxide (ferric oxide) (CAS 1309-37-1)	PEL	10 mg/m ³	Fume.
Manganese oxide (CAS 1344-43-0)	Ceiling	5 mg/m ³	
Manganese sulfate (CAS 7785-87-7)	Ceiling	5 mg/m ³	
Trimanganese tetraoxide (CAS 1317-35-7)	Ceiling	5 mg/m ³	
Zinc oxide (CAS 1314-13-2)	PEL	5 mg/m ³	Fume.
		5 mg/m ³	Respirable fraction.
		15 mg/m ³	Total dust.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Calcium sulfate (CAS 7778-18-9)	TWA	10 mg/m ³	Inhalable fraction.
Diiron trioxide (ferric oxide) (CAS 1309-37-1)	TWA	5 mg/m ³	Respirable fraction.
Iron sulfate (CAS 7720-78-7)	TWA	1 mg/m ³	
Manganese oxide (CAS 1344-43-0)	TWA	0.1 mg/m ³	Inhalable fraction.
		0.02 mg/m ³	Respirable fraction.
Manganese sulfate (CAS 7785-87-7)	TWA	0.1 mg/m ³	Inhalable fraction.
		0.02 mg/m ³	Respirable fraction.
Trimanganese tetraoxide (CAS 1317-35-7)	TWA	0.1 mg/m ³	Inhalable fraction.
		0.02 mg/m ³	Respirable fraction.
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m ³	Respirable fraction.
	TWA	2 mg/m ³	Respirable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Calcium sulfate (CAS 7778-18-9)	TWA	5 mg/m ³	Respirable.
		10 mg/m ³	Total
Diiron trioxide (ferric oxide) (CAS 1309-37-1)	TWA	5 mg/m ³	Dust and fume.
		1 mg/m ³	
Iron sulfate (CAS 7720-78-7)	TWA	1 mg/m ³	
		3 mg/m ³	Fume.
Manganese oxide (CAS 1344-43-0)	STEL	3 mg/m ³	Fume.
	TWA	1 mg/m ³	Fume.
Manganese sulfate (CAS 7785-87-7)	STEL	3 mg/m ³	Fume.
	TWA	1 mg/m ³	Fume.
Trimanganese tetraoxide (CAS 1317-35-7)	STEL	3 mg/m ³	Fume.
	TWA	1 mg/m ³	Fume.
Zinc oxide (CAS 1314-13-2)	Ceiling	15 mg/m ³	Dust.
	STEL	10 mg/m ³	Fume.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
	TWA	5 mg/m ³	Fume.
		5 mg/m ³	Dust.

US. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value	Form
Urea (CAS 57-13-6)	TWA	10 mg/m ³	Total particulate.

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls Provide adequate ventilation.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Chemical resistant gloves are recommended.

Other Wear chemical-resistant gloves, footwear and protective clothing appropriate for risk of exposure. Contact chemical protective clothing manufacturer for specific information.

Respiratory protection If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA 29 CFR 1910.134. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister.

Thermal hazards Not applicable.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance

Physical state Solid.

Form Granular.

Color Brown and yellow speckled.

Odor Odorless.

Odor threshold Not available.

pH Not available.

Melting point/freezing point Not available.

Initial boiling point and boiling range Not available.

Flash point Not available.

Evaporation rate Not available.

Flammability (solid, gas) Non flammable.

Upper/lower flammability or explosive limits

Explosive limit - lower (%) Not available.

Explosive limit - upper (%) Not available.

Vapor pressure Not available.

Vapor density Not available.

Relative density Not available.

Solubility(ies)

Solubility (water) Not available.

Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity Not available.

Other information

Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Particle size	2 - 3 mm

10. Stability and reactivity

Reactivity	The product is non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable at normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Humidity. Contact with incompatible materials.
Incompatible materials	Strong oxidizing substances.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Under normal conditions of intended use, this material is not expected to be an inhalation hazard.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye damage.
Ingestion	May cause discomfort if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics Causes serious eye damage. Causes skin irritation.

Information on toxicological effects

Acute toxicity Causes serious eye damage. Causes skin irritation.

Components	Species	Test Results
Manganese sulfate (CAS 7785-87-7)		
Acute		
<i>Oral</i>		
LD50	Rat	1470 mg/kg
Zinc sulfate (CAS 7733-02-0)		
Acute		
<i>Oral</i>		
LD50	Rat	920 mg/kg 623 mg/kg

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization Not a skin sensitizer.

Germ cell mutagenicity Not classified.

Carcinogenicity Not classified.

IARC Monographs. Overall Evaluation of Carcinogenicity

Diiron trioxide (ferric oxide) (CAS 1309-37-1) 3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity Not classified.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure May cause damage to organs (central nervous system, lung) through prolonged or repeated exposure by inhalation.

Aspiration hazard Not classified.

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Components	Species	Test Results
Zinc oxide (CAS 1314-13-2)		
Aquatic		
Crustacea	LC50 Water flea (Daphnia magna)	0.098 mg/l, 48 Hours
Zinc sulfate (CAS 7733-02-0)		
Aquatic		
Fish	LC50 Carp (Cyprinus carpio)	0.15 mg/l, 96 hours

Persistence and degradability None known.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

Urea (CAS 57-13-6) -2.11

Mobility in soil No data available.

Mobility in general No data available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Since emptied containers may retain product residue, follow label warnings even after container is emptied.

The generation of waste should be avoided or minimized whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner. Dispose of non-recyclable products in accordance with all applicable Federal, State, Provincial, and Local requirements.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Recover and recycle, if practical. Dispose in accordance with all applicable regulations.

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number UN3077
UN proper shipping name Environmentally hazardous substances, solid, n.o.s. (Zinc oxide, Zinc sulfate)
Transport hazard class(es)
Class 9
Subsidiary risk -
Label(s) 9
Packing group III
Environmental hazards
Marine pollutant Yes
Special precautions for user Not available.
Special provisions 8, 146, 335, A112, B54, IB8, IP3, N20, T1, TP33
Packaging exceptions 155
Packaging non bulk 213
Packaging bulk 240

IATA

UN number UN3077
UN proper shipping name Environmentally hazardous substance, solid, n.o.s. (Zinc oxide, Zinc sulfate)
Transport hazard class(es)
Class 9
Subsidiary risk -
Label(s) 9
Packing group III
Environmental hazards Yes
ERG Code 9L

Special precautions for user Not available.

IMDG

UN number UN3077
UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc oxide, Zinc sulfate)
Transport hazard class(es)
Class 9
Subsidiary risk -
Label(s) 9
Packing group III
Environmental hazards
Marine pollutant Yes
EmS F-A, S-F

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not available.

15. Regulatory information

US federal regulations This product is hazardous according to OSHA 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Iron sulfate (CAS 7720-78-7)	LISTED
Manganese oxide (CAS 1344-43-0)	LISTED
Manganese sulfate (CAS 7785-87-7)	LISTED
Trimanganese tetraoxide (CAS 1317-35-7)	LISTED
Zinc oxide (CAS 1314-13-2)	LISTED
Zinc sulfate (CAS 7733-02-0)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Manganese sulfate	7785-87-7	30-50
Manganese oxide	1344-43-0	10-15
Trimanganese tetraoxide	1317-35-7	10-15
Zinc sulfate	7733-02-0	1-3
Zinc oxide	1314-13-2	0.1-1

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Manganese oxide (CAS 1344-43-0)
Manganese sulfate (CAS 7785-87-7)
Trimanganese tetraoxide (CAS 1317-35-7)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Calcium sulfate (CAS 7778-18-9)
Diiron trioxide (ferric oxide) (CAS 1309-37-1)
Iron sulfate (CAS 7720-78-7)
Trimanganese tetraoxide (CAS 1317-35-7)
Zinc oxide (CAS 1314-13-2)
Zinc sulfate (CAS 7733-02-0)

US. New Jersey Worker and Community Right-to-Know Act

Calcium sulfate (CAS 7778-18-9)
Diiron trioxide (ferric oxide) (CAS 1309-37-1)
Iron sulfate (CAS 7720-78-7)
Manganese oxide (CAS 1344-43-0)
Manganese sulfate (CAS 7785-87-7)
Trimanganese tetraoxide (CAS 1317-35-7)
Zinc oxide (CAS 1314-13-2)
Zinc sulfate (CAS 7733-02-0)

US. Pennsylvania Worker and Community Right-to-Know Law

Calcium sulfate (CAS 7778-18-9)
Diiron trioxide (ferric oxide) (CAS 1309-37-1)
Iron sulfate (CAS 7720-78-7)
Trimanganese tetraoxide (CAS 1317-35-7)
Zinc oxide (CAS 1314-13-2)
Zinc sulfate (CAS 7733-02-0)

US. Rhode Island RTK

Manganese oxide (CAS 1344-43-0)
Manganese sulfate (CAS 7785-87-7)
Trimanganese tetraoxide (CAS 1317-35-7)
Zinc oxide (CAS 1314-13-2)
Zinc sulfate (CAS 7733-02-0)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	19-May-2015
Revision date	-
Version #	01
HMIS® ratings	Health: 3* Flammability: 1 Physical hazard: 0

NFPA ratings**References**

Registry of Toxic Effects of Chemical Substances (RTECS)
HSDB® - Hazardous Substances Data Bank
IARC: International Agency for Research on Cancer.
National Toxicology Program (NTP) Report on Carcinogens

Disclaimer

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