

**Midwestern BioAg, Inc.
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Blue Mounds, WI 53517
Phone 800-327-6012**

Section 1: Product and Company Identification

Midwestern BioAg, Inc 10955 Blackhawk Drive Blue Mounds, Wisconsin 53517 Phone: 800.327.6012	Product Name: MicroHume® Product Description: Plant micronutrient mixture Date of Revision: 30 June 2011
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Section 2: Hazard Identification

Emergency Overview: Black granular solid. Harmful if swallowed. May be irritating to eyes, skin and respiratory system. Use with adequate ventilation.

OSHA Regulatory Status: This material **is** considered hazardous under the OSHA standard.

Potential Health Effects:

Inhalation: Harmful if inhaled. Effects may be delayed.

Ingestion: Harmful if swallowed. May cause gastrointestinal irritation with symptoms such as nausea, vomiting, and diarrhea due to copper and zinc salts. Ingestion may cause degeneration of liver, kidney, or renal failure.

Skin Contact: May cause irritation.

Eye Contact: Dust can cause irritation and redness.

Chronic Exposure: Copper overexposure leads to mutagenic effects. Zinc overexposure leads to digestive disorders and kidney and liver damage.

Aggravation of Pre-existing Conditions: No information found.

Target Organs: Kidney, liver, blood.

Section 3: Composition / Information On Ingredients

Component	Common Names, Synonyms	CAS #	EINECS	Weight %
Potassium humate	Humic acid, potassium salt	68514-28-3	271-030-1	10 - 30
Sulfur		7704-34-9	231-722-6	10 - 30
Gypsum	Calcium sulfate dihydrate	10101-41-4	231-900-3	10 - 30
Iron sulfate	Ferrous sulfate	7720-78-7	231-753-5	1 - 5
Aluminum potassium sulfate	Potassium alum	10043-67-1	233-141-3	1 - 5
Sodium tetraborate decahydrate	Sodium borate, borax	1303-96-4	215-540-4	10 - 30
Copper sulfate	Cupric sulfate	7758-98-7	231-847-6	1 - 5
Manganese sulfate	Manganese sulfate monohydrate	10034-96-5	232-089-9	5 - 10
Zinc sulfate	Zinc sulfate heptahydrate	7446-20-7	231-793-3	5 - 10

Non-hazardous components may or may not be listed. Carcinogens are listed when present at 0.1% or more; components which are otherwise hazardous according to OSHA are listed when present at 1.0% or more.

This is not intended to be complete compositional disclosure. See Section 15 for applicable states right to know and other regulatory information.

Section 4: First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: DO NOT induce vomiting. Never give anything by mouth to an unconscious person. If symptoms appear, get medical attention.

Skin: Immediately flush skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention promptly.

Note to Physicians: Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

Fire: Combustible solid.

Explosion: Not considered an explosion hazard. Low dust-producing solid.

Extinguishing Media: Any suitable for surrounding fire.

Special Precautions: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

NFPA Rating: Health - 1 Flammability - 1 Reactivity - 0 Other – OX

Section 6: Accidental Release Measures

Sweep granules into suitable container for re-use or disposal.

Section 7: Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

Section 8: Exposure Control / Personal Protection

Component	CAS #	OSHA PEL	ACGIH TLV	NIOSH TLV
Potassium humate	68514-28-3	None established	None established	None established
Sulfur	7704-34-9	None established	None established	None established
Gypsum	10101-41-4	15 mg/m ³ TWA (total dust) 5 mg/m ³ TWA (respirable dust)	10 mg/m ³ TWA (total dust)	15 mg/m ³ TWA (total dust) 5 mg/m ³ TWA (respirable dust)
Iron sulfate	7720-78-7	None established	1 mg/m ³ TWA	1 mg/m ³ TWA
Aluminum potassium sulfate	10043-67-1	None established	None established	2 mg/m ³ TWA
Sodium tetraborate decahydrate	1303-96-4	None established	2 mg/m ³ TWA 6 mg/m ³ STEL Inhalable fraction	5 mg/m ³ TWA
Copper sulfate	7758-98-7	None established	None established	1 mg/m ³ TWA

Manganese sulfate	10034-96-5	10 mg/m ³ TWA	0.2 mg/m ³ TWA	1 mg/m ³ TWA 3 mg/m ³ STEL
Zinc sulfate	7446-20-7	None established	None established	None established

Personal Protective Equipment:

Skin Contact: Wear impervious protective clothing, including boots, gloves, apron or coveralls, as appropriate, to prevent skin contact.

Eye Contact: Use safety glasses to prevent dust contact. Maintain eye wash fountain in work area.

Inhalation: Use dust mask or NIOSH-approved dust respirator if exposure is unknown or exceeds permissible limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use.

Engineering Controls: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Section 9: Physical and Chemical Properties			
Appearance	Black granular solid	Bulk density (lbs/ft ³)	55
Odor	Mild	pH	Not applicable
Odor Threshold	Not determined	Solubility in water	Low
Melting Point	Not determined	% Volatiles	< 1%
Boiling Point	Not determined	Evaporation Rate	Not determined
Flash Point	Not applicable	Vapor Pressure	Not determined

Section 10: Stability and Reactivity

Chemical Stability: This product is stable in closed containers at room temperature.

Hazardous Decomposition Products: Oxides of boron, oxides of iron, oxides of copper, oxides of zinc, oxides of manganese, oxides of potassium, oxides of sulfur, oxides of calcium

Hazardous Polymerization: Will not occur

Incompatibilities: Strong acids, strong bases

Conditions to Avoid: Incompatible materials, combustible materials

Section 11: Toxicological Information

Acute Dose Effects: Eyes: Mild to moderate irritation.

Skin: No information found.

Oral: Copper sulfate: Rat LD₅₀: 300 mg/kg; Iron sulfate: Rat LD₅₀: 319 mg/kg; Zinc sulfate: Rat LD₅₀: 1260 mg/kg; Manganese sulfate: Rat LD₅₀: 2150 mg/kg

Inhalation: No information found.

Carcinogenicity:

Components not listed by ACGIH, IARC, NTP, or CA Proposition 65.

Section 12: Ecological Information

Environmental Fate: This product is not expected to bioaccumulate. This product is readily biodegradable. The products of degradation are less toxic than the product itself.

Ecotoxicity: Can be toxic to aquatic life.

Section 13: Disposal Considerations

As a waste, this material IS NOT considered a HAZARDOUS WASTE under RCRA (29 CFR 261).

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14: Transport Information

Not regulated for transport by U.S. DOT, IATA, IMDG or TDG.

Section 15: Regulatory Information

TSCA Chemical Inventory: All of the chemicals in this product are listed on the TSCA Inventory.

TSCA Sec 4 Chemical Test Rule: None of the chemicals in this product are under a Chemical Test Rule.

TSCA Sec 8(d): None of the chemicals in this product are on the Health and Safety Reporting List.

TSCA Sec 12(b) Notices of Export: None of the chemicals in this product are on this list.

TSCA Significant New Use Rule (SNUR): None of the chemicals in this product are on this list.

SARA Sec 302 (EHS) TPQ: None of the chemicals in this product are on this list.

SARA Sec 302 (EHS) RQ: None of the chemicals in this product are on this list.

SARA Sec 311/312: Acute – Yes; Chronic – No; Fire – No; Release of Pressure – No; Reactivity – No

SARA 313 List: Copper sulfate and Zinc sulfate are reportable under Section 313 Title III and 40 CFR Part 372.

CERCLA Hazardous Substances and corresponding RQs: Not applicable

RCRA: None of the chemicals in this product are on this list.

Clean Air Act: Hazardous Air Pollutants? No **Class 1 Ozone Depletors?** No **Class 2 Ozone Depletors?** No

Clean Water Act: Hazardous Substance? No **Priority Pollutant?** No **Toxic Pollutant?** No

Chemical Weapons Convention: None of the chemicals in this product are on this list.

Drug Enforcement Agency (DEA) CDTA: None of the chemicals in this product are on this list.

OSHA: None of the chemicals in this product are considered Highly Hazardous by OSHA.

State Right-to-Know Lists: Aluminum potassium sulfate is on the state Right-to-Know lists of California, Pennsylvania and Minnesota. Calcium sulfate is on the state Right-to-Know lists of Pennsylvania, Minnesota and Massachusetts. Copper sulfate is on the state Right-to-Know lists of California, Florida, New Jersey, Pennsylvania, Minnesota and Massachusetts. Iron sulfate is on the state Right-to-Know lists of California, New Jersey, Pennsylvania and Massachusetts and Minnesota. Manganese sulfate is not on the state Right-to-Know lists of California, Florida, New Jersey, Pennsylvania, Minnesota or Massachusetts. Sodium borate is on the state Right-to-Know lists of

California, New Jersey, Pennsylvania, Minnesota and Massachusetts. Sulfur is on the state Right-to-Know lists of California, New Jersey, Pennsylvania and Massachusetts. Zinc sulfate is on the state Right-to-Know lists of California, New Jersey, Pennsylvania, Minnesota and Massachusetts.

California Proposition 65: None of the chemicals in this product are on this list.

Canadian: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations.

The components in this product are listed, or exempt from listing, on the Canadian Domestic Substances List.

WHMIS Classification: D1B, D2A, D2B - WHMIS Controlled

Section 16: Other Information

Abbreviations and acronyms used:

ACGIH	American Conference of Governmental Industrial Hygienists	NA	not applicable, not available
ANSI	American National Standards Institute	NIOSH	National Institute for Occupational Safety and Health
atm	atmosphere (pressure unit)	ND	not determined
BOD	biological oxygen demand	NFPA	National Fire Prevention Association
CAS	Chemical Abstracts Service	NTP	National Toxicology Program
CC	closed cup	OC	open cup
CDTA	Chemical Drug and Trafficking Act	OSHA	Occupational Safety and Health Administration
COC	Cleveland Open Cup	Part	partition
COD	chemical oxygen demand	PEL	permissible exposure limits
CFR	Code of Federal Regulations	ppb	parts per billion
CPR	cardio-pulmonary resuscitation	PPE	personal protective equipment
DEA	Drug Enforcement Agency	ppm	parts per million
DOT	Department of Transportation	psi	pounds per square inch
EINECS	Euorpean Inventory of Existing Commercial Chemical Substances	RCRA	Resource Conservation and Recovery Act
FDA	Food and Drug Administration	RQ	Reportable quantity
IARC	Internat'l Agency for Research on Cancer	RTK	Right to Know
IDLH	immediate danger to life and health	SARA	Superfund Amendments and Reauthorization Act
kg	kilogram	STEL	short-term exposure limit
L	liter	TCC	Tagliabue Closed Cup
LC50	median lethal concentration	TPQ	threshold planning quantity
LD50	median lethal dose	TQ	threshold quantity
LEL	lower explosive limit	TSCA	Toxic Substances Control Act
mg	milligram	TWA	time-weighted average
mL	milliliter	UEL	upper explosive limit

This document was prepared in accordance with 29 CFR 1910.1200 and ANSI Z400.1-2004.

Prepared by Douglas R. Chrisope on 30 June 2011.

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