



STOLLER USA, INC.

4001 W Sam Houston Parkway N, Suite 100 ☎ Houston, Texas 77043-1226 U.S.A.
Toll-Free: 1(800)539-5283 ☎ Tel.: 1(713)461-1493 ☎ Fax: 1(713)461-4467 ☎ stoller@stollerusa.com

KEY FEEDS DF MICROMIX

MATERIAL SAFETY DATA SHEET (Rev. 18/Oct/2012)

SECTION I – PRODUCT IDENTIFICATION AND COMPANY INFORMATION

Company Name: STOLLER USA, INC.
Address: 4001 W Sam Houston Parkway N, Suite 100 • Houston, TX 77043 U.S.A.
Phone Number for Information: 1 (800) 539-5283 or 1 (713) 461-1493

Emergency Phone Number, CHEMTREC for Stoller Enterprises:

In the US and Canada call toll-free 1 (800) 424-9300

From other countries call collect: +1 (703) 527-3887

Chemical Family: chelated micronutrient mixture

Chemical Name & Synonyms: chelated metallic sulfates mixture

Formula: Proprietary; $MgSO_4 \cdot 7H_2O$; H_3BO_3 ; $CuSO_4 \cdot 5H_2O$; $FeSO_4 \cdot 7H_2O$; $MnSO_4 \cdot H_2O$; $Na_2MoO_4 \cdot 2H_2O$; $ZnSO_4 \cdot H_2O$;
Sodium Lignosulfonate = $C_{20}H_{24}Na_2O_{10}S_2$

Tradename & Synonyms: **KEY FEEDS DF MICROMIX 10%S, 4%Mg, 0.5%B, 1%Cu, 3%Fe, 3%Mn, 0.1%Mo 2%Zn**

SECTION II - COMPOSITION / INFORMATION ON INGREDIENTS

Active Ingredients:	CAS Reg. No.	Approx. %	TLV	RTECS
Magnesium sulfate, heptahydrate	10034-99-8	41 – 42	N/E	OM4500000
Copper Sulfate, pentahydrate	7758-99-8	4 – 4.2	1 mg/m ³ as Cu	GL8900000
Ferrous Sulfate, Heptahydrate	7782-63-0	10 – 11	1 mg/m ³ as Fe	NO8500000
Manganese sulfate, monohydrate	10034-96-5	10 – 11	0.2 mg/m ³ as Mn	OP0893500
Zinc Sulfate, monohydrate	7446-19-7	5.5 – 6	10 mg/m ³ as Zn	QA5075000
Boric Acid	10043-35-3	2.9 – 3	N/E	
Sodium Molybdate, dihydrate	10102-40-6	0.2 – 0.3	10 mg/m ³ as Mo	QA5075000
Lignosulfonic (phenolic) acid sodium or calcium salt	8061-51-6 8061-52-7	10 – 12	1 mg/m ³	

SECTION III - HAZARD IDENTIFICATION

NFPA HAZARD RATINGS

HEALTH HAZARD 2 FIRE HAZARD 0 REACTIVITY 0

Based on the Natl. Fire Protection Association rating system (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = High; 4 = Extreme)

SARA/TITLE III HAZARD CATEGORIES (See Section XV)

Immediate (Acute) Health: YES Delayed (Chronic) Health: Not Known
Reactive Hazard: NO Fire Hazard: NO Sudden Release of Pressure: NO

EXPOSURE LIMITS

OSHA Permissible Exposure Limit (PEL): Not Established (N/E)

ACGIH Threshold Limit Value (TLV): Not Established (N/E)

EFFECTS OF OVEREXPOSURE

1.- ACUTE: Depending on the duration of contact, overexposure can irritate the eyes, skin, mucous membranes and any other exposed tissue.

EYES: Contact with product may cause mild to severe irritation, blurred vision.

SKIN: May cause discomfort, skin irritation or rash, unless treated promptly.

INHALATION: Prolonged exposure to vapors may cause sore throat and headache, irritation of respiratory tract.

INGESTION: May cause malaise, nausea, stomachache, burning sensation in stomach. Large doses may cause gastrointestinal damage.

2.- CHRONIC: Not known. Copper is not metabolized by people affected with Wilson's disease, so it may accumulate in various tissues and result in severe organ damage. Expected toxicity hazard: slight to moderate.

SECTION IV - FIRST-AID MEASURES**EMERGENCY FIRST AID PROCEDURES**

Victims of severe exposure to chemicals must be taken to health providing centers for medical attention. Always bring with victim a copy of label and MSDS of product to health professional.

EYES: Immediately, holding eyelids apart, flush eyes with copious amounts of clean water for at least 15 minutes. Seek medical attention should severe irritation occurs.

SKIN: Immediately wash affected area with abundant soap and water. Remove contaminated clothing taking care not to impregnate eyes. Seek medical attention if irritation occurs.

INHALATION: Move patient to fresh air. Supplemental oxygen may be indicated. Assure mucous does not obstruct airway. Seek medical attention if victim's breathing is difficult.

INGESTION: Immediately contact a physician or poison control center for treatment advice. Induce vomiting. Victim should drink milk, egg whites or large quantities of water. Never give anything by mouth to someone who is unconscious, having convulsions or unable to swallow.

ADDITIONAL INFORMATION: Note to Physician: Symptomatic treatment.

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT: Not Applicable; product is non-flammable.

FLAMMABLE LIMITS: **LEL:** Not Applicable **UEL:** Not Applicable

EXTINGUISHER MEDIA: Use all means adequate to fight surrounding fire, water, foam, CO₂, dry chemicals, etc.

SPECIAL FIRE FIGHTING PROCEDURES: None specific for this product, however, it is suggested that firefighters wear self-contained breathing apparatus and full protective equipment, such as chemical resistant clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None.

HAZARDOUS DECOMPOSITION PRODUCTS: Toxic fumes under fire conditions, such as SO, SO₂, CO, CO₂, etc.

SECTION VI - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED: In case of a large spill, clear the affected area and protect people. Such releases should be responded to by trained personnel using pre-planned procedures.

In the event of an incidental release, minimum Personal Protective Equipment must be worn: dust respirator, latex or rubber gloves and rubber boots, goggles or full face-shield, and coveralls or long sleeved shirt and pants.

It is necessary to contain spill into the smallest area possible by sweeping, scooping, shoveling, etc., and place powder into an appropriate container, labeling it accordingly. If product is clean, use it as intended following original label directions; should it get contaminated, salvage for proper disposal as waste in accordance with all Federal, State and Local waste disposal regulations.

SECTION VII - HANDLING AND STORAGE

All personnel who handle this material should be trained to work with it safely. Avoid breathing vapors or mists; use in a well-ventilated location. Empty containers may contain residual liquid or vapors therefore, should be handled also with care. Store in a cool, dry place, away from direct sunlight, sources of intense heat or where freezing is possible. Store it away from food, feed, clothing materials and living quarters.

Whenever possible, place chemicals on secondary containers or diked area. Inspect all incoming containers before storage to ensure all are properly labeled and not damaged. Keep containers tightly closed when not in use.

SECTION VIII - SPECIAL PROTECTION / CONTROL MEASURES

RESPIRATORY PROTECTION: Wear a NIOSH / OSHA approved dust mask when working with this product.

VENTILATION: General ventilation is usually adequate. Local exhaust should be used if needed for safe, comfortable working conditions.

SKIN AND EYE PROTECTION: Safety glasses should be worn in any type of operation with chemicals. Protective gloves, long sleeved shirt and long pants, as well as protective shoes should be worn as a good safety practice.

OTHER CONTROL MEASURES: An eye bath and washing facilities should be readily available. Remove all dirty or contaminated clothing and wash it before reusing.

WORK/HYGIENIC PRACTICES: As a general rule, do not eat, drink, smoke nor chew gum or tobacco when handling chemicals. Wash thoroughly after handling this product.

SECTION IX - PHYSICAL AND CHEMICAL CHARACTERISTICS

BOILING POINT: Not Established	VAPOR PRESSURE (mm/Hg): Not Established
MELTING POINT: Not Established	VAPOR DENSITY (air = 1): Not Established
SPECIFIC GRAVITY: 1.3 – 1.5	REACTIVITY IN WATER: Not Applicable
SOLUBILITY IN WATER: >99%	EVAPORATION RATE: Not Applicable
APPEARANCE AND ODOR: Fine powder, brown color, with a pleasant characteristic vanilla odor.	
OTHER:	

SECTION X - PHYSICAL HAZARDS (REACTIVITY DATA)

STABILITY: Stable

CONDITIONS TO AVOID: Stable under normal conditions, but avoid extreme heat and contact with incompatible material

INCOMPATIBILITY, MATERIALS TO AVOID: Strong oxidizing agents.

HAZARDOUS POLYMERIZATION: Will not occur

HAZARDOUS DECOMPOSITION PRODUCTS: Toxic fumes under fire conditions, like SO, SO₂, CO, CO₂, etc.

SECTION XI - TOXICOLOGICAL INFORMATION**TOXICITY DATA**

ORAL LD₅₀ (rats) mg/kg: MgSO₄ = >5000; CuSO₄ = 300; FeSO₄ = 2140; MnSO₄ = 2150; ZnSO₄ = 2000;
Na₂MoO₄ = 4000

DERMAL LD₅₀ (rabbit): CuSO₄ = >8000

INHALATION TCLO: Cupric sulfate pentahydrate (rats) >2950 mg/m³

CARCINOGENICITY

The components of this product are not listed as a carcinogenic by CPDB, IARC, NTP, OSHA, CAL/OSHA and ACGIH.

MUTAGENICITY: The components of this product are not reported to produce mutagenic effects in humans.

EMBRYOTOXICITY: The components of this product are not reported to produce embryotoxic effects in humans.

TERATOGENICITY: The components of this product are not reported to produce teratogenic effects in humans.

REPRODUCTIVE TOXICITY:

The components of this product are not reported to produce reproductive toxicity effects in humans.

SECTION XII - ENVIRONMENTAL EFFECTS DATA

The available data on this material does not indicate any undue hazard to the environment under anticipated use and storage. All work practices must be aimed at preventing environmental contamination. Any waste due to spillage or leakage should be contained and disposed of accordingly, see above under Accidental Release Measures. Because of its nutritional nature, may cause eutrophication if discharged in bodies of water. May be toxic to fish due to its copper component.

To aid our customers in complying with regulatory requirements, SARA Title III hazard categories for this product are indicated in Section III. If the word "YES" appears next to any category, this product may be reportable by you under the requirements of 40 CFR Part 370. Please consult those regulations for details

SECTION XIII - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS: Waste disposal must be done following all Federal, State and Local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local waste regulatory authority.

Empty containers may have residues thus, handle them with care. Dispose properly accordingly to regulations on empty containers in your locality or make available to a container reconditioning facility for recycling.

SECTION XIV - TRANSPORTATION DATA**DOT Proper Shipping Name and Hazard Class:**

For single packages of less than 254 Lb: Not Regulated by DOT (49CFR 171.4); trade name: KEY FEEDS DF MICROMIX

Single containers 254 Lb (115.2 Kg) and larger reach the threshold limit for Reportable Quantity (RQ) of 10 Lb for Copper Sulfate, therefore should be shipped as:

UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(Contains Copper Sulfate) 9, III, RQ

IATA Proper Shipping Name:

For packages 115.2 Kg and larger:
DGR 54th Edition 3.9.2.4

UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(Contains Copper Sulfate) 9, III, RQ

IMO Proper Shipping Name:

For ANY size of package:

UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(Contains Copper Sulfate) CLASS 9, PG III, MARINE POLLUTANT

Placards / Markings:

Not required as per 49CFR172.504(f)(9) for domestic transportation.
Miscellaneous 9 and Marine Pollutant for international transportation.

Emergency Response Guide Number: 171

SECTION XV - REGULATORY INFORMATION

U. S. SARA REPORTING REQUIREMENTS: This product might be subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act:

U.S. SARA 302 (40 CFR 355, Appendix A): NO

U.S. SARA 304 (40 CFR Table 302.4): NO

U.S. SARA 313 (40 CFR 372.65): This product contains the following substances subject to the reporting requirements of Section 313: copper compound and zinc compound.

U.S. SARA THRESHOLD PLANNING QUANTITY: NO

U.S. CERCLA REPORTABLE QUANTITY (RQ): Cupric Sulfate = 10 Lb (4.54 kg), equivalent to 254 Lb or 115.2 Kg of finished product.

U.S. TSCA INVENTORY STATUS: Some components of this material are listed on the TSCA Inventory, however, hydrates are exempted to be listed.

CANADIAN DSL INVENTORY: The components of this material are listed in the DSL inventory

If this product contains components designated as CERCLA Reportable Quantity (RQ) Substance, Section 103 of CERCLA requires the "person in charge" of a facility or vessel, as soon as he or she has knowledge of a release of a hazardous substance in an amount equal to or greater than an RQ, to report the release immediately to the National Response Center in Washington, DC. The NRC number is 1-800-424-8802, or 1 (202) 267-2675.

SECTION XVI - OTHER INFORMATION

Date of MSDS Revision: October 18, 2012. Supersedes all previous versions.

Stoller USA, Inc., believes the information contained in this Material Safety Data Sheet is accurate, based on the information supplied by reputable suppliers of our raw materials. However, Stoller USA does not guarantee their accuracy or completeness. The information contained herein is furnished without warranty of any kind, whether expressed or implied, as to the safety of the goods, the merchantability of the goods, or the fitness of the goods for any particular purpose. Users should consider these data only as a supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers. Stoller USA assumes no responsibility for results obtained or for incidental or consequential damages arising from the use of goods and data.