MATERIAL SAFETY DATA SHEET

AMERICAN MINERALS, INC.

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MSDS ID: AM065
Product No: AM065
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SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material Name: Southeast Mix
CAS Number: Mineral Mixture
Chemical family: Inorganic Oxide
Description: Southeast Mix is a granulated sucrate (carboxylate) of various elements, as well as other substances. A granulated micronutrient formulated to contain 18.8% Fe, 7.8% Mn, 3.1% Boron, 3.2%Cu, 6.75%Zn, and 0.078%Mo.
Manufacturer/Supplier: American Minerals
901 East Eighth Ave.
Suite 200
King of Prussia, PA 19406 Phone: 610/337-8030

SECTION 2. INGREDIENTS/COMPOSITION

Ingredient name:	CAS Number:	Percent:	IARC/NTP/OSHA:	Exposure Limits:
Manganese Compounds as Mn	7439-96-5	7.8	No	Manganese Dust & Compounds (as Mn) ACGIH TWA: 0.2 mg/m^3. OSHA: 5 mg/m^3; STEL: 3 mg/m^3. Fume
Zinc Compounds as Zn	7440-66-6	6.75	No	ACGIH TLV:TWA Total Dust, no asbestos, less than 1% crystalline silica: 10 mg/m^3.
Iron Oxide, Saccharated as Fe	8047-67-4	18.8	No*	Iron Oxide Dust - OSHA 10 mg/m^3' , respirable dust: 5 mg/m^3.
Cupric Oxide as Cu	1317-39-1	3.2	No	OSHA PEL:TWA Cu dust as /Cu/ 1 mg/m^3. ACGIH TLV:TWA Cu dust as /Cu/ 1 mg/m^3
Boron Oxide as Boron	1303-86-2	3.1	No	ACGIH TLV:TWA: 10 mg/m^3; Respirable dust: 3 mg/m^3.
Molybdenum Soluble Comp'ds	7631-95-0	0.07	No	OSHA PEL:TWA 5 mg/m^3, ACGIH TLV:TWA 0.5 mg/m3.
Quartz (SiO_2)	14808-60-7	0-1	Yes	ACGIH TLV:TWA respirable 0.05 mg/m^3. OSHA PEL:TWA 30 mg/m^3 ÷ (%SiO_2 + 2); Respirable quartz: 10 mg/m^3 ÷ (%SiO_2 + 2).
Misc. Nonhazardous Ingredients	---------	Balance	No	Nuisance Particulate Not Otherwise Regulated OSHA PEL:TWA 15 mg/m^3; respirable dust: 5 mg/m^3. ACGIH TLV:TWA Total dust: 10 mg/m^3; respirable dust: 3 mg/m^3.

* Iron Oxide, Saccharated: IARC Cancer Review: Animal - Sufficient Evidence.
Quartz, a polymorph of crystalline silica, is classified by IARC as "Known Human Carcinogen - Group 1". NTP lists respirable crystalline silica amongst substances which may "reasonably be anticipated to be carcinogens".

Page 1

MATERIAL SAFETY DATA SHEET

SECTION 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Dry, free-flowing, black granules ranging in size from minus 6 to plus 20 mesh. Avoid excessive inhalation of dust. Not a fire, spill or environmental hazard.

Primary route(s) of entry: Inhalation

Target Organs: Upper Respiratory System

ACUTE EFFECTS:

Eye Contact: Slightly to moderately irritating.

Inhalation: If inhaled in sufficient quantity, may cause respiratory tract irritation. Symptoms may include scratchiness of the nose, throat, cough or chest discomfort.

Skin Contact: Slightly to moderately irritating. Exposure may result in irritation, inflammation, rash or itching.

Ingestion: If ingested in sufficient quantity, may cause gastrointestinal disturbances. Symptoms may include nausea, vomiting, or abdominal pain.

CHRONIC EFFECTS:

Chronic exposure to excess levels of iron (<50-100 mg/day, as /Fe/) can result in pathological deposition of iron in the body tissues, the symptoms of which are fibrosis of the pancreas, diabetes, mellitus, and liver cirrhosis. Also, dust generated from this product may contain a trace, less than 1 percent, of crystalline silica (quartz). IARC has classified crystalline silica as a "known human carcinogen - Group 1". NTP has listed respirable crystalline silica amongst substances which may "reasonably be anticipated to be carcinogens".

SECTION 4. FIRST AID MEASURES

Eye contact: Flush eyes, including under the eyelids, with large amounts of water. If irritation persists, seek medical attention.

Skin contact: Wash affected areas with mild soap and water.

Inhalation: Remove victim to fresh air. If not breathing, give artificial respiration. Get immediate medical attention.

Ingestion: Ingestion is an unlikely route of exposure. If ingested in sufficient quantity and victim is conscious, give 1-2 glasses of water or milk. Never give anything by mouth to an unconscious person. Leave decision to induce vomiting to qualified medical personnel, since particles may be aspirated into the lungs. Seek immediate medical attention.

SECTION 5. FIRE FIGHTING MEASURES0

NFPA code: Flammability: 0, **Health:** 0, **Reactivity:** 0, **Special:** 0.

Flash point: Not Combustible

Unusual Fire Hazard/ Extinguishing Media: None

Hazardous Decomposition Products: Exposure to fire/high temperature will produce a caramel odor and possibly CO and CO_2.

Firefighting instructions: Firefighters should wear NIOSH-approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Spill procedures: Not a spill hazard. Carefully, cleanup and place spilled material into a suitable container, being careful to avoid creating excessive dusty conditions. If conditions warrant, clean-up personnel should wear approved respiratory protection, gloves, and goggles to prevent irritation from contact and/or inhalation.

SECTION 7. HANDLING AND STORAGE

Storage: Store in dry, protected storage. Product is stable under normal conditions of storage. Minimize dust generation during material handling and transfer.

WARN YOUR EMPLOYEES (AND YOUR CUSTOMERS – USERS IN CASE OF RESALE) BY POSTING AND OTHER MEANS OF THE HAZARDS AND OSHA PRECAUTIONS TO BE USED. PROVIDE TRAINING FOR YOUR EMPLOYEES ABOUT OSHA PRECAUTIONS.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL

Engineering controls: Provide sufficient ventilation, in both volume and air flow patterns, to control dust concentrations below allowable exposure limits.

Personal protective equipment: The use of eye protection, gloves and long sleeve clothing is recommended.

Respiration protection: For dust concentrations above allowable limits provide employee with NIOSH/MSHA approved particulate dust respirator in accordance with requirements of 29 CFR 1910.134.

Hygienic Practices: Avoid contact with skin, eyes and clothing. After handling this product, wash hands before eating or drinking.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: A dry, dark gray to black, mixture of pellets ranging in size from 6 to 20 mesh; odorless.

Boiling Point: Not Applicable
Melting Point: >2000? F (>1100? C)
Water Solubility: Slight
pH (10% aqueous slurry): 6-8
Specific Gravity (g/cc): Mixture
Bulk Weight(lbs/cu.ft): 98
% Volatile by volume: 0
Evaporation rate: Not Applicable

SECTION 10. STABILITY AND REACTIVITY

Hazardous Polymerization: Will not occur

Chemical Incompatibilities: Mixtures with aluminum plus calcium silicide plus sodium nitrate react violently if heated. Ignites on contact with hydrogen trisulfide.

Hazardous Decomposition Products: None

SECTION 11. TOXICOLOGICAL INFORMATION

Iron Oxide, Saccharated CAS#8047-67-4 Toxic and Hazard Review (Sax): Saccharated iron compounds are poisonous by intravenous route. An experimental neoplastigen and turmorigen. Iron is potentially toxic in all forms and by all routes of exposure. Inhalation of large amounts of dust containing high iron levels results in iron pneumoconiosis. Chronic exposure to excess levels (>50 – 100 mg/day, as /Fe/) can result in pathological deposition of iron in the body tissues, the symptom of which are fibrosis of the pancreas, diabetes mellitus, and liver cirrhosis.

Toxicity Data: ims-rat TDLo:148 mg/kg/74W:NEO; scu-mus TDLo:104 g/kg/13W-I:ETA; suc-mus TD :150 g/kg/I:ETA; inv-mus LD50:180 mg/kg.

IARC Cancer Review: Animal Sufficient Evidence.

Manganese Compounds as Mn CAS#7439-95-5. Toxic and Hazard Review (SAX): Can cause central nervous system and pulmonary system damage by inhalation of fumes and dust. Very few poisonings have occurred from ingestion. Some manganese compounds are experimental tumorigens. Chronic manganese poisoning is a clearly characterized disease which results from inhalation of fumes or dusts of manganese. Exposure to heavy concentrations of dust or fumes for as little as three months may produce the condition, but usually develops after 1-3 years of exposure. The central nervous system is the chief site of damage. If cases are removed form exposure shortly after appearance of symptoms, some improvement in patient's condition frequently occurs, though there may be some residual disturbances in gait and speech.

Toxicity Data: ihl:mus TCLo:49 mg/m^3/7H(75d PRE/118d PREG):PEP; scu-mus LD_{50}:422 mg/kg; inv-rbt LDLo:45 mg/kg.

Cupric Oxide as Cu CAS#1317-39-1. Copper(II) Toxicity Data: poison by intratracheal rout. Acute Effects: Rat-intratracheal, LD_{LO}:278 mg/kg.

Zinc Compounds as Zn CAS#7440-66-6. Toxic and Hazard Review (SAX): "Zinc oxide dust that is not freshly formed is virtually innocuous". There are no cumulative effects form the inhalation of zinc fumes. Zinc compounds: variable toxicity, but generally of low toxicity.

Toxicity Data: Zinc oxide: skin-rabbit, adult 500 mg/24H:Mild irritation effects;
Eye Effects-rabbit, adult 500 mg/24H:Mild irritation effects
DNA Damage-Escherichia coli 3000 ppm.

Quartz CAS# 14808-60-7. Toxic and Hazard Review (Sax): Experimental poison by intratracheal and intravenous routes. An experimental carcinogen, tumorigen, and neoplastigen. Human systemic effects by inhalation: cough, dyspnea, liver effects. Listed by IARC as a "Known Human Carcinogen - Group 1". Listed by NTP. No LD_{50} in RTECS. Inhalation human: TCLo 16 million particles per cubic centimeter per 8 hours per 17.9 Years-Intermittent: Pulmonary system effects; Inhalation-human LCLo: 300 micrograms/m^3 per 10 years-intermittent: liver. Other species toxicity data (NIOSH RTECS): intravenous-rat LDLo: 90 mg/kg; intraperitoneal-rat LDLo: 200 mg/kg;
intravenous-mouse LDLo: 40 mg/kg; intravenous-dog LDLo: 20 mg/kg.

Balance of Ingredients: No LD_{50} or LC_{50} found for oral, dermal, or inhalation routes of administration.

SECTION 12. ECOLOGICAL

Ecotoxicological/Chemical Fate Information:

No data available on any adverse effects of this material on the environment.

SECTION 13. DISPOSAL INFORMATION

Waste Management/Disposal: This product, as manufactured does not exhibit any characteristics of a hazardous waste, and is suitable for landfill disposal. Pleased be advised, however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material. If, however, the product has been altered or contaminated with other hazardous materials, appropriate waste analysis may be necessary determine proper method for disposal. Waste characterization and disposal/treatment methods should be determined by a qualified environmental professional in accordance with applicable federal, state and local regulations.

SECTION 14. TRANSPORT INFORMATION

US Department of Transportation: Not regulated by DOT as a hazardous material. No hazard class, no label or placard required, no UN or NA number assigned.

Canadian TDG Hazard Class & PIN: Not regulated

LABEL:

CAUTION!

Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling and use. Keep in a closed container in a well-ventilated area.

FIRST AID MEASURES:

Eye Contact: Remove material by immediately flushing eyes with clean, flowing, lukewarm water (low pressure) for at least 15 minutes. Get medical attention if pain or irritation persists.

Skin Contact: Immediately wash affected area with mild soap and water to remove any dust adhering to the skin. Get medical attention if irritation develops or persists.

Inhalation: If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop. If not breathing, give artificial respiration or give oxygen by trained personnel, and get medical attention.

Ingestion: Ingestion is an unlikely route of exposure. If ingested in sufficient quantity and victim is conscious, give 1-2 glasses of water or milk. Never give anything by mouth to an unconscious person. Leave decision to induce vomiting to qualified medical personnel, since particles may be aspirated into the lungs. Seek immediate medical attention.

CHRONIC HEALTH EFFECTS:

Excessive, long-term inhalation of airborne mineral dusts and particulate may contribute to the development of bronchitis, reduced breathing capacity, and may lead to the increased susceptibility to lung disease.

Silica: Crystalline silica (quartz) is a known cause of lung disease (silicosis). Respirable size quartz has been classified as a human carcinogen (lung cancer). Take precautions to avoid inhaling dust or creating dusty conditions. Dust generated from this product may contain crystalline silica (quartz). The prolonged inhalation (usually years) of mineral dust containing free/crystalline silica may result in the development of a disabling pulmonary fibrosis known as silicosis a progressive, incapacitating and sometimes-fatal lung disease. Silicosis is characterized by generalized fibrotic changes and the development of miliary nodules in both lungs, and clinically by shortness of breath, decreased chest expansion, wheezing, lessened capacity for work, absence of fever, and the increased susceptibility to other lung disease. IARC has classified crystalline silica as a "known human carcinogen" Group 1. NTP has listed respirable crystalline silica amongst substances, which may "reasonably be anticipated to be carcinogens.

SECTION 15. REGULATORY INFORMATION

Product or components of mixture regulated under following lists:

SARA TITLE III:

Section 302: No (Extremely Hazardous Substances)
Section 304: No (Emergency Release)
Section 311: Yes, Chronic Effects- MSDS
Section 312: Yes, Tier I/II
Section 313: No (Toxic Chemicals, Toxic Chemical Release Reporting, Form R)

CERCLA Hazardous Substance List, RQ: Copper has an RQ of 5000 pounds. Manganese Compounds were designated as Hazardous Air Pollutants under the Clean Air Act Amendments of 1990, and hence are listed as hazardous substances. As such, they are subject to CERCLA clean-up standards and liability. However, release reporting is not required.

TSCA: All substances in this product are listed in the Chemical Substance Inventory of TSCA.

California Proposition 65: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive toxins.

REGULATORY INFORMATION continued from page 4:

WARN YOUR EMPLOYEES (AND YOUR CUSTOMERS – USERS IN CASE OF RESALE) BY POSTING AND OTHER MEANS OF THE HAZARDS AND OSHA PRECAUTIONS TO BE USED. PROVIDE TRAINING FOR YOUR EMPLOYEES ABOUT OSHA PRECAUTIONS.

SECTION 16. OTHER INFORMATION

ACRONYMS AND REFERENCES USED IN PREPARATION OF MSDS':

ACGIH:	American Conference of Governmental Industrial Hygienists
CAS#:	CAS Registration Number is an assigned number to identify a material.
CERCLA:	Comprehensive Environmental Response, Compensation & Liability Act
EPCRA:	Emergency Planning and Community Right-to-Know Act of 1986
HMIS[?]:	Hazardous Materials Identification System (National Paint & Coatings Association)
IARC:	International Agency for Research on Cancer
mg/m^3:	Milligrams per cubic meter
NFPA:	National Fire Protection Association
NTP:	National Toxicology Program
OSHA:	Occupational Safety and Health Administration
PEL:	Permissible Exposure Limit (OSHA)
SARA:	Superfund Amendments and Reauthorization Act
TITLE III:	Emergency Planning and Community Right To Know Act
Section 302:	Extremely Hazardous Substances
Section 304:	Emergency Release
Section 311:	*Community Right-to-Know*, MSDSs or List of Chemicals
Section 312:	*Community Right-to-Know*, Inventories & Locations, (Tier I/Tier II)
Section 313:	Toxic Chemicals, Toxic Chemical Release Reporting, Form R
TLV:	Threshold Limit Values (ACGIH)
TWA:	Time Weighted Average

REFERENCES:

Sax, N. Irving: Dangerous Properties of Industrial Materials, Seventh Edition, Van Nostrand Reinhold Co., Inc., 1989.
Kirk, R. and Othmer, D., Encyclopedia of Chemical Technology, Third Edition, Wiley-Interscience, New York, NY 1982.
Clansky, K.B., Suspect Chemicals Sourcebook, 1992-2 Edition, Roytech Publications, Bethesda, Maryland.
Sax, N.Irving and Lewis,R.J. Hawley's Condensed Chemical Dictionary, Eleventh Ed., Van Nostrand Reinhold Co.,Inc., New York, NY.
Manufacturers/Suppliers, Material Safety Data Sheets on Raw Materials Used
American National Standard for Hazardous Industrial Chemicals - Material Safety Data Sheets - Preparation, American National Standards Institute, Inc.11 West 42nd St, New York, NY 10036.

IMPORTANT:

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