SAFETY DATA SHEET

1. Identification

Product identifier	**12-12-12**
Other means of identification	**160711**
SDS number	
Recommended use	**laboratory check sample**
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier	Mosaic
Address	13830 Circa Crossing Drive, Lithia, FL 33547
Contact person	Bill Hall
Emergency	863-559-2197
Email	bill.hall@mosaicco.com

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, oral	Category 4
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, repeated exposure (inhalation)	Category 2 (central nervous system, lung) Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	Causes serious eye damage. Harmful if swallowed. May cause damage to organs (central nervous system, lung) through prolonged or repeated exposure by inhalation. 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. Do not eat, drink or smoke when using this product. 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 swallowed: Call a poison center/doctor if you feel unwell. Rinse mouth. 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 ingredinents

Mixtures

Chemical name	CAS number	%
Zinc sulfate	7733-02-0	2-4
Zinc oxide	1314-13-2	1-3
Diiron trioxide (ferric oxide)	1309-37-1	1-1.5
Manganese oxide	1344-43-0	1-1.5
Calcium sulfate	7778-18-9	.3-.5
Iron sulfate	7720-78-7	.3-.5
Manganese sulfate	7785-87-7	.3-.5
Urea	57-13-6	.3-.5
Calcium oxide	1305-78-8	.1-.3
Dicopper oxide	1317-39-1	.1-.3
Magnesium oxide	1309-48-4	.1-.3

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. Harmful if swallowed. May cause 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

Methods and materials for containment and cleaning up

Environmental precautions	Wear appropriate personal protective equipment (See Section 8). Sweep up or vacuum up spillage and collect in suitable container for disposal. 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.

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 oxide (CAS 1305-78-8)	PEL	5 mg/m3	
Calcium sulfate (CAS 7778-18-9)	PEL	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.
Diiron trioxide (ferric oxide) (CAS 1309-37-1)	PEL	10 mg/m3	Fume.
Magnesium oxide (CAS 1309-48-4)	PEL	15 mg/m3	Total particulate.
Manganese oxide (CAS 1344-43-0)	Ceiling	5 mg/m3	
Manganese sulfate (CAS 7785-87-7)	Ceiling	5 mg/m3	
Zinc oxide (CAS 1314-13-2)	PEL	5 mg/m3	Respirable fraction.
		5 mg/m3	Fume.
		15 mg/m3	Total dust.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Calcium oxide (CAS 1305-78-8)	TWA	2 mg/m3	
Calcium sulfate (CAS 7778-18-9)	TWA	10 mg/m3	Inhalable fraction.
Diiron trioxide (ferric oxide) (CAS 1309-37-1)	TWA	5 mg/m3	Respirable fraction.
Iron sulfate (CAS 7720-78-7)	TWA	1 mg/m3	
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m3	Inhalable fraction.
Manganese oxide (CAS 1344-43-0)	TWA	0.1 mg/m3	Inhalable fraction.
		0.02 mg/m3	Respirable fraction.
Manganese sulfate (CAS 7785-87-7)	TWA	0.1 mg/m3	Inhalable fraction.
		0.02 mg/m3	Respirable fraction.
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Respirable fraction.
	TWA	2 mg/m3	Respirable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Calcium oxide (CAS 1305-78-8)	TWA	2 mg/m3	
Calcium sulfate (CAS 7778-18-9)	TWA	5 mg/m3	Respirable.
Dicopper oxide (CAS 1317-39-1)		10 mg/m3	Total
Diiron trioxide (ferric oxide) (CAS 1309-37-1)	TWA	1 mg/m3	Dust and mist.
	TWA	5 mg/m3	Dust and fume.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Iron sulfate (CAS 7720-78-7)	TWA	1 mg/m3	
Manganese oxide (CAS 1344-43-0)	STEL	3 mg/m3	Fume.
Manganese sulfate (CAS 7785-87-7)	TWA	1 mg/m3	Fume.
	STEL	3 mg/m3	Fume.
Zinc oxide (CAS 1314-13-2)	TWA	1 mg/m3	Fume.
	Ceiling	15 mg/m3	Dust.
	STEL	10 mg/m3	Fume.
	TWA	5 mg/m3	Fume.
		5 mg/m3	Dust.

US. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value	Form
Urea (CAS 57-13-6)	TWA	10 mg/m3	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.

Odor Odorless.

Odor threshold Not available.

pH Not available.

Melting point/freezing point Not available.

Initial boiling point and 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
Incompatible materials	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	May cause skin irritation.
Eye contact	Causes serious eye damage.
Ingestion	Harmful if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Causes serious eye damage. May cause skin irritation.

Information on toxicological effects

Acute toxicity Causes serious eye damage. Harmful if swallowed.

Components	Species	Test Results
Dicopper oxide (CAS 1317-39-1)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg, 24 hours
Inhalation		
LC50	Rat	2.92 mg/l, 4 hours
Oral		
LD50	Rat	928 - 2000 mg/kg
Manganese sulfate (CAS 7785-87-7)		
Acute		
Oral		
LD50	Rat	1470 mg/kg
Zinc sulfate (CAS 7733-02-0)		
Acute		
Oral LD50	Rat	920 mg/kg 623 mg/kg

Skin corrosion/irritation May cause 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

Transport hazard class(es)

Class

UN3077

Environmentally hazardous substances, solid, n.o.s. (Zinc oxide, Zinc sulfate)

Hazardous waste code

9

Waste from residues / unused products

Contaminated packaging

14. Transport information

DOT

UN number

UN proper shipping name

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)

Dicopper oxide (CAS 1317-39-1)	LISTED
Iron sulfate (CAS 7720-78-7)	LISTED
Manganese oxide (CAS 1344-43-0)	LISTED
Manganese sulfate (CAS 7785-87-7)	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.
Zinc sulfate	7733-02-0	20-40
Zinc oxide	1314-13-2	10-30
Manganese oxide	1344-43-0	10-15
Manganese sulfate	7785-87-7	3-5
Dicopper oxide	1317-39-1	1-3

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)

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 oxide (CAS 1305-78-8)
Calcium sulfate (CAS 7778-18-9)
Diiron trioxide (ferric oxide) (CAS 1309-37-1)
Iron sulfate (CAS 7720-78-7)
Magnesium oxide (CAS 1309-48-4)
Zinc oxide (CAS 1314-13-2)
Zinc sulfate (CAS 7733-02-0)

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

Calcium oxide (CAS 1305-78-8)
Calcium sulfate (CAS 7778-18-9)
Dicopper oxide (CAS 1317-39-1)
Diiron trioxide (ferric oxide) (CAS 1309-37-1)
Iron sulfate (CAS 7720-78-7)
Magnesium oxide (CAS 1309-48-4)
Manganese oxide (CAS 1344-43-0)
Manganese sulfate (CAS 7785-87-7)
Zinc oxide (CAS 1314-13-2)
Zinc sulfate (CAS 7733-02-0)

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

Calcium oxide (CAS 1305-78-8)
Calcium sulfate (CAS 7778-18-9)
Diiron trioxide (ferric oxide) (CAS 1309-37-1)
Iron sulfate (CAS 7720-78-7)
Magnesium oxide (CAS 1309-48-4)
Zinc oxide (CAS 1314-13-2)
Zinc sulfate (CAS 7733-02-0)

US. Rhode Island RTK

Dicopper oxide (CAS 1317-39-1)
Manganese oxide (CAS 1344-43-0)
Manganese sulfate (CAS 7785-87-7)
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	Canada Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL) YesNon-Domestic Substances List (NDSL)	No

Country(s) or region	Inventory name	On inventory (yes/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 21-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

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