

Apex Micronutrient Formulation

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Product name : Apex Micronutrient Formulation
Product code : M74218

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.3. Details of the supplier of the safety data sheet

JR Simplot Company
P.O. Box 70013
Boise, ID 83707
T 1-208-336-2110

1.4. Emergency telephone number

Emergency number : CHEMTREC 1-800-424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Acute Tox. 4 (Oral) H302
Eye Irrit. 2B H320
STOT SE 3 H335

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :



GHS07

Signal word (GHS-US) :

Warning

Hazard statements (GHS-US) :

H302 - Harmful if swallowed
H320 - Causes eye irritation
H335 - May cause respiratory irritation

Precautionary statements (GHS-US) :

P261 - Avoid breathing dust/fume/gas/mist/vapours/spray
P264 - Wash ... thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P301+P312 - If swallowed: Call a poison center/doctor/... if you feel unwell
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P312 - Call a poison center/doctor/... if you feel unwell
P330 - Rinse mouth
P337+P313 - If eye irritation persists: Get medical attention
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P501 - Dispose of contents/container to ...in accordance with local/regional/national regulations

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

Not applicable

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SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	GHS-US classification
Ferrous Sulfate Monohydrate	(CAS No) 17375-41-6		Acute Tox. 4 (Oral), H302 Eye Irrit. 2B, H320 STOT SE 3, H335
calcium sulfate, dihydrate	(CAS No) 10101-41-4		Not classified
magnesium sulfate	(CAS No) 7487-88-9		Not classified
manganese(II)sulfate, monohydrate	(CAS No) 10034-96-5		Not classified
zinc sulfate, monohydrate	(CAS No) 7446-19-7		Acute Tox. 4 (Oral), H302 Eye Irrit. 2A, H319 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
copper(II)sulfate	(CAS No) 7758-98-7		Acute Tox. 3 (Oral), H301 Skin Irrit. 2, H315
disodium molybdate	(CAS No) 7631-95-0		Not classified

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
- First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.
- First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a POISON CENTER or doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries after inhalation : May cause respiratory irritation.
- Symptoms/injuries after eye contact : Causes eye irritation.
- Symptoms/injuries after ingestion : Swallowing a small quantity of this material will result in serious health hazard.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.

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Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : On land, sweep or shovel into suitable containers. Minimize generation of dust. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour. Avoid breathing dust/fume/gas/mist/vapours/spray. Use only outdoors or in a well-ventilated area.

Hygiene measures : Do not eat, drink or smoke when using this product. Wash ... thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Keep container tightly closed.

Incompatible products : Strong bases. Strong acids.

Incompatible materials : Sources of ignition. Direct sunlight.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Apex Micronutrient Formulation		
ACGIH	Not applicable	
OSHA	Not applicable	
calcium sulfate, dihydrate (10101-41-4)		
ACGIH	ACGIH TWA (mg/m ³)	10 mg/m ³
OSHA	Not applicable	
magnesium sulfate (7487-88-9)		
ACGIH	Not applicable	
OSHA	Not applicable	
copper(II)sulfate (7758-98-7)		
ACGIH	Not applicable	
OSHA	Not applicable	
Ferrous Sulfate Monohydrate (17375-41-6)		
ACGIH	Not applicable	
OSHA	Not applicable	
manganese(II)sulfate, monohydrate (10034-96-5)		
ACGIH	ACGIH TWA (mg/m ³)	0.1 mg/m ³
OSHA	Not applicable	
disodium molybdate (7631-95-0)		
ACGIH	ACGIH TWA (mg/m ³)	0.5 mg/m ³
OSHA	Not applicable	
zinc sulfate, monohydrate (7446-19-7)		
ACGIH	Not applicable	

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zinc sulfate, monohydrate (7446-19-7)

OSHA	Not applicable
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8.2. Exposure controls

Personal protective equipment : Avoid all unnecessary exposure.

Hand protection : Wear protective gloves.

Eye protection : Chemical goggles or safety glasses.

Respiratory protection : Wear appropriate mask.

Other information : Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid

Appearance : Granules.

Colour : Multi-colored

Odour : There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure.
Mixture contains one or more component(s) which have the following odour(s):
Odourless

Odour threshold : No data available

pH : No data available

Melting point : No data available

Freezing point : No data available

Boiling point : No data available

Flash point : No data available

Relative evaporation rate (butylacetate=1) : No data available

Flammability (solid, gas) : No data available

Explosive limits : No data available

Explosive properties : No data available

Oxidising properties : No data available

Vapour pressure : No data available

Relative density : No data available

Relative vapour density at 20 °C : No data available

Solubility : soluble.
Water: Solubility in water of component(s) of the mixture :
• calcium sulfate, dihydrate: 0.21 g/100ml • magnesium sulfate: 26 g/100ml (0 °C) •
copper(II)sulfate: 20 g/100ml • manganese(II)sulfate, monohydrate: 100 g/100ml • zinc
sulfate, monohydrate: 35 g/100ml

Log Pow : No data available

Log Kow : No data available

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Viscosity : No data available

Viscosity, kinematic : No data available

Viscosity, dynamic : No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Not established.

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10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed.

Apex Micronutrient Formulation	
ATE US (oral)	656.925 mg/kg bodyweight
calcium sulfate, dihydrate (10101-41-4)	
LD50 oral rat	> 2000 mg/kg bodyweight (Rat; OECD 420: Acute Oral toxicity – Acute Toxic Class Method; Experimental value)
magnesium sulfate (7487-88-9)	
LD50 oral rat	> 4000 mg/kg (Rat)
LD50 dermal rat	> 2000 mg/kg (Rat)
copper(II)sulfate (7758-98-7)	
LD50 oral rat	300 mg/kg (Rat)
LD50 dermal rabbit	> 1000 mg/kg (Rabbit)
ATE US (oral)	300.000 mg/kg bodyweight
Ferrous Sulfate Monohydrate (17375-41-6)	
LD50 oral rat	319 mg/kg
ATE US (oral)	319.000 mg/kg bodyweight
disodium molybdate (7631-95-0)	
LD50 oral rat	4000 mg/kg (Rat)
LD50 dermal rat	> 2000 mg/kg (Rat)
LC50 inhalation rat (mg/l)	> 2.1 mg/l/4h (Rat; >584 mg/l/4h; Rat)
ATE US (oral)	4000.000 mg/kg bodyweight
zinc sulfate, monohydrate (7446-19-7)	
LD50 oral rat	1710 mg/kg
ATE US (oral)	1710.000 mg/kg bodyweight

Skin corrosion/irritation : Not classified
Serious eye damage/irritation : Causes eye irritation.
Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Reproductive toxicity : Not classified
Specific target organ toxicity (single exposure) : May cause respiratory irritation.

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

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Potential adverse human health effects and symptoms	: Based on available data, the classification criteria are not met. Harmful if swallowed.
Symptoms/injuries after inhalation	: May cause respiratory irritation.
Symptoms/injuries after eye contact	: Causes eye irritation.
Symptoms/injuries after ingestion	: Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

12.1. Toxicity

calcium sulfate, dihydrate (10101-41-4)	
LC50 fish 1	2980 mg/l (96 h; Lepomis macrochirus; Anhydrous form)
LC50 fish 2	> 56000 mg/l (96 h; Gambusia affinis; Anhydrous form)
magnesium sulfate (7487-88-9)	
LC50 fish 1	14000 mg/l (48 h; Leuciscus idus)
EC50 Daphnia 1	1700 mg/l (24 h; Daphnia magna)
LC50 fish 2	15500 mg/l (96 h; Gambusia affinis)
Threshold limit other aquatic organisms 1	27.4 g/l (0.5 h; Photobacterium phosphoreum)
Threshold limit algae 2	220 mg/l (72 h; Scenedesmus subspicatus; Biomass)
copper(II)sulfate (7758-98-7)	
LC50 fish 1	0.0199 mg/l (96 h; Salmo gairdneri (Oncorhynchus mykiss); Soft water)
EC50 Daphnia 1	0.01 mg/l (48 h; Daphnia magna; Soft water)
LC50 fish 2	0.298 mg/l (96 h; Salmo gairdneri (Oncorhynchus mykiss); Hard water)
EC50 Daphnia 2	0.2 mg/l (48 h; Daphnia magna; Hard water)
TLM fish 1	3.8 ppm 24 h; Salmo gairdneri (Oncorhynchus mykiss)
Threshold limit algae 2	1.1 mg/l (Scenedesmus quadricauda)
manganese(II)sulfate, monohydrate (10034-96-5)	
LC50 fish 1	2850 mg/l (96 h; Colisa fasciatus; Anhydrous form)
EC50 Daphnia 1	8.28 mg/l (48 h; Daphnia magna; Anhydrous form)
LC50 fish 2	33.8 mg/l (96 h; Pimephales promelas; Anhydrous form)
EC50 Daphnia 2	10 mg/l (24 h; Daphnia magna; Anhydrous form)
Threshold limit algae 1	25.7 mg/l (Phaeodactylum; Anhydrous form)
disodium molybdate (7631-95-0)	
LC50 fish 1	> 1000 mg/l (96 h; Oncorhynchus kisutch; Dihydrate)
EC50 Daphnia 1	330 mg/l (48 h; Daphnia magna; Dihydrate)
LC50 fish 2	7600 mg/l 96 h; Salmo gairdneri (Oncorhynchus mykiss)
Threshold limit algae 1	4.6 mg/l (72 h; Selenastrum capricornutum; Nominal concentration)
Threshold limit algae 2	12.5 mg/l (72 h; Scenedesmus subspicatus; Dihydrate)
zinc sulfate, monohydrate (7446-19-7)	
LC50 fish 1	1.7 mg/l (96 h; Poecilia reticulata; Anhydrous form)
EC50 Daphnia 1	0.56 mg/l (48 h; Daphnia magna; Anhydrous form)
LC50 fish 2	2.4 mg/l (96 h; Salmo gairdneri (Oncorhynchus mykiss); Anhydrous form)
EC50 Daphnia 2	1 mg/l (24 h; Daphnia magna; Anhydrous form)

12.2. Persistence and degradability

Apex Micronutrient Formulation	
Persistence and degradability	Not established.
calcium sulfate, dihydrate (10101-41-4)	
Persistence and degradability	Biodegradability: not applicable. Not established.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable
magnesium sulfate (7487-88-9)	
Persistence and degradability	Biodegradability: not applicable. Not established.

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magnesium sulfate (7487-88-9)	
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable
copper(II)sulfate (7758-98-7)	
Persistence and degradability	May cause long-term adverse effects in the environment.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable
Ferrous Sulfate Monohydrate (17375-41-6)	
Persistence and degradability	Not established.
manganese(II)sulfate, monohydrate (10034-96-5)	
Persistence and degradability	Biodegradability: not applicable. Not established.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable
disodium molybdate (7631-95-0)	
Persistence and degradability	Biodegradability: not applicable. Photolysis in water. Not established.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable
zinc sulfate, monohydrate (7446-19-7)	
Persistence and degradability	Biodegradability: not applicable. Not established.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

12.3. Bioaccumulative potential

Apex Micronutrient Formulation	
Bioaccumulative potential	Not established.
calcium sulfate, dihydrate (10101-41-4)	
Bioaccumulative potential	No bioaccumulation data available. Not established.
magnesium sulfate (7487-88-9)	
Bioaccumulative potential	No bioaccumulation data available. Not established.
copper(II)sulfate (7758-98-7)	
Bioaccumulative potential	Bioaccumable.
Ferrous Sulfate Monohydrate (17375-41-6)	
Bioaccumulative potential	Not established.
manganese(II)sulfate, monohydrate (10034-96-5)	
Bioaccumulative potential	Not established.
disodium molybdate (7631-95-0)	
BCF fish 1	4.9 (28 days; Oncorhynchus tshawytscha)
BCF other aquatic organisms 1	164.3 (Mollusca)

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disodium molybdate (7631-95-0)	
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500). Not established.
zinc sulfate, monohydrate (7446-19-7)	
BCF fish 1	59 - 242 (Cyprinus carpio; Anhydrous form)
BCF fish 2	59 - 242 (Cyprinus carpio; Test duration: 8 weeks)
Bioaccumulative potential	Bioaccumable. Not established.

12.4. Mobility in soil

copper(II)sulfate (7758-98-7)	
Ecology - soil	Toxic to flora.

12.5. Other adverse effects

Effect on the global warming : No known ecological damage caused by this product.

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to ...

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not regulated for transport

Additional information

Other information : No supplementary information available.

ADR

No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory except for:

calcium sulfate, dihydrate	CAS No 10101-41-4	
Ferrous Sulfate Monohydrate	CAS No 17375-41-6	
manganese(II)sulfate, monohydrate	CAS No 10034-96-5	
zinc sulfate, monohydrate	CAS No 7446-19-7	

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

copper(II)sulfate	CAS No 7758-98-7	
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copper(II)sulfate (7758-98-7)	
Listed on United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	10 lb

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15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

No additional information available

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Not classified

National regulations

No additional information available

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer and/or reproductive harm

copper(II)sulfate (7758-98-7)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

Other information : None.

Full text of H-phrases:

Acute Tox. 3 (Oral)	Acute toxicity (oral), Category 3
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment — Chronic Hazard, Category 1
Eye Irrit. 2A	Serious eye damage/eye irritation, Category 2A
Eye Irrit. 2B	Serious eye damage/eye irritation, Category 2B
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H301	Toxic if swallowed
H302	Harmful if swallowed
H315	Causes skin irritation
H319	Causes serious eye irritation
H320	Causes eye irritation
H335	May cause respiratory irritation
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

SDS US (GHS HazCom 2012)

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