

1. Identification

Product identifier	AMP Copper 12
Other means of identification	
SDS number	103500
Recommended use	Crop Nutrient.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Company name	Advanced Micronutrient Products
Address	2405 W. Vassar Road (M-15) Reese, MI 48757
Telephone	General information: 800-292-3672 or 989-752-2138
Contact person	Product Stewardship
E-mail	info@ampmicros.com
Emergency phone number	800-424-9300 CCN 724829

2. Hazard identification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1

Label elements



Signal word	Danger
Hazard statement	Harmful if swallowed. Causes skin irritation. Causes serious eye damage. Very toxic to aquatic life with long lasting effects.
Precautionary statement	
Prevention	Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.
Response	IF SWALLOWED: Call a POISON CENTRE/doctor if you feel unwell. Rinse mouth. IF ON SKIN: Wash with plenty of water. 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 CENTRE/doctor. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. Collect spillage.
Storage	Store away from incompatible materials.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Other hazards	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Copper sulphate		7758-98-7	15 - 40
Zinc sulphate		7733-02-0	10 - 30
Ferrous sulfate		7720-78-7	7 - 13
Calcium sulphate		7778-18-9	5 - 10
Diiron trioxide		1309-37-1	5 - 10
Dicopper oxide		1317-39-1	3 - 7
Urea		57-13-6	3 - 7
Magnesium sulphate		7487-88-9	1 - 5
Zinc oxide		1314-13-2	1 - 5

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
Ingestion	Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical advice/attention if you feel unwell.
Most important symptoms/effects, acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
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	Move containers from fire area if you can do so without risk. Use water spray to cool unopened containers. Use standard firefighting procedures and consider the hazards of other involved materials. In case of fire and/or explosion do not breathe fumes.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
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Methods and materials for containment and cleaning up

Prevent entry into waterways, sewer, basements or confined areas.

Large Spills: Stop the flow of material, if this is without risk. Following product recovery, flush area with water. Retain and dispose of contaminated wash water.

Small Spills: Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage**Precautions for safe handling**

Do not get this material in contact with eyes. Do not taste or swallow. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.

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 of the SDS). Use appropriate container to avoid environmental contamination. Keep out of reach of children.

8. Exposure controls/personal protection**Occupational exposure limits****US. ACGIH Threshold Limit Values**

Components	Type	Value	Form
Calcium sulphate (CAS 7778-18-9)	TWA	10 mg/m ³	Inhalable fraction.
Copper sulphate (CAS 7758-98-7)	TWA	1 mg/m ³	Dust and mist.
		0.2 mg/m ³	Fume.
Dicopper oxide (CAS 1317-39-1)	TWA	1 mg/m ³	Dust and mist.
		0.2 mg/m ³	Fume.
Diiron trioxide (CAS 1309-37-1)	TWA	5 mg/m ³	Respirable fraction.
Ferrous sulfate (CAS 7720-78-7)	TWA	1 mg/m ³	
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m ³	Respirable fraction.
	TWA	2 mg/m ³	Respirable fraction.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Calcium sulphate (CAS 7778-18-9)	TWA	10 mg/m ³	
Diiron trioxide (CAS 1309-37-1)	TWA	5 mg/m ³	Respirable.
Ferrous sulfate (CAS 7720-78-7)	TWA	1 mg/m ³	
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m ³	Respirable.
	TWA	2 mg/m ³	Respirable.

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Calcium sulphate (CAS 7778-18-9)	TWA	10 mg/m ³	Inhalable
Diiron trioxide (CAS 1309-37-1)	STEL	10 mg/m ³	Fume.
	TWA	5 mg/m ³	Dust.
		5 mg/m ³	Fume.

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
		3 mg/m3	Respirable fraction.
		10 mg/m3	Total dust.
Ferrous sulfate (CAS 7720-78-7)	STEL	2 mg/m3	
	TWA	1 mg/m3	
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Respirable.
	TWA	2 mg/m3	Respirable.

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value	Form
Calcium sulphate (CAS 7778-18-9)	TWA	10 mg/m3	Inhalable fraction.
Copper sulphate (CAS 7758-98-7)	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
Dicopper oxide (CAS 1317-39-1)	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
Diiron trioxide (CAS 1309-37-1)	TWA	5 mg/m3	Respirable fraction.
Ferrous sulfate (CAS 7720-78-7)	TWA	1 mg/m3	
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Respirable fraction.
	TWA	2 mg/m3	Respirable fraction.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Calcium sulphate (CAS 7778-18-9)	TWA	10 mg/m3	Inhalable fraction.
Diiron trioxide (CAS 1309-37-1)	TWA	5 mg/m3	Respirable fraction.
Ferrous sulfate (CAS 7720-78-7)	TWA	1 mg/m3	
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Respirable fraction.
	TWA	2 mg/m3	Respirable fraction.

Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety)

Components	Type	Value	Form
Calcium sulphate (CAS 7778-18-9)	TWA	5 mg/m3	Respirable dust.
		10 mg/m3	Total dust.
Diiron trioxide (CAS 1309-37-1)	TWA	5 mg/m3	Dust and fume.
		10 mg/m3	Total dust.
Ferrous sulfate (CAS 7720-78-7)	TWA	1 mg/m3	
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Fume.
		5 mg/m3	Fume.
		10 mg/m3	Total dust.

Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)

Components	Type	Value	Form
Calcium sulphate (CAS 7778-18-9)	15 minute	20 mg/m3	

Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)

Components	Type	Value	Form
	8 hour	10 mg/m3	
Diiron trioxide (CAS 1309-37-1)	15 minute	20 mg/m3	
	8 hour	10 mg/m3	
Ferrous sulfate (CAS 7720-78-7)	15 minute	3 mg/m3	
	8 hour	1 mg/m3	
Zinc oxide (CAS 1314-13-2)	15 minute	10 mg/m3	Respirable fraction and dust or fume.
	8 hour	2 mg/m3	Respirable fraction and dust or fume.

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station and safety shower.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves.

Other

Wear chemical-resistant gloves, footwear and protective clothing appropriate for risk of exposure. Contact glove 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. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Keep away from food and drink. 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.

9. Physical and chemical properties

Appearance

Physical state

Solid.

Form

Solid. Granular.

Colour

Grey. Tan. or Brown.

Odour

Not available.

Odour threshold

Not available.

pH

6 - 7

Melting point/freezing point

Not available.

Initial boiling point and boiling range

Not applicable.

Flash point

Not applicable.

Evaporation rate

Not available.

Flammability (solid, gas)

Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)

Not available.

Flammability limit - upper (%)

Not available.

Vapour pressure

Not available.

Vapour density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Soluble (10 - 99%)
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.
Oxidising properties	Not oxidising.
Particle size	1 - 2.7 mm

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Humidity. Contact with incompatible materials.
Incompatible materials	Aluminium. Phosphorus. Strong oxidising substances.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye damage.
Ingestion	Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity Harmful if swallowed.

Components	Species	Test Results
Calcium sulphate (CAS 7778-18-9)		
Acute		
Inhalation		
LC50	Rat	> 3.26 mg/l, 4 Hours
Oral		
LD50	Rat	> 1581 mg/kg
Copper sulphate (CAS 7758-98-7)		
Acute		
Oral		
LD50	Rat	300 mg/kg
Dicopper oxide (CAS 1317-39-1)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg, 24 hours
Inhalation		
LC50	Rat	2.92 mg/l, 4 hours

Components	Species	Test Results
Oral LD50	Rat	928 - 2000 mg/kg
Zinc sulphate (CAS 7733-02-0)		
Acute Oral LD50	Rat	920 mg/kg 623 mg/kg
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Causes serious eye damage.	
Respiratory or skin sensitisation		
Canada - Alberta OELs: Irritant		
Ferrous sulfate (CAS 7720-78-7)	Irritant	
Respiratory sensitisation	Not a respiratory sensitiser.	
Skin sensitisation	This product is not expected to cause skin sensitisation.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity		
ACGIH Carcinogens		
Diiron trioxide (CAS 1309-37-1)	A4 Not classifiable as a human carcinogen.	
Canada - Manitoba OELs: carcinogenicity		
Diiron trioxide (CAS 1309-37-1)	Not classifiable as a human carcinogen.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Diiron trioxide (CAS 1309-37-1)	3 Not classifiable as to carcinogenicity to humans.	
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.	
Specific target organ toxicity - single exposure	Not classified.	
Specific target organ toxicity - repeated exposure	Not classified.	
Aspiration hazard	Not an aspiration hazard.	
Chronic effects	Prolonged inhalation may be harmful.	

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Components	Species	Test Results
Copper sulphate (CAS 7758-98-7)		
Aquatic		
<i>Acute</i>		
Crustacea	EC50	Amphipod (<i>Crangonyx pseudogracilis</i>) 2.21 - 2.72 mg/l, 48 hours
		Calanoid copepod (<i>Acartia clausi</i>) 0.034 mg/l, 48 hours
	LC50	Water flea (<i>Ceriodaphnia dubia</i>) 0.0091 mg/l, 96 hours
Magnesium sulphate (CAS 7487-88-9)		
Aquatic		
<i>Acute</i>		
Crustacea	EC50	Tubificid worm (<i>Tubifex tubifex</i>) 149.6 - 191.36 mg/l, 48 hours
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 2610 - 3080 mg/l, 96 hours
Zinc oxide (CAS 1314-13-2)		
Aquatic		
Crustacea	LC50	Water flea (<i>Daphnia magna</i>) 0.098 mg/l, 48 Hours

Components	Species	Test Results
Zinc sulphate (CAS 7733-02-0)		
Aquatic		
<i>Acute</i>		
Fish	LC50	Carp (Cyprinus carpio) 0.15 mg/l, 96 hours
Persistence and degradability	No data is available on the degradability of this product.	
Bioaccumulative potential	No data available for this product.	
Partition coefficient n-octanol / water (log Kow)		
Urea (CAS 57-13-6)		-2.11
Mobility in soil	The product is soluble in water.	
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.	
13. Disposal considerations		
Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.	
Local disposal regulations	Dispose in accordance with all applicable regulations.	
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.	
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).	
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.	
14. Transport information		
TDG		
UN number	UN3077	
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc oxide, Zinc sulphate)	
Transport hazard class(es)		
Class	9	
Subsidiary risk	-	
Packing group	III	
Environmental hazards	Yes	
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.	
IATA		
UN number	UN3077	
UN proper shipping name	Environmentally hazardous substance, solid, n.o.s. (Zinc oxide, Zinc sulphate)	
Transport hazard class(es)		
Class	9	
Subsidiary risk	-	
Label(s)	9	
Packing group	III	
Environmental hazards	Yes	
ERG Code	9L	
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.	
IMDG		
UN number	UN3077	
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc oxide, Zinc sulphate)	
Transport hazard class(es)		
Class	9	
Subsidiary risk	-	
Label(s)	9	
Packing group	III	
Environmental hazards	Yes	
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 applicable.

General information IMDG Regulated Marine Pollutant.

15. Regulatory information

Canadian regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Ontario. Toxic Substances. Toxic Reduction Act, 2009. Regulation 455/09 (July 1, 2011)

Copper sulphate (CAS 7758-98-7)

Dicopper oxide (CAS 1317-39-1)

Zinc oxide (CAS 1314-13-2)

Zinc sulphate (CAS 7733-02-0)

Precursor Control Regulations

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto Protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Calcium sulphate (CAS 7778-18-9)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	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
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	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

Issue date 31-May-2016

Revision date 13-July-2020

Version No. 02

List of abbreviations EC50: Effective Concentration, 50%.
IATA: International Air Transport Association.
IMDG: International Maritime Dangerous Goods.
LC50: Lethal Concentration, 50%.
LD50: Lethal Dose, 50%.
TDG: Transportation of Dangerous Goods.
TWA: Time Weighted Average.
STEL: Short term exposure limit.

References ACGIH
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
Registry of Toxic Effects of Chemical Substances (RTECS)

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