



FOR ANY EMERGENCY, 24 HOURS / 7 DAYS, CALL:	1-800-654-6911 (OUTSIDE USA: 1-423-780-2970)
FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC®:	1-800-424-9300 (OUTSIDE USA: 1-703-527-3887)
FOR ALL MSDS QUESTIONS & REQUESTS, CALL:	1-800-511-MSDS (OUTSIDE USA: 1-423-780-2347)

PRODUCT NAME: AB BRAND COPPER SULFATE CRYSTALS
 EPA Registration Number: 565-76-1

1. PRODUCT AND COMPANY IDENTIFICATION

Supplier
Applied Biochemists (WI)
 W175 N11163 Stonewood Drive ,
 Suite 234
 Germantown, WI, 53022
 United States

Telephone: +12622554449
 Telefax: +12622554268
 Web: www.appliedbiochemists.com

REVISION DATE: 02/03/2011
 SUPERCEDES: 10/30/2009

MSDS Number: 000000012609
 SYNONYMS:
 CHEMICAL FAMILY: None
 DESCRIPTION / USE: None established
 FORMULA: None established

Manufacturer
 Advantis Technologies
 1400 Bluegrass Lakes Parkway
 Alpharetta, GA 30004
 United States of America

2. HAZARDS IDENTIFICATION

OSHA Hazard Classification:	Moderate skin irritant, Moderate eye irritant, Mucous membrane irritant, Toxic by ingestion
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Routes of Entry: Eyes Skin Ingestion Inhalation



Chemical Interactions: None known.
Medical Conditions Aggravated: Dermatitis, Liver disorders, Kidney disorders

Human Threshold Response Data

Odor Threshold Not established for product.
Irritation Threshold Not established for product.

Hazardous Materials Identification System / National Fire Protection Association Classifications

<u>Hazard Ratings :</u>	<u>Health</u>	<u>Flammability</u>	<u>Physical / Instability</u>	<u>PPI / Special hazard.</u>
HMIS	2*	0	0	
NFPA	2	0	0	

Immediate (Acute) Health Effects

Inhalation Toxicity: Inhalation of dust may cause irritation to the mucous membranes of the respiratory tract.
Skin Toxicity: Causes skin irritation. Not expected to be toxic from dermal contact.
Eye Toxicity: Causes eye irritation.
Ingestion Toxicity: May be fatal if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.
Acute Target Organ Toxicity: May cause skin, eye and mucous membrane irritation (includes upper respiratory tract). Ingestion may cause gastrointestinal discomfort.

Prolonged (Chronic) Health Effects

Carcinogenicity: This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA.
Reproductive and Developmental Toxicity: Not known or reported to cause reproductive or developmental toxicity.
Inhalation: There are no known or reported effects from chronic exposure.
Skin Contact: Chronic exposure may cause dermatitis.
Skin Absorption: There are no known or reported effects from chronic exposure.
Ingestion: Prolonged or repeated exposure may cause kidney, liver and blood damage.
Sensitization: This material is not known or reported to be a skin or respiratory sensitizer.
Chronic Target Organ Toxicity: Prolonged or repeated exposure may cause kidney, liver and blood damage., Chronic exposure may cause dermatitis.
Supplemental Health Hazard Information : No additional health information available.



3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>CAS OR CHEMICAL NAME</u>	<u>CAS #</u>	<u>% RANGE</u>
Copper Sulfate pentahydrate	7758-99-8	

4. FIRST AID MEASURES

General Advice:	Call a poison control center or doctor for treatment advice. For 24-hour emergency medical assistance, call Arch Chemical Emergency Action Network at 1-800-654-6911. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.
Inhalation:	IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.
Skin Contact:	IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Eye Contact:	IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
Ingestion:	IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Flammability Summary (OSHA): The product is not flammable., Not combustible., The substance or mixture is not classified as pyrophoric., Not explosive

Flammable Properties

Fire / Explosion Hazards: Will not burn
Extinguishing Media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.



Fire Fighting Instructions: Use water spray to cool unopened containers. In case of fire, use normal fire-fighting equipment and the personal protective equipment recommended in Section 8 to include a NIOSH approved self-contained breathing apparatus.

Hazardous Combustion Products: During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal Protection for Emergency Situations: Use the personal protective equipment recommended in Section 8 and a NIOSH approved self-contained breathing apparatus.

Spill Mitigation Procedures

Air Release:

Keep people away from and upwind of spill/leak.

Water Release:

If the product contaminates rivers and lakes or drains inform respective authorities.

Land Release:

Sweep up and shovel into suitable containers for disposal. Avoid creating dust.

Additional Spill Information :

Prevent further leakage or spillage if safe to do so. Use personal protective equipment as required. Evacuate personnel to safe areas.

7. HANDLING AND STORAGE

Handling: Do not take internally. Avoid contact with skin, eyes and clothing. If in eyes or on skin, rinse well with water. Avoid breathing dust.

Storage: Store in a cool, dry and well ventilated place. Isolate from incompatible materials.

Incompatible Materials for Storage: Refer to Section 10, "Incompatible Materials."

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation: Local exhaust ventilation or other engineering controls are normally required when handling or using this product to keep airborne exposures below the TLV, PEL or other recommended exposure limit.

Protective Equipment for Routine Use of Product



Respiratory Protection : Wear a NIOSH approved respirator if levels above the exposure limits are possible., NIOSH approved half-face air purifying respirator with an N95 filter. Air purifying respirators should not be used in oxygen deficient or IDLH atmospheres or if exposure concentrations exceed ten (10) times the published limit.

Skin Protection : Avoid contact with skin. Impervious gloves

Eye Protection: Chemical resistant goggles must be worn.

Protective Clothing Type: impervious clothing

General Protective Measures: Ensure that eyewash stations and safety showers are close to the workstation location.

Exposure Limit Data

<u>CHEMICAL NAME</u>	<u>CAS #</u>	<u>Name of Limit</u>	<u>Exposure</u>
Copper Sulfate pentahydrate	7758-99-8	OSHA Z1	1 mg/m3 TWA dusts and mists
Copper Sulfate pentahydrate	7758-99-8	NIOSH-IDLH	100 mg/m3

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: solid

Form: No data.

Color: No data.

Odor: No data.

Molecular Weight: 249.68 Gm

Specific Gravity : 2.28

pH : 15.6 °C
3.7 - 4.2
100 g/l (as aqueous solution)

Boiling Point: 560 °C
1,040 °F

Freezing Point: 150 °C
302 °F

Melting Point: 150 °C
302 °F

Density: no data available

Bulk Density: no data available

Vapor Pressure: 26.7 hPa
22.5 °C



Vapor Density:	8.6
Viscosity:	no data available
Solubility in Water:	316 g/l 0 °C
Partition coefficient n-octanol/water:	Not applicable
Evaporation Rate:	not applicable
Oxidizing:	None established
Volatiles, % by vol.:	no data available
VOC Content	no data available
HAP Content	Not applicable

10. STABILITY AND REACTIVITY

Stability and Reactivity Summary:	Stable under normal conditions.
Conditions to Avoid:	Heat., Exposure to air.
Chemical Incompatibility:	Strong bases, Reducing agents, alkalis, acetylene, nitromethane, Metals, Oxidizing agents
Hazardous Decomposition Products:	Sulphur oxides, Copper oxides
Decomposition Temperature:	No data

11. TOXICOLOGICAL INFORMATION

Component Animal Toxicology

Oral LD50 value:

Copper Sulfate pentahydrate LD50 = 300 mg/kg rat

Component Animal Toxicology

Dermal LD50 value:

Copper Sulfate pentahydrate LD50 >= 1,000 mg/kg rabbit

Component Animal Toxicology

Inhalation LC50 value:

Copper Sulfate pentahydrate no data available



Product Animal Toxicity

Oral LD50 value: LD50 = 300 mg/kg rat
Dermal LD50 value: LD50 >= 1,000 mg/kg rabbit
Inhalation LC50 value: no data available
 Skin Irritation: Moderate skin irritant
 Eye Irritation: Moderate eye irritant
 Skin Sensitization: Not believed to be sensitising to skin.

Acute Toxicity: May cause skin, eye and mucous membrane irritation (includes upper respiratory tract). Ingestion may cause gastrointestinal discomfort.

Subchronic / Chronic Toxicity: Prolonged or repeated exposure may cause kidney, liver and blood damage., Chronic exposure may cause dermatitis.

Reproductive and Developmental Toxicity: Not known or reported to cause reproductive or developmental toxicity.

Mutagenicity: Not known or reported to be mutagenic.
 Copper Sulfate pentahydrate Copper sulfate has been tested for mutagenicity, and there is equivocal evidence for its mutagenic potential. It was found to be negative in the Ames assay and in a yeast assay. It was found to be positive in the in vitro Syrian hamster embryo (SA7/SHE) cell transformation assay.

Carcinogenicity: This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA.

12. ECOLOGICAL INFORMATION

Overview: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Ecological Toxicity Values for: Copper Sulfate pentahydrate

Bluegill	- (measured, renewal) 96 h LC50 = 0.892 mg/l
Rainbow trout (Oncorhynchus mykiss)	- (static). 96 h LC50 = 1.3 - 2.8 mg/l
Blue crab (Callinectes sapidus)	- (static). 96 h LC50= 28 mg/l
Northern pink shrimp (Penaeus duorarum)	- (static). 96 h LC50= 16 mg/l



- Marsh grass shrimp - (static). 96 h LC50= 17 mg/l
- Green algae (Selenastrum capricornutum), - (static). 5 day EC50 (population growth) = 0.0031 mg/l
- Anabaena flos-aquae (freshwater blue-green algae) - (static). 5 day EC50 (population growth) = 0.029 mg/l
- Skeletonema costatum (diatom) - (static). 5 day EC50 (population growth) = 0.25 mg/l

13. DISPOSAL CONSIDERATIONS

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THE MATERIAL. THE USER OF THE MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

Waste Disposal Summary : If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D. As a nonhazardous solid waste it should be disposed of in accordance with local, state and federal regulations.

Potential US EPA Waste Codes : not applicable

14. TRANSPORT INFORMATION

Land (US DOT): UN3077 RQ, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (COPPER SULFATE PENTAHYDRATE) 9 III

Water (IMDG): UN3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (COPPER SULFATE PENTAHYDRATE) 9 III MARINE POLLUTANT

Air (IATA): UN3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (COPPER SULFATE PENTAHYDRATE) 9 III

Emergency Response Guide Number: ERG # 171



Transportation Notes: Material is not regulated as a marine pollutant for ground, rail car, or aircraft transportation within the USA if shipped in non bulk packages per marine pollutant exception 49 CFR 171.4(c). Hazardous Substance as defined in 49 CFR 172.101, Appendix A: Yes

EMS: F-A, S-F

15. REGULATORY INFORMATION

UNITED STATES:

Toxic Substances Control Act (TSCA): This product is regulated under the Federal Insecticide, Fungicide and Rodenticide Act. It must be used for purposes consistent with its labeling.

EPA Pesticide Registration Number: 565-76-1

FIFRA Listing of Pesticide Chemicals (40 CFR 180): This product is regulated under the Federal Insecticide, Fungicide and Rodenticide Act. It must be used for purposes consistent with its labeling.

Superfund Amendments and Reauthorization Act (SARA) Title III:

Hazard Categories Sections 311 / 312 (40 CFR 370.2):

Health Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard
Physical None

Emergency Planning & Community Right to Know (40 CFR 355, App. A):

Extremely Hazardous Substance Section 302 - Threshold Planning Quantity:

ZUS_SAR302 TPQ (threshold planning quantity) None established

Reportable Quantity (49 CFR 172.101, Appendix):

ZUS_CERCLA Reportable quantity COPPER AND COMPOUNDS Value:

ZUS_SAR302 Reportable quantity None established

Supplier Notification Requirements (40 CFR 372.45), 313 Reportable Components



ZUS_SAR313 De minimis concentration None established

Clean Air Act Toxic ARP Section 112r:

CAA 112R None established

Clean Air Act Socmi:

HON SOC None established

Clean Air Act VOC Section 111:

CAA 111 None established

Clean Air Act Haz. Air Pollutants Section 112:

ZUS_CAAHAP None established

ZUS_CAAHRP None established

CAA AP None established

State Right-to-Know Regulations Status of Ingredients

Pennsylvania:

CAS #	COMPONENT NAME
7758-99-8	Copper Sulfate pentahydrate

ZUSPA_RTK

Pennsylvania: Hazardous substance list
1990-01-01
COPPER COMPOUNDS
Environmental hazard, hazardous substance

New Jersey:

CAS #	COMPONENT NAME
7758-99-8	Copper Sulfate pentahydrate

ZUSNJ_RTK

New Jersey Right to Know Hazardous Substance List (RTK-HSL)
1989-12-01
COPPER compounds
hazardous substance

Massachusetts:

CAS #	COMPONENT NAME
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ZUSMA_RTK None established

California Proposition 65:

CAS #	COMPONENT NAME
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ZUSCA_P65 None established

WHMIS Hazard Classification:

Ingredient Disclosure List (WHMIS)

1988-01-20

Threshold limits: 1 Weight percent

431

COPPER COMPOUNDS, N.O.S.

16. OTHER INFORMATION

MSDS REVISION STATUS :

SECTIONS REVISED:

First formulated version in SAP.

Major References :

Available upon request.

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THE INFORMATION IN THIS MSDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. ARCH CHEMICALS BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION BUT, MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT ARCH CHEMICALS MSDS CONTROL AT THE PHONE NUMBER ON THE FRONT PAGE TO MAKE CERTAIN THAT THIS DOCUMENT IS CURRENT. .