

# MATERIAL SAFETY DATA SHEET

## AB Brand Copper Sulfate Crystals

### 1. Product And Company Identification

#### Supplier

Applied Biochemists (WI)  
A division of Advantis Technologies, Inc.  
W175 N11163 Stonewood Drive, Suite 234  
Germantown, WI 53022

Telephone Number: (262) 255-4449  
FAX Number: (262) 255-4268  
Web Site: www.appliedbiochemists.com

#### Manufacturer

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

Telephone Number: (770) 521-5999  
FAX Number: (770) 521-5959  
Web Site: www.poolspacare.com

#### Supplier Emergency Contacts & Phone Number

CHEMTREC - DAY OR NIGHT: (800) 424-9300  
ACEAN - DAY OR NIGHT: (800) 654-6911

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Issue Date: 10/30/2009

Product Name: AB Brand Copper Sulfate Crystals  
Chemical Name: Copper Sulfate Pentahydrate  
Chemical Formula:  $CuSO_4 \cdot 5H_2O$   
MSDS Number: 365

### 2. Composition/Information On Ingredients

Ingredient Name	CAS Number	Percent Of Total Weight
COPPER (II) SULFATE PENTAHYDRATE	7758-99-8	

Ingredients listed in this section have been determined to be hazardous as defined in 29CFR 1910.1200. Materials determined to be health hazards are listed if they comprise 1% or more of the composition. Materials identified as carcinogens are listed if they comprise 0.1% or more of the composition. Information on proprietary materials is available in 29CFR 1910.1200(i)(1).

This product may be regulated, have exposure limits or other information as the following: Copper (7440-50-8) and inorganic compounds, as Cu, Copper (7440-50-8) dusts and mists, as Cu and Copper fume, Cu.

### EMERGENCY OVERVIEW

Copper Sulfate Pentahydrate is a blue crystalline or powdered, odorless solid. Potentially fatal if swallowed. May cause irritation to the eyes, respiratory system and skin. Fire may produce irritating, corrosive and/or toxic fumes. Firefighters should use full protective equipment and clothing.

### 3. Hazards Identification

#### Eye Hazards

Exposure to particulates or solution of this product may cause redness and pain. Prolonged contact may cause conjunctivitis, ulceration and corneal abnormalities.

#### Skin Hazards

This product may cause irritation of the skin with pain, itching, and redness. Severe overexposure can cause skin burns. Prolonged exposure may cause dermatitis and eczema.

#### Ingestion Hazards

Harmful or painful if swallowed. May cause gastrointestinal irritation with symptoms such as nausea, vomiting, and diarrhea. Ingestion may cause degeneration of liver, kidney, or renal failure. Persons who survive ingestion may develop granulomatous lesions of the kidney. Ingestion of large amounts may lead to convulsions, coma, or death.

## AB Brand Copper Sulfate Crystals

### 3. Hazards Identification - Continued

#### Inhalation Hazards

May irritate the nose, throat and respiratory tract. Symptoms can include sore throat, coughing and shortness of breath. In severe cases, ulceration and perforation of the nasal septum can occur. If this material is heated, inhalation of fumes may lead to development of metal fume fever. This is a flu-like illness with symptoms of metallic taste, fever, and chills, aches, chest tightness and cough. Repeated inhalation exposure can cause shrinking of the lining of the inner nose.

**HARMFUL OR FATAL IF SWALLOWED.** Can cause irritation of eyes, skin, respiratory tract and, in extreme cases, burns. Avoid contact with eyes and skin. Avoid breathing dusts. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Keep from contact with clothing and other combustible materials.

#### First Aid (Pictograms)



### 4. First Aid Measures

#### Eye

Immediately flush eyes with large amounts of room temperature water, occasionally lifting the lower and upper lids, for at least 15 minutes. If symptoms persist after 15 minutes of irrigation, seek medical attention.

#### Skin

Remove contaminated clothing and shoes. Wash affected areas with soap and water for at least 20 minutes. Get medical attention immediately if irritation develops and persists.

#### Ingestion

**DO NOT INDUCE VOMITING.** Have victim rinse mouth thoroughly with water, if conscious. Never give anything by mouth to a victim who is unconscious or having convulsions. Contact a physician or poison control center immediately.

#### Inhalation

If inhaled, remove to fresh air. If not breathing, give artificial respiration. Do not use mouth to mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, give oxygen. Call a physician or a poison control center immediately.

#### Note To Physician

Provide general supportive measures and treat symptomatically. **Basic treatment:** Establish a patent airway. Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by non-rebreather mask at 10 to 15 L/minutes. Monitor for shock and treat if necessary. For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport. Do not use emetics. For ingestion, rinse mouth and administer 5 mL/kg up to 200 mL of water for dilution of the patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal. **Advanced treatment:** Consider orotracheal intubation for airway control in the patient who is unconscious. Start an IV with lactated Ringer's SRP: "To keep open", minimal flow rate. Watch for signs of fluid overload. For hypotension with signs of hypovolemia, administer fluid cautiously. Consider vapopressors if hypotensive with a normal fluid volume. Watch for signs of fluid overload. Use proparacaine, hydrochloride to assist eye irrigation.

#### Fire Fighting (Pictograms)



## AB Brand Copper Sulfate Crystals

### 5. Fire Fighting Measures

**Flash Point:** NA °F

**Flash Point Method:** NA

**Autoignition Point:** NA °F

**Flammability Class:** Not flammable

**Lower Explosive Limit:** NA

**Upper Explosive Limit:** NA

#### Fire And Explosion Hazards

Copper Sulfate Pentahydrate is not combustible, but may decompose in the heat of a fire to produce corrosive and/or toxic fumes. **Hazardous Combustion Products:** Sulfur oxides and copper fumes.

#### Extinguishing Media

Use methods for surrounding fire.

#### Fire Fighting Instructions

Firefighters should wear self-contained breathing apparatus and full protective gear. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

### 6. Accidental Release Measures

**Containment Procedures:** Stop the flow of material, if this can be done without risk. Contain the discharged material. If sweeping of a contaminated area is necessary use a dust suppressant agent, which does not react with the product.

**Clean-Up Procedures:** Wear appropriate protective equipment and clothing during clean-up. Shovel the material into waste container. Thoroughly wash the area after a spill or leak clean-up. Prevent spill rinsate from contamination of storm drains, sewers, soil, or groundwater.

**Evacuation Procedures:** Evacuate the area promptly and keep upwind of the spilled material. Isolate the spill area to prevent people from entering. Keep materials which can burn away from spilled material. In case of large spills, follow all facility emergency response procedures.

**Special Procedures:** Remove soiled clothing and launder before reuse. Avoid all skin contact with the spilled material. Have emergency equipment readily available.

### Handling & Storage (Pictograms)



### 7. Handling And Storage

#### Handling Precautions

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling, when used as a pesticide. Do not breathe dust. Avoid all contact with skin and eyes. Use this product only with adequate ventilation. Wash thoroughly after handling.

#### Storage Precautions

Keep in original container in locked storage area. Keep container tightly closed when not in use. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Store containers away from incompatible chemicals. Storage areas should be made of fire-resistant materials. Post warning and "NO SMOKING" signs in storage and use areas, as appropriate. Use corrosion-resistant structural materials, lighting, and ventilation systems in the storage area. Floors should be sealed to prevent absorption of this material. Have appropriate extinguishing equipment in the storage area (i.e. sprinkler system, portable fire extinguishers). Empty containers may contain residual particulates; therefore, empty containers should be handled with care. Do not cut, grind, weld, or drill near this container. Never store food, feed, or drinking water in

## AB Brand Copper Sulfate Crystals

### 7. Handling And Storage - Continued

#### Storage Precautions - Continued

containers that held this product. Keep this material away from food, drink and animal feed. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Do not store this material in open or unlabeled containers. Limit quantity of material stored. Store in suitable containers that are corrosion-resistant.

#### Protective Clothing (Pictograms)



### 8. Exposure Controls/Personal Protection

#### Engineering Controls

Use mechanical ventilation such as dilution and local exhaust. Use a corrosion-resistant ventilation system and exhaust directly to the outside. Supply ample air replacement. Provide dust collectors with explosion vents.

#### **Component Exposure Limits:**

**The exposure limits given are for Copper & Inorganic Compounds, as Cu (7440-50-8), Copper fume as Cu or Copper dusts and mists, as Cu.**

ACGIH: 1 mg/m<sup>3</sup> TWA (dusts and mists)  
0.2 mg/m<sup>3</sup> TWA (fume)

OSHA: 1 mg/m<sup>3</sup> TWA (dusts and mists)  
0.1 mg/m<sup>3</sup> TWA (fume)

NIOSH: 1 mg/m<sup>3</sup> TWA (dusts and mists)  
0.1 mg/m<sup>3</sup> TWA (fume)

DFG MAKs 1 mg/m<sup>3</sup> TWA Peak, 2 . MAK 15 minutes, average value, 1-hr interval (copper and inorganic copper compounds)

0.1 mg/m<sup>3</sup> TWA Peak, 2 . MAK 15 minutes, average value, 1-hr interval (fume)

#### Eye/Face Protection

Wear safety glasses with side shields (or goggles) and a face shield, if this material is made into solution. If necessary, refer to U.S. OSHA 29 CFR 1910.133.

#### Skin Protection

Wear chemically-impervious gloves, made of any waterproof material, boots and coveralls to avoid skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138.

#### Respiratory Protection

If airborne concentrations are above the applicable exposure limits, use NIOSH-approved respiratory protection. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). The following NIOSH Guidelines for Copper dust and mists (as Cu) are presented for further information.

Up to 5 mg/m<sup>3</sup>: Dust and mist respirator

Up to 10 mg/m<sup>3</sup>: Any dust and mist respirator except single-use and quarter mask respirators or any SAR

Up to 25 mg/m<sup>3</sup>: SAR operated in a continuous-flow mode or powered air-purifying respirator with a dust and mist filter.

Up to 50 mg/m<sup>3</sup>: Air purifying, full-facepiece respirator with high-efficiency particulate filter(s), and powered air-purifying respirator with tight-fitting facepiece and high-efficiency particulate filter(s) or full-facepiece SCBA, or full-facepiece SAR.

Up to 100 mg/m<sup>3</sup>: Positive pressure, full-facepiece SAR.

Emergency or Planned Entry into Unknown Concentrations of IDLH Conditions: Positive pressure, full-facepiece

## AB Brand Copper Sulfate Crystals

### 8. Exposure Controls/Personal Protection - Continued

#### Respiratory Protection - Continued

SCBA, or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.  
Escape: Full-facepiece respirator with high-efficiency particulate filter(s), or escape-type SCBA.

Note: The IDLH concentration for Copper dusts and mists (as Cu) is 100 mg/m<sup>3</sup>.

#### Other/General Protection

Wash hands thoroughly after handling material. Do not eat, drink or smoke in work areas. Have a safety shower or eye-wash fountain available. Use good general hygiene practices when handling this material including changing and laundering work clothing after use. Discard contaminated shoes and leather goods.

### 9. Physical And Chemical Properties

#### Appearance

Blue crystals or powder

#### Odor

Odorless

**Chemical Type:** Mixture

**Physical State:** Solid

**Melting Point:** 302 °F 150 °C

**Boiling Point:** 1040 (decomposes) °F 560 (decomposes) °C

**Specific Gravity:** 2.28 @ 15.6 deg C (H<sub>2</sub>O=1)

**Molecular Weight:** 249.68

**Vapor Pressure:** 20 torr at 22.5 deg C

**Vapor Density:** 8.6

**pH Factor:** 3.7-4.2 At a Concentration Of (10% solution)

**Solubility:** 31.6 g/100 cc (@ 0 deg C)

### 10. Stability And Reactivity

**Stability:** Stable when kept dry, under normal temperature and pressures

**Hazardous Polymerization:** Will not occur

#### Conditions To Avoid (Stability)

Avoid high temperatures, exposure to air and incompatible materials.

#### Incompatible Materials

Copper Sulfate causes hydroxylamine to ignite and the hydrated salt is vigorously reduced. Solutions of sodium hypobromite are decomposed by powerful catalytic action of cupric ions, even as impurities. Copper salts, including Copper Sulfate, may react to form explosive acetylides when in contact with acetylene or nitromethane. Contact with reducing agents, can cause a vigorous reaction, especially in solution. This product can corrode aluminum, steel and iron. Copper Sulfate Pentahydrate is incompatible with magnesium, strong bases, alkalines, phosphates, acetylene, hydrazine, and zirconium.

#### Hazardous Decomposition Products

Sulfur oxides and Copper oxides

### 11. Toxicological Information

#### Acute Studies

Acute toxicity is largely due to the caustic (alkaline) properties of this material. Harmful or fatal if swallowed. Product is an eye and skin irritant, and may cause burns. Product is a respiratory tract irritant, and inhalation may cause nose irritation, sore throat, coughing, and chest tightness and possibly, ulceration and perforation of the nasal septum.

## AB Brand Copper Sulfate Crystals

### 11. Toxicological Information - Continued

#### Chronic/Carcinogenicity

Long term skin overexposure to this product may lead to dermatitis and eczema. Prolonged or repeated eye contact may cause conjunctivitis and possibly corneal abnormalities. Chronic overexposure to the product may cause liver and kidney damage, anemia, and other blood cell abnormalities.

**Copper Sulfate Pentahydrate (7758-99-8):** Cytogenetic Analysis-Rat/ast 300 mg/kg

**Copper dusts and mists, as Cu (7440-50-8):** EPA: EPA-D (Not Classifiable as to Human Carcinogenicity - inadequate human and animal evidence of carcinogenicity or no data available)

#### Epidemiology

No information available

#### Teratogenicity (Birth Defects)

There are no reports of teratogenicity in humans. Animal studies indicate that a deficiency or excess of copper in the body can cause significant harm to developing embryos. The net absorption of copper is limited and toxic levels are unlikely from industrial exposure.

#### Neurotoxicity

Has not been identified

#### Mutagenicity (Genetic Effects)

Human and animal mutation data are available for Copper Sulfate Pentahydrate; these data were obtained during clinical studies on specific human and animal tissues exposed to high doses of this compound.

#### Miscellaneous Toxicological Information

Individuals with Wilson's disease are unable to metabolize copper. Thus, persons with pre-existing Wilson's disease may be more susceptible to the effects of overexposure to this product.

### Ecological (Pictograms)



### 12. Ecological Information

#### Ecotoxicological Information

Harmful to aquatic life in very low concentrations. Copper Sulfate Pentahydrate is toxic to fish and marine organisms when applied to streams, rivers, ponds or lakes.

#### Environmental Fate Information

If released to soil, copper sulfate may leach to groundwater, be partly oxidized or bind to humic materials, clay or hydrous oxides of iron and manganese. In water, it will bind to carbonates as well as humic materials, clay and hydrous oxides of iron and manganese. Copper is accumulated by plants and animals, but it does not appear to biomagnify from plants to animals. In air, copper aerosols have a residence time of 2 to 10 days in an unpolluted atmosphere and 0.1 to greater than 4 days in polluted, urban areas.

### 13. Disposal Considerations

This product is a registered pesticide.

All wastes must be handled in accordance with local, state and federal regulations or with regulations of Canada and its Provinces. The material can be converted to a less hazardous material by weak reducing agents followed by neutralization. Do not reuse empty containers. Do not rinse unless required for recycling. If partly filled, call local solid waste agency for disposal instructions. Never pour unused product down drains or on the ground.

## AB Brand Copper Sulfate Crystals

### 13. Disposal Considerations - Continued

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticides, spray mixtures, or rinsate is a violation of U.S. Federal and Canadian Law. If these wastes cannot be disposed of by use, according to product label instruction, contact your U.S. State, or Canadian Province Pesticide or Environmental Control Agency, or the hazardous waste representative at the nearest U.S. EPA Regional Office, or the offices of Environment Canada for guidance.

### 14. Transport Information

#### Proper Shipping Name

Environmentally Hazardous Substance, Solid, n.o.s. (copper sulfate pentahydrate), Marine Pollutant

#### Hazard Class

9, PGIII (<=5 kg Consumer Commodity ORM-D)

#### DOT Identification Number

UN3077

#### Additional Shipping Paper Description

North American Emergency Response Guide No. 171

Not regulated by DOT for ground or air shipments [see exception for marine pollutants 49CFR171.4(c)].

#### DOT (Pictograms)



### 15. Regulatory Information

#### U.S. Regulatory Information

Copper Sulfate Pentahydrate (CAS #7758-99-8) is listed as a Priority and Toxic Pollutant under the Clean Water Act.

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4):

#### **Copper Compounds (7440-50-8)**

SARA 313: final RQ = 5000 lbs (2270 kg) Note: no reporting of releases of this substance is required if the diameter of the pieces of the solid metal released is equal to or greater than 0.004 inches.

#### **Cupric Sulfate (7758-98-7)**

CERCLA: final RQ = 10 lbs (4.54 kg)

Copper Sulfate Pentahydrate (7758-99-8) is listed under SARA 311/312 Tier II Hazard Ratings as an Immediate Health Hazard and a Chronic Health Hazard.

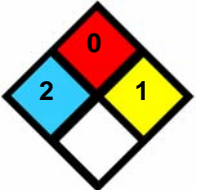
#### State Regulations

Copper Sulfate Pentahydrate is not on the California Proposition 65 chemical lists.

Copper Sulfate Pentahydrate (7758-99-8) is listed on the following state hazardous substance lists: NJ, PA

# MATERIAL SAFETY DATA SHEET

## AB Brand Copper Sulfate Crystals

<b>NFPA</b>	<b>HMIS</b>								
	<table border="1"><tr><td>HEALTH</td><td style="text-align: center;">2</td></tr><tr><td>FLAMMABILITY</td><td style="text-align: center;">0</td></tr><tr><td>REACTIVITY</td><td style="text-align: center;">1</td></tr><tr><td>PERSONAL PROTECTION</td><td style="text-align: center;">E</td></tr></table>	HEALTH	2	FLAMMABILITY	0	REACTIVITY	1	PERSONAL PROTECTION	E
HEALTH	2								
FLAMMABILITY	0								
REACTIVITY	1								
PERSONAL PROTECTION	E								

### 16. Other Information

#### Revision/Preparer Information

MSDS Preparer: JHW

#### Disclaimer

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