Material Safety Data Sheet
Copper Sulfate-Sulfamic Acid Solution

Section 1 - Chemical Product and Company Identification

MSDS Name:
Copper Sulfate-Sulfamic Acid Solution
Catalog Numbers:
LC13470
Synonyms:
None

Section 2 – Composition, Information on Ingredients

CAS#	Chemical Name:	Percent
7732-18-5	Water	>89
7758-99-8	Cupric sulfate pentahydrate	5
5329-14-6	Sulfamic acid	3.2
64-19-7	Acetic acid	2.5

Section 3 - Hazards Identification

Emergency Overview

Appearance: *Clear, blue solution*
Warning! May cause irritation to eyes and skin. May cause kidney and liver damage.
Target Organs: *Eyes, skin, gastrointestinal tract, teeth, blood, kidneys, liver*

Potential Health Effects

Eye:
May cause eye irritation.
Skin:
May cause skin irritation.
Ingestion:
May cause gastrointestinal tract irritation. May cause kidney and liver damage.

Inhalation:
May cause irritation to the respiratory tract.
Chronic:
May cause liver and kidney damage. May cause anemia and other blood cell disorders. Laboratory experiments have resulted in mutagenic effects.

Section 4 - First Aid Measures

Eyes:
Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids until no evidence of chemical remains. Get medical aid at once.
Skin:
Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid at once.
Ingestion:
Do not induce vomiting. Give conscious victim 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid at once.
Inhalation:
Move victim to fresh air immediately. If breathing is difficult, administer oxygen. Give artificial respiration if necessary. Get medical aid at once.
Notes to Physician:
Persons with pre-existing skin disorders or impaired respiratory or pulmonary function may be at increased risk. Individuals with Wilson's disease are more susceptible to chronic copper poisoning.
Antidote:
The use of d-Penicillamine as a chelating agent should be determined by qualified medical personnel.

Section 5 - Fire Fighting Measures

General Information:
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Contact with metals may evolve flammable hydrogen gas. Vapors are heavier than air and may collect in low or confined areas.
Extinguishing Media:
For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam.
Autoignition Temperature:
No information found.
Flash Point:
No information found.
NFPA Rating:
Health- 32, Flammability- 0, Instability- 0.
Explosion Limits:
Lower: N/A Upper: N/A

Section 6 - Accidental Release Measures

General Information:

Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spill with inert material such as sand, vermiculite, or diatomaceous earth, and transfer to a suitable container labeled for later disposal.

Section 7 - Handling and Storage

Handling:

Wash thoroughly after handling. Do not ingest or inhale. Do not get in eyes, on skin, or on clothing. Use with adequate ventilation.

Storage:

Store tightly capped in a cool, dry, well-ventilated area away from incompatible materials.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls:

Facilities using or storing this material should be equipped with an eyewash and safety shower. Provide local exhaust or general dilution ventilation to keep airborne levels below the permissible exposure limits.

Exposure Limits:

Chemical Name:	ACGIH	NIOSH	OSHA
Water	None listed	None listed	None listed
Cupric sulfate pentahydrate	None listed	None listed	None listed
Sulfamic acid	None listed	None listed	None listed
Acetic acid	10 ppm TWA 15 ppm STEL	10 ppm TWA 15 ppm STEL 50 ppm IDLH	10 ppm TWA 25 mg/m3 TWA

OSHA Vacated PELs:

Acetic acid: 10 ppm TWA; 25 mg/m3 TWA

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133. Do not wear contact lenses when working with chemicals.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

Follow the OSHA respirator regulations found in 29 CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Color: Blue

Material Safety Data Sheet
Copper Sulfate-Sulfamic Acid Solution

Odor:	Mild vinegar-like
pH:	Acidic
Vapor Pressure:	Not available
Vapor Density:	Not available
Evaporation Rate:	Not available
Viscosity:	Not available
Boiling Point:	Not available
Freezing/Melting Point:	Not available
Decomposition Temperature:	Not available
Solubility in water:	Soluble
Specific Gravity/Density:	1.0 -1.05
Molecular Formula:	Not applicable
Molecular Weight:	Not applicable

Section 10 - Stability and Reactivity

Chemical Stability:
Stable under normal temperatures and pressures.

Conditions to Avoid:
Incompatible materials, excess heat.

Incompatibilities with Other Materials:
Oxidizing agents, bases, metals.

Hazardous Decomposition Products:
Oxides of sulfur, carbon monoxide, carbon dioxide, oxides of copper.

Hazardous Polymerization:
Has not been reported.

Section 11 - Toxicological Information

RTECS:
CAS# 7732-18-5: ZC0110000.
CAS# 7758-99-8: GL8900000.
CAS# 5329-14-6: WO5950000.
CAS# 64-19-7: AF1225000.

LD50/LC50:
CAS# 7732-18-5:
Oral, rat: LD50 = >90 mL/kg
CAS# 7758-99-8:
Oral, rat: LD50 = 300 mg/kg
Skin, rat: LD50 = 2 g/kg
CAS# 5329-14-6:
Oral, rat: LD50 = 1450 mg/kg.
CAS# 64-19-7:
Inhalation, rat: LC50 = 11.4 mg/L/4H
Oral, rat: LD50 = 3310 mg/kg
Skin, rabbit: LD50 = 1060 mg/kg

Carcinogenicity:
CAS# 7732-18-5: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.

CAS# 7758-99-8: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.
CAS# 5329-14-6: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.
CAS# 64-19-7: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.

Epidemiology:
No information found

Teratogenicity:
No information found

Reproductive:
Reproductive toxicity effects have occurred in laboratory animals.

Mutagenicity:
Not mutagenic in AMES test.

Neurotoxicity:
No information found

Section 12 - Ecological Information

Environmental:
Copper is accumulated by plants and animals, but it does not appear to biomagnify from plants to animals.

Section 13 - Disposal Considerations

Dispose of in accordance with Federal, State, and local regulations.

Section 14 - Transport Information

US DOT

Shipping Name: Not regulated
Hazard Class:
UN Number:
Packing Group:

Section 15 - Regulatory Information

US Federal

TSCA:
CAS# 7732-18-5 is listed on the TSCA Inventory.
CAS# 7758-99-8 is not listed on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the Inventory (40CFR 720.3(u)(2)).
CAS# 5329-14-6 is listed on the TSCA Inventory.
CAS# 64-19-7 is listed on the TSCA Inventory.

SARA Reportable Quantities (RQ):
CAS# 7758-98-7 (anhydrous): final RQ = 10 pounds (4.54 kg)
CAS# 64-19-7: final RQ = 5000 pounds (2270 kg)

CERCLA/SARA Section 313:

This material contains Copper (II) Sulfate, Pentahydrate (listed as Copper compounds, nos.), 5%, (CAS# 7758-99-8), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

OSHA - Highly Hazardous:

None of the chemicals in this product are considered highly hazardous by OSHA.

US State

State Right to Know:

Cupric sulfate can be found on the following state Right-to-Know lists: California, New Jersey, Pennsylvania, Massachusetts.

Sulfamic acid can be found on the following state Right-to-Know lists: New Jersey.

Acetic acid can be found on the following state Right-to-Know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

California Regulations:

None.

European/International Regulations

Canadian DSL/NDSL:

CAS# 7732-18-5 is listed on Canada's DSL List.
CAS# 7758-99-8 is listed on Canada's DSL List.
CAS# 5329-14-6 is listed on Canada's DSL List.
CAS# 64-19-7 is listed on Canada's DSL List.

Canada Ingredient Disclosure List:

CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.
CAS# 7758-99-8 is listed on Canada's Ingredient Disclosure List as Copper compounds, nos.
CAS# 5329-14-6 is listed on Canada's Ingredient Disclosure List.
CAS# 64-19-7 is listed on Canada's Ingredient Disclosure List.

Section 16 - Other Information

MSDS Creation Date: November 21, 1998
Revision Date: May 23, 2011

Information in this MSDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made.