

*** MATERIAL SAFETY DATA SHEET ***

Copper (II) Sulfate Pentahydrate
05690

*** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ***

MSDS Name: Copper (II) Sulfate Pentahydrate
Catalog Number: 73250, 73253, 73256, 73268-1, 73269-1, 73269-3, 73271,
BP346-500, C489-1, C489-500, C490-10, C490-3, C493-10, C493-100,
C493-3, C493-500, C494-12, C494-212, C494-500, C494501B, NC9996491,
73250-1, XKC493200LB
Synonyms:
Blue Vitriol
Company Identification: Fisher Scientific
Reagent Lane 07410
For information, call: 201-796-7100
For Chemtrec assistance, call: 800-424-9300
For International Chemtrec assistance, call: 703-527-3887

*** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ***

CAS#	Chemical Name	EMSCS#
7758-99-8	Copper (II) sulfate pentahydrate	ca 100
		unlisted

Hazard Symbols: XN N
Risk Phrases: 22 36/38 50/53

*** SECTION 3 - HAZARDS IDENTIFICATION ***

EMERGENCY OVERVIEW

Appearance: blue crystals.
Harmful if swallowed. Causes moisture from the air. Air sensitive.
Irritant if swallowed. Causes eye and skin irritation and possible
burns. Causes digestive and respiratory tract irritation with
possible burns. Possible sensitizer.
Target Organs: Blood, kidneys, liver.

Potential Health Effects

Eye: Exposure to particulates or solution may cause conjunctivitis,
ulceration, and corneal abnormalities. Causes eye irritation and
possible burns.

Skin: May cause skin sensitization, an allergic reaction, which becomes
evident upon re-exposure to this material. Causes skin irritation
and possible burns. May cause itching eczema.

Ingestion: Harmful if swallowed. May cause severe gastrointestinal tract
irritation with nausea, vomiting and possible burns. Ingestion of
large amounts of copper salts may cause bloody stools and vomit, low
blood pressure, jaundice and coma. Ingestion of copper compounds may
produce systemic toxic effects to the kidney and liver and central
nervous system followed by depression.

Inhalation: May cause ulceration and perforation of the nasal septum if inhaled
in excessive quantities. Causes respiratory tract irritation with
possible burns.

Chronic: Prolonged or repeated eye contact may cause conjunctivitis. May
cause liver and kidney damage. May cause anemia and other blood cell
abnormalities. Individuals with Wilson's disease are unable to
metabolize copper. Thus, copper accumulates in various tissues and
may result in liver, kidney, and brain damage. Laboratory allergic
skin reaction in some individuals. Chronic copper poisoning in man is
recognized in the form of Wilson's disease.

*** SECTION 4 - FIRST AID MEASURES ***

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes,
occasionally lifting the upper and lower eyelids. Get medical aid.
Skin: Get medical aid. Flush skin with plenty of water for at least 15
minutes while removing contaminated clothing and shoes. Wash clothing
before reuse.
Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4
cupfuls of milk or water. Never give anything by mouth to an
unconscious person. Get medical aid immediately. If breathing
is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth
resuscitation. If breathing has ceased apply artificial respiration
using oxygen and a suitable mechanical device such as a bag and a
mask.
Notes to Physician: 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.

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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. During a fire, irritating and highly toxic gases
may be generated by thermal decomposition or combustion. Substance
is non-combustible. This material in sufficient quantity and reduced
oxygen concentration is capable of creating a dust explosion.
Extinguishing Media: Use extinguishing media most appropriate for the surrounding fire.
Use water spray, dry chemical, carbon dioxide, or appropriate foam.
Autoignition Temperature: Not applicable.
Flash Point: Not applicable.
Explosion Limits: Lower: Not available.
Explosion Limits, upper: Not available.
NFPA Rating: (estimated) Health: 2; Flammability: 0
Instability: 0

*** SECTION 6 - ACCIDENTAL RELEASE MEASURES ***

General Information: Use proper personal protective equipment as indicated
in Section 8.
Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal
container. Clean up spills immediately, observing precautions in the
protective section. Avoid generating dusty conditions.
Provide ventilation. Place under an inert atmosphere.

*** SECTION 7 - HANDLING AND STORAGE ***

Handling: Wash thoroughly after handling. Remove contaminated clothing and
wash before reuse. Use only in a well-ventilated area. Minimize dust
generation and accumulation. Avoid contact with eyes, skin, and
clothing. Keep container tightly closed. Do not ingest or inhale.
Handle under an inert atmosphere. Store protected from air.
Storage: Store in a tightly closed container. Store in a cool, dry,
well-ventilated area away from incompatible substances. Do not expose
to air. Store protected from moisture. Store under an inert
atmosphere.

*** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ***

Engineering Controls: Facilities storing or utilizing this material should be equipped
with an eyewash facility and a safety shower. Use adequate
ventilation to keep airborne concentrations low.

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Copper (II) sulfate pentahydrate	0.2 mg/m ³ TWA (fume); 1 mg/m ³ TWA (dusts and mists, as Cu) (listed under ** no name **)	1 mg/m ³ TWA (dusts and mists) (listed under ** no name **) 1 mg/m ³ TWA (as Cu) (listed under ** no name **) 100 mg/m ³ IDLH (dusts and mists) (listed under ** no name **) 100 mg/m ³ IDLH (dusts and mists, as Cu) (listed	0.1 mg/m ³ TWA (fume); 1 mg/m ³ TWA (dusts and mists) (listed under ** no name **) 1 mg/m ³ TWA (dusts and mists) (listed under ** no name **)

OSHA Vacated PELs:
Copper (II) sulfate pentahydrate:
0.1 mg/m³ TWA (fume, dusts, mists as Cu) (listed under ** no name **)

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 or European

Skin: Standard EN166.
Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

*** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ***

Physical State: Crystals
Color: Blue
Odor: Odorless
Vapor Pressure: Not available.
Vapor Density: 7.3 mm Hg @ 25 deg C
Evaporation Rate: Not available.
Volatility: Negligible.
Boiling Point: Not available.
Freezing/Melting Point: 110 deg C (dec)
Decomposition Temperature: 2.2840g/cm3
Solubility in water: 2.2840g/cm3
Specific Gravity/Density: CuO4S.5H2O
Molecular Weight: 249.68

*** SECTION 10 - STABILITY AND REACTIVITY ***

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions. Air sensitive.
Conditions to Avoid: High temperatures, incompatible materials, dust generation, exposure to air, exposure to moist air or water.
Incompatibilities with Other Materials: Moisture, air, steel, finely powdered metals, hydroxylamine, magnesium, hydrazine, nitromethane.
Hazardous Decomposition Products: None.
Hazardous Polymerization: Has not been reported

*** SECTION 11 - TOXICOLOGICAL INFORMATION ***

RTCS#:
CAS# 7758-99-8: GL8900000
LD50/LC50: 7758-99-8: Oral, mouse: LD50 = 43 mg/kg; Oral, rat: LD50 = 300 mg/kg; Skin, rat: LD50 = >2 gm/kg.
Carcinogenicity: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Copper (II) sulfate pentahydrate -
Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Neurotoxicity: No information available.
Mutagenicity: No information available.
DNA Inhibition: Human, lymphocyte = 76 umol/L.; Unscheduled DNA Synthesis: Rat, Liver = 31 umol/L.; Cytogenetic Analysis: Rat, Asciates tumor = 300 mg/kg.; Micronucleus Test: Interperitoneal, mouse = 5 mg/kg.
Other Studies: No information available.

*** SECTION 12 - ECOLOGICAL INFORMATION ***

Ecotoxicity:
Fish: Rainbow trout: LC50 = 0.1-2.5 mg/L; 96 Hr: Unspecified fish: Goldfish: LC50 = 0.1-2.5 mg/L; 96 Hr: Unspecified fish: Daphnia: EC50 = 0.24 mg/L; 48 Hr: Unspecified soil, copper sulfate is partly washed down to lower levels, partly bound by soil components, and partly oxidized to form copper sulfate. Copper has a strong affinity for hydrous matter. Sorption to these materials is strong and is suspended in the water column & in the bed sediments, results in relative enrichment of the solid phase and reduction in dissolved levels.

*** SECTION 13 - DISPOSAL CONSIDERATIONS ***

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Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste.
US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

*** SECTION 14 - TRANSPORT INFORMATION ***

US DOT
Shipping Name: ENVIRONMENTALLY HAZARDOUS
Hazard Class: SUBSTANCES, SOLID, N.O.S.
UN Number: UN3077
Packing Group: III
Canadian TDG
Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTAN (CUPRIC SULFATE)
Hazard Class: 9
UN Number: UN3077

*** SECTION 15 - REGULATORY INFORMATION ***

US FEDERAL
TSCA

CAS# 7758-99-8 is not 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 (40CFR720.3(u)(2)).
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
Section 12b
None of the chemicals in this product are under a Chemical Test Rule.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.

SARA

CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPO.
SARA Codes 7758-99-8: acute, chronic.
Section 113
This material contains Copper (II) sulfate pentahydrate (listed as ** undefined **), 100%, (CAS# 7758-99-8) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.

Clean Air Act:

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depleters.
This material does not contain any Class 2 Ozone depleters.
Clean Air Act
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
CAS# 7758-99-8 is listed as a Priority Pollutant under the Clean Water Act.

CAS# 7758-99-8 is listed as a Toxic Pollutant under the Clean Water Act.

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

STATE

Copper (II) sulfate pentahydrate can be found on the following state right to know lists: California, (listed as ** no name **), California, (listed as ** no name **), New Jersey, (listed as ** no name **), Pennsylvania, (listed as ** no name **), Minnesota, (listed as ** no name **), Massachusetts, (listed as ** no name **), California No Significant Risk Level:
None of the chemicals in this product are listed.
European/International Regulations
European Labeling in Accordance with EC Directives
European Labeling in Accordance with EC Directives
Risk Phrases: XN N

R 22 Harmful if swallowed.
R 36/38 Irritating to eyes and skin.
R 50/53 Very toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.
Safety Phrases: S 22 Do not breathe dust.
S 360 This material and/or its container must be kept tightly closed.
S 61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

WGK (Water Danger/Protection)

CAS# 7758-99-8: 2
United Kingdom Occupational Exposure Limits
CAS# 7758-99-8: OES-United Kingdom, TWA (listed as ** undefined

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CAT NO: C4891

FO NBR: P0095908

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*) : 0.2 ppm TWA (fume, as Cu) : 1 mg/m³ TWA (dusts and mists, as Cu)
CAS# 7758-07-3: STEL (as dusts)
United Kingdom Maximum Exposure Limits

Canada

None of the chemicals in this product are listed on the DSL/NDSL list.
This product has a WHMIS classification of D1B, D2B.
CAS# 7758-99-8 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits
CAS# 7758-99-8: OEL-ARAB Republic of Egypt: TWA 0.1 mg(Cu)/m³ (fume)
OEL-AUSTRIA: TWA 0.1 mg(Cu)/m³ (dust)
OEL-AUSTRALIA: TWA 0.2 mg(Cu)/m³ (dust)
OEL-BELGIUM: TWA 0.2 mg(Cu)/m³ (fume)
OEL-BELGIUM: TWA 1 mg(Cu)/m³ (dust)
OEL-DENMARK: TWA 0.1 mg(Cu)/m³ (fume)
OEL-DENMARK: TWA 1 mg(Cu)/m³ (dust)
OEL-FINLAND: TWA 0.2 mg(Cu)/m³ (fume)
OEL-FINLAND: TWA 1 mg(Cu)/m³ (dust)
OEL-FRANCE: TWA 0.2 mg(Cu)/m³ (fume)
OEL-FRANCE: TWA 1 mg(Cu)/m³ (dust)
OEL-GERMANY: TWA 0.1 mg(Cu)/m³ (fume)
OEL-GERMANY: TWA 1 mg(Cu)/m³ (dust)
OEL-HUNGARY: TWA 0.2 mg(Cu)/m³ (fume)
OEL-HUNGARY: TWA 1 mg(Cu)/m³ (dust)
OEL-INDIA: TWA 0.2 mg(Cu)/m³ (fume)
OEL-INDIA: TWA 1 mg(Cu)/m³ (dust)
OEL-THE NETHERLANDS: TWA 0.2 mg(Cu)/m³ (fume)
OEL-THE NETHERLANDS: TWA 1 mg(Cu)/m³ (dust)
OEL-THE PHILIPPINES: TWA 1.0 mg(Cu)/m³ (fume) JAN9
OEL-THE PHILIPPINES: TWA 1.0 mg(Cu)/m³ (dust) JAN9
OEL-RUSSIA: STEL 0.1 mg(Cu)/m³ (fume)
OEL-SWEDEN: TWA 0.2 mg(Cu)/m³ (fume)
OEL-SWEDEN: TWA 1 mg(Cu)/m³ (total dust)
OEL-SWITZERLAND: TWA 0.1 mg(Cu)/m³ (fume)
OEL-SWITZERLAND: TWA 1 mg(Cu)/m³ (dust)
OEL-THAILAND: TWA 0.1 mg(Cu)/m³ (fume)
OEL-THAILAND: TWA 1 mg(Cu)/m³ (dust)
OEL-U

*** SECTION 16 - ADDITIONAL INFORMATION ***

MSDS Creation Date: 7/09/1999 Revision #3 Date: 3/18/2003

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses or damages of any third party or for lost profits for any claimant. The company does not accept any responsibility for damages, however arising even if the company has been advised of the possibility of such damages.