MATERIAL SAFETY DATA SHEET

June 1, 2011

Product Name **Copper Sulfate Crystals**

Manufacturer Old Bridge Chemical Inc.

24-hour Emergency Telephone (800) 424-9300 Chemtrec
HAZARD CLASSIFICATION: NFPA: Health-3 Fire-0 Reactivity-0
HMIS: Health-3 Fire-0 Reactivity-0

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SECTION I. MATERIAL IDENTIFICATION.....

Common Name	Copper Sulfate
Synonyms	Blue Vitrol, Bluestone, Cupric Sulfate
Molecular Formula	$CuSO_4 \cdot 5H_20$
EPA Reg. Number	46923-4
EPA Signal Word	**DANGER**
CAS Number	7758-99-8
SIC Number	28199 C 29

SECTION II. COMPOSITION/INFORMATION ON INGREDIENTS.....

Exposure Limits	ACGIH TLV TWA: 1.0 mg/m³ (as copper dust/mist)
	OSHA PEL TWA: 1.0 mg/m³ (as copper dust/mist)

SECTION III. HAZARD INFORMATION.....

Emergency overview: Odorless blue crystals. Can cause irreversible eye damage and severe skin irritation. Harmful if swallowed or absorbed through the skin. Avoid breathing dust or mist. Avoid contact with the skin, eyes or clothes. May cause skin sensitization in certain individuals.

Swallowing	Toxic orally in accordance with FHSLA regulations. Acute oral LD50 (male rats) = 472 mg/Kg. Can cause irritation to the digestive tract and abdominal pain.
Skin	Slight skin irritant. Excessive exposure may cause skin irritation. Repeated exposure may cause allergic dermititis. May cause irritation or burns on wet skin.
Eyes	Can cause severe eye irritation and may result in irreversible eye damage.
Inhalation	Inhalation of dust may cause irritation to the mucous membranes and upper respiratory tract
Carcenogenicity	None as per NTP, OSHA, and IARC.

SECTION IV. FIRST AID PROCEDURES.....

Ingestion	Give large amounts of milk, egg white, gelatin solution, or if they are not available, large quantities of water. Do not induce vomiting or give anything to an unconscious person. Avoid alcohol. Call Poison Control Center or a physician.
Skin	Wash thoroughly with soap and water. Remove and wash contaminated clothing before reuse.
Eyes	Immediately flush eyes with plenty of water for 15 minutes. Hold eyelids apart during irrigation. Call a physician.
Inhalation	Remove person to fresh air. If not breathing administer artificial respiration. Get medical attention.
Cargenogenicity	None

SECTION V. FIRE AND EXPLOSION DATA.....

Flash Point	Not applicable
Flammable Limits	Not flammable. If heated above 400o C it can decompose to emit toxic fumes of oxide and sulfur.
Auto ignition Temperature	Not determined
Extinguishing Media	Copper Sulfate does not burn nor will it support combustion. If stored with other combustible products use water, CO_2 or dry chemical.
Special Fire Fighting Instructions:	If dry heated above 600° C, SO_2 is evolved. If water is used it will solubalize the Copper Sulfate and care should be taken to keep such water out of streams or other water bodies.
Fire Fighting Equipment	Wear self-contained breathing apparatus
Fire and Explosion Hazards	None

SECTION VI. ACCIDENTAL RELEASE MEASURES.....

Use clean-up measures that avoid dust generation. Wear NIOSH or MSHA approved respirator if dust will be generated. Cover spill with absorbent material such as seeping compound or lime. Sweep up and put into an appropriate container for proper disposal in an approved method. Prevent accidental entry of solution into streams or other bodies of water. Shovel spills into plastic bags and seal with tape.

SECTION VII. HANDLING AND STORAGE.....

Signal Word	**DANGER**
	Handling Information: Avoid breathing dust or mist. Sweep up crystals. Eye wash stations should be available in work areas. Users should wash hands before eating, drinking, smoking or using the toilet. Remove PPE immediately after handling this product. Wash outside of gloves before removing. Wash and change into clean clothing as soon as possible.
Storage Information	Store in closed containers in a cool, dry, well-ventilated area away from heat sources and reducing agents. Store in original containers. Keep away from galvanized pipe, aluminum and nylon. Place damaged containers in plastic bags.

SECTION VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION.....

Ventilation	TWA = 1 mg/l. for Copper Sulfate. When TWA exceeds this limit in the workplace, provide appropriate ventilation.
Respiratory Protection	Wear an approved respirator for dusts or mists: MSHA/NIOSH approved number prefix TC-21C, or a NIOSH approved respirator with any R, P or HE filter. Alternatively, provide respiratory protection equipment in accordance with Paragraph 1910.134 of Title 29 of the Code of Federal Regulations.
Eye Protection	Use safety glasses with side shields or goggles.
Skin Protection	Applicators and other handlers should wear long-sleeved shirts and long pants, waterproof gloves, shoes plus socks and protective eyewear. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with product's concentrate. Do not reuse them. Keep and wash PPE separately from other laundry.

SECTION IX. PHYSICAL DATA.....

Physical State	Blue crystals or powder
Boiling Point	NA
Melting Point	Decomposition above 110°C with $-4H_2O$
Vapor Density	NA
Specific Gravity	2.284
Solubility in H_20	22.37% @ 0°C 117.95% @ 100°C
Solubility in other Solvents	Soluble in methanol, glycerol and slightly soluble in ethanol.
Molecular Weight	249.68
Appearance	Transparent blue crystals
Odor	Odorless

SECTION X. REACTIVITY DATA.....

Stability	Stable
Conditions to Avoid	Product is highly soluble, but does not react with water.
Incompatibility	Solutions are mildly corrosive to steel. Store solutions in plastic or rubber or 304, 347 or 316 stainless steel. Iron and moisture should be avoided. Store in a dry area. Incompatible with aluminum powder, acetylene gas, hydroxylamine, magnesium and moisture. Contact with magnesium can generate dangerous levels of hydrogen gas. With exposure to air it will oxidize and turn whitish.
Hazardous Decomposition products	None at normal production temperatures and pressures. If dry heated above 600°C toxic sulfur may evolve.
Polymerization	Will not occur.

SECTION XI. TOXICOLOGICAL INFORMATION.....

Skin:	LD_{50} > 8.0 g/kg (rabbit)
Ingestion:	LD_{50} > 472.5 mg/kg (rat)
Primary Eye Irritation:	Corrosive, irreversible eye damage.
Primary Skin Irritation:	No skin irritation.

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsions may be needed. Wilson's disease can be aggravated by excessive exposure. Symptoms include nausea, vomiting, epigastria pain, diarrhea, dizziness, jaundice and general debility.

SECTION XII. ENVIRONMENTAL AND DISPOSAL INFORMATION.....

Spills and Leaks	Comply with Federal. State and local regulations on reporting spills. Do not wash away crystals or powder. Recover dry if possible. If product is in a confined solution, react with soda ash to from an insoluble Copper Carbonate solid that can be scooped up.
Waste Disposal	Do not reuse container. Comply with Federal, State and local environmental control regulations. Sweep up crystals, powder or insoluble Copper Carbonate and dispose of in an approved landfill.
Environmental Effects	May be dangerous if it enters the public water systems. Follow local regulation. Toxic to fish and plants. Fish toxicity critical concentration is 235 mg/l. and plant toxicity is 25 mg/l.

SECTION XIII. REGULATORY INFORMATION.....

NOTICE: The information herein is presented in good faith and believed to be accurate. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another.

It is the buyer's responsibility to ensure that its activities comply with Federal, State and local laws.

SARA 313 Information; This product contains the following substance subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372: COPPER COMPOUND > 1.0%

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following category:

ACUTE HEALTH HAZARD

OSHA: This product is considered hazardous under the OSHA Hazardous Communication Standard (29 CFR 1910.1200)

TSCA: Listed on the Chemical Inventory

CERCLA Hazardous Substances: RQ is not assigned to the broad class of copper compounds.

RCRA: When discarding this material as supplied, it does not meet RCRA characteristic definition if ignitability, corrositivity reactivity and is not listed in 40CFR 261.33.

This product contains Copper Sulfate and is subject to the reporting requirements of Section 13 of the Emergency Planning and Community-Right-to-Know-Act of 1986 (40CFR372).

SECTION XIV. SHIPPING INFORMATION.....

DOT Shipping Name RQ, Environmentally Hazardous Substance, Solid, NOS, (CUPRIC SULFATE), 9, UN3077, PGIII, ERG 171 Marine Pollutant

Reportable Quantity (RQ): 10 pounds (4.54 kg)

Not hazardous when shipping less than 10 pounds

SECTION XV MISCELLANEOUS INFORMATION.....

This is an NSF Certified Product to ANSI/NSF 60. Maximum use in potable water is not to exceed 2 mg. per liter

SECTION. MSDS PREPARATION INFORMATION.....

Prepared By: Old Bridge Chemical Regulatory Dept.