SAFETY DATA SHEET

Copper Sulfate Pentahydrate ECG

SECTION 1: IDENTIFICATION

Product identifier used on a label:	**Copper Sulfate Pentahydrate ECG**
Product code:	2081
CAS-No.:	7758-99-8
Synonyms:	Cupric sulfate pentahydrate, Copper (II) sulphate pentahydrate, Bluestone, Vitriol
Recommended use of the chemical and restrictions on use:	Chemical reagent, metal plating additive
Chemical family:	Copper salt
Chemical formula:	$CuSO_4.5H_2O$
Name, address and phone # of supplier:	Aqua Bond Inc. 440 Passmore Ave. Toronto, ON, M1V 5J8 (416) 754-7211
24 Hr. Emergency phone #:	**CANUTEC (613) 996-6666**

SECTION 2: HAZARDS IDENTIFICATION

Classification of the chemical: This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification:
Acute toxicity, Oral (Category 4), H302
Serious eye damage (Category 1), H318
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

Label elements:



Signal word: DANGER

Hazard statements:
H302 Harmful if swallowed.
H318 Causes serious eye damage.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements:

Prevention
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P273 Avoid release to the environment.
P280 Wear eye protection/ face protection.
Response
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
Storage and Disposal
P391 Collect spillage.
P501 Dispose of contents/ container to an approved waste disposal plant.

Other Hazards: Very toxic to aquatic life with long lasting effects.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient name	Synonyms	CAS Number	Concentration (wt. %)
Copper (II) sulfate pentahydrate	Cupric sulfate pentahydrate, Copper (II) sulphate pentahydrate	7758-99-8	≥ 99 %

SECTION 4: FIRST-AID MEASURES

Description of first aid measures:

General information: Immediately remove any clothing soiled by the product. Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after an accident.

Inhalation: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

Skin contact: Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician if necessary.

Eye contact: Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Consult a physician.

Ingestion	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Give one or two glasses of water to drink. Consult a physician.

Most important symptoms and effects, both acute and delayed: May cause burning of throat, mouth esophagus, stomach. May cause nausea, abdominal pain, metallic taste, hemorrhagic gastritis, diarrhea. May cause irritation of the respiratory tract, coughing, shortness of breath, sore throat, ulceration and perforation of the respiratory tract, chills and stuffiness of the head. Copper poisoning may occur if vomiting does not occur immediately. Symptoms may include capillary damage, cold sweat, headache, weak pulse, liver and kidney damage, blood effects, convulsions, jaundice, paralysis, coma, shock, or renal failure causing death.

Indication of any immediate medical attention and special treatment needed: Treat symptomatically. Individuals with Wilson's disease are more susceptible to chronic copper poisoning. The use of d-Penicillamine as a chelating agent should be determined by qualified medical personnel.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media:	Use media appropriate for the surrounding fire.
Suitable	Dry chemical, CO2, water spray or foam. Dike fire-control water for later disposal.
Unsuitable	Do not scatter spilled material with high pressure water streams.
Flash point:	Not Available.
Autoignition Temperature:	Not Available.
Specific hazards arising from the substance:	Not Available.
Hazardous thermal decomposition products:	Fire or heat can produce Sulphur oxides, Copper oxides.
Special protective equipment and precautions for fire-fighters:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	Use personal protective equipment. Avoid breathing vapours, mist or gas. Avoid dust formation. Ensure adequate ventilation. Wear respiratory protection. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.
Environmental precautions:	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. Prevent from reaching drains, sewer, or waterway. Report releases as required by local and national authorities.

Methods and materials for containment and cleaning up:	Wear protective eyeware, gloves, and clothing. Refer to Section 8. Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. Keep in suitable closed containers for disposal. Dispose contaminated material as waste according to section 13. Always obey local regulations. If necessary use trained response staff or contractor.
Special spill response procedures:	In case of transportation accident, contact CHEMTREC at 1-800-424-9300.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling:	Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.
Conditions for safe storage:	Air sensitive. hygroscopic Handle and store under inert gas. Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, and moisture. Store separately from foodstuff containers or incompatible materials.
	Storage class (TRGS 510): Non Combustible Solids.
Incompatible materials:	Not available.
Hazardous decomposition products:	Sulphur oxides, Copper oxides

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Ingredient	**Exposure limits**
Copper (II) sulfate Pentahydrate (CAS No. 7758-99-8)	ACGIH TLV TWA: 1 mg/m^3 Cu dust and mist NIOSH IDLH: 100 mg/m^3 Cu dust and mist NIOSH TWA: 1 mg/m^3 Cu dust and mist

Engineering controls:	Ensure adequate ventilation, especially in confined areas. Provide safety showers, eyewash stations, ventilation systems.
Individual protection measures:	**Eye Protection**: Use chemical safety goggles and / or a full face shield where splashing is possible. Maintain eye wash fountain and safety shower facilities in work area. **Skin Protection**: Wear appropriate protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Handle with gloves. Gloves must be inspected prior to use.

Respiratory protection: Where ventilation is not adequate, respiratory protection may be required. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Avoid breathing dust, vapours or mists.
Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Blue crystalline solid
Odour:	none
Odour threshold:	Not available.
pH:	3.7 – 4.5 at 50 g/L at 25 °C
Melting point/Freezing point:	110 °C - dec.
Initial boiling point/boiling	Not available.
range:	Not available.
Flash point:	Not available.
Evaporation rate:	Not available.
Flammability (solid; gas) :	Not available.
Lower flammable/explosive limit:	Not available.
Upper flammable/explosive limit:	Not available.
Vapour pressure:	9,7 hPa at 25 °C
Vapour density:	Not available.
Relative density:	2,284 g/cm^3
Solubility:	Not available.
Partition coefficient	Not available.
(n-octanol/water) :	Not available.
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not available.
Viscosity:	Not available.

SECTION 10: STABILITY AND REACTIVITY

Reactivity:	Not available.
Chemical stability:	Stable under recommended storage conditions.
Possibility of hazardous reactions:	Not available.
Conditions to avoid:	Exposure to moisture and incompatible materials.

Incompatible materials:	Powdered metals, Anhydrous copper(II) sulfate, reacts violently with: hydroxylamine, magnesium.
Hazardous decomposition products:	Sulphur oxides, Copper oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicity data Acute toxicity:	LD50 Oral - Rat - 482 mg/kg (OECD Test Guideline 401) Remarks: anhydrous
	LD50 Dermal - Rat - > 2.000 mg/kg Remarks: anhydrous
Information on the likely routes of exposure:	Skin, eyes, ingestion, inhalation
Potential health effects (acute):	**Inhalation**: Prolonged or repeated exposure may cause allergic reactions in certain sensitive individuals. **Skin Contact**: Prolonged or repeated exposure may cause allergic reactions in certain sensitive individuals.
Target organ effects:	No information available.
Carcinogenicity:	IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Potential chronic health effects:	No information available.
Teratogenicity:	No information available.
Developmental effects:	No information available.
Fertility effects:	No information available.
Irritation/corrosion:	No information available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish: no data available
Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna (Water flea) - 0,024 mg/l - 48 h
Toxicity to algae: no data available
Toxicity to microorganisms: no data available
Other adverse effects: Very toxic to aquatic life with long lasting effects.
Persistence and degradability: no data available
Bioaccumulative potential: no data available

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal methods: The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and nonrecyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Contaminated packaging: Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

UN Number:	3077 (DOT, IMDG, IATA)
UN proper shipping name:	**DOT**: Environmentally hazardous substance, solid, n.o.s. (Copper sulphate pentahydrate) **IMDG:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper sulphate pentahydrate) **IATA**: Environmentally hazardous substance, solid, n.o.s. (Copper sulphate pentahydrate)
Transport hazard class:	9 (DOT, IMDG, IATA)
Packing group:	III (DOT, IMDG, IATA)
IMDG Marine pollutant:	Yes
Special precautions for user:	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident.

SECTION 15: REGULATORY INFORMATION

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

SECTION 16: OTHER INFORMATION

Revision date: January 31, 2020

UN = United Nations

Disclaimer

While the information and recommendations set forth are believed to be accurate as of data hereof, Aqua Bond Inc., makes no warranty with respect thereto and disclaims all liability from reliance thereon.