

SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier used on the label

: **Flottec Liquid Copper Sulfate Activator**

Recommended use of the chemical and restrictions on use

: Activator used in mining industry

Chemical family

: Inorganic salts

Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party:

Flottec, LLC

2505 Collingsworth Street, 2nd Floor

Houston, TX 77026 U.S.A.




www.flottec.com

Information Telephone # : 1-713-425-7055

24 Hr. Emergency Tel # : Chemtrec 1-800-424-9300 (Within Continental U.S.); Chemtrec 703-527-3887 (Outside U.S.)

2. HAZARDS IDENTIFICATION

Classification of the chemical

		
H302: Harmful if swallowed	H410: Very toxic to aquatic life with long lasting effects	H314: Causes severe skin burns and serious eye damage H290: Can be corrosive to metals

Acute toxicity (Category 4)

Eye injuries (Category 1)

Skin lesions (Category 1)

Chronic aquatic toxicity (Category 1)

Corrosive substances and mixtures for metals (Category 1)

Label elements

Signal Word

Danger

Hazard statement(s)

H302: Harmful if swallowed

H314: Causes severe skin burns and serious eye damage

H290: Can be corrosive to metals

H410: Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

P264: Wash face, hands and any exposed parts after handling.

P270: Do not eat, drink or smoke while using this product.

P272: Contaminated clothing should not be worn outside the workplace.

P273: Avoid throwing it into the environment.

P280: Use eye protection, gloves and protective clothing adapted to the task to be performed and its possible risks.

P301 + 312 + P330: IN CASE OF INGESTION: Rinse mouth. Contact a doctor if you feel discomfort.

P302 + 352: IN CASE OF CONTACT WITH SKIN. Wash with soap and water.

P333 + 313: In case of skin irritation or rashes, consult your doctor.

P305 + 351 + 338: IF IN EYES: IF ON EYES: Rinse continuously with water for several minutes. Remove contact lenses if you have one. Continue rinsing.

P310: Immediately call a doctor.

P361 + P364: Take off immediately all contaminated clothing and wash it before reuse.

P391: Collect spill.

P405: Stay closed.

P501: Dispose of waste and packaging with a chemical waste agency in accordance with local, regional, and national regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Common name	CAS #	Concentration / wt %
Copper Sulfate Pentahydrate	7758-99-8	25%

The exact concentrations of the above listed chemicals are being withheld as a trade secret.

4. FIRST-AID MEASURES

Description of first aid measures

- Ingestion* : DO NOT induce vomiting, unless recommended by medical personnel. Never give anything by mouth if victim is unconscious or convulsing. If spontaneous vomiting occurs, keep head below hips level to prevent aspiration into the lungs. Seek medical attention or contact a Poison Centre immediately. If victim is conscious wash out mouth with water and give 1-2 glasses of water to drink.
- Inhalation* : Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen by trained personnel. If a problem develops or persists, seek medical attention.
- Skin Contact* : Flush with water for at least 15 minutes. Remove contaminated clothing and wash before reuse. Avoid touching eyes with contaminated body parts. Seek medical attention immediately.
- Eye Contact* : IMMEDIATELY flush with plenty of water. Remove contact lenses. Flush with water for at least 15 minutes. Hold eyelids apart to rinse properly. If a problem develops or persists, seek medical attention. Seek medical attention immediately.

Symptoms : May cause severe eye irritation or eye damage. May cause skin irritation and burns. May cause burns to mouth, throat and stomach.

Notes to the physician : Treat according to person's condition and specifics of exposure. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media : Dry chemicals, water spray, chemical foam, carbon dioxide (CO₂).

Unsuitable extinguishing media : Do not use direct water jet.

Special hazards arising from the substance or mixture

: This product is an aqueous solution which does not support combustion unless the water has been evaporated. Emits toxic and corrosive fumes under fire conditions.

Special protective equipment and precautions for firefighters

Protective equipment for fire-fighters : Firefighters must wear self-contained breathing apparatus with full face mask. Firefighting suit may not be efficient against chemicals.

Special fire-fighting procedures : Heating the container can cause an increase in pressure with the risk of bursting and subsequent explosion. Emits toxic and irritating fumes when heated or burned. Steam can be invisible and heavier than air. It spreads through the ground and can enter sewers and basements. Keep the container cold with water. Do not use a direct water jet. Avoid spills with extinguishing media.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

: Do not touch spilled material. Make sure to wear personal protective equipment mentioned in this Safety Data Sheet.

Environmental precautions : Prevent entry in sewer and other enclosed area. For a large spillage, consult the Department of Environment or the relevant authorities.

Methods and material for containment and cleaning up

: Ventilate the area well. Stop leak, if it's possible to do so without risk. Absorb with inert material (soil, sand, vermiculite) and place in an appropriate waste disposal clearly identified. Finish

cleaning by rinsing with water contaminated surface. Dispose via a licensed waste disposal contractor.

7. HANDLING AND STORAGE

Precautions for safe handling : Handle in a ventilated workplace. During handling do not drink, eat or smoke. Avoid contact with eyes. The personnel involved with its handling must have all the recommended protection elements.

Conditions for safe storage : Store tightly closed and in appropriately labeled containers in a cool, dry, well-ventilated place. Containers that have been opened should be carefully resealed and held vertically to prevent leakage and to gain or lose water. Store away from acids and incompatible materials. Keep away from sunlight, humidity and heat.

Storage temperature : 10 to 40 ° C (50 to 104 F)

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Immediately Dangerous to Life or Health

No immediately dangerous damage to life or health is reported.

Exposure controls

Appropriate engineering controls : Provide sufficient mechanical ventilation (general and/or local exhaust) to keep the airborne concentrations of vapors, mists, aerosols or dust below their respective occupational exposure limits.

Respiratory protection : Respiratory protection is not required in normal use. Respiratory protection equipment (PPE) must be selected, fitted, maintained and inspected in accordance with regulations and CSA Standard Z 94.4 and approved by NIOSH / MSHA. In case of insufficient ventilation or in confined or enclosed space and for an assigned protection factor (APF) up to 10 times the exposure limit: wear a half mask respirator with appropriate cartridges fitted with P100 filters. For an APF until maximum 100 times of exposure limit, wear a full face respirator mask with appropriate cartridges and P100 filters.

Skin protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved. Wear normal work clothing covering arms and legs as required by employer code. Wear an apron or long-sleeve protective coverall suit.

Eye / face protection : Wear chemical splash goggles. If risk of contact with eyes or the face, wear a face shield.

Hands : Wear nitrile or neoprene gloves. Chemical-resistant, impervious gloves should be worn at all times when handling this chemical product. Before using, user should confirm impermeability. Discard gloves that show tears, pinholes, or signs of wear. Gloves must only be worn on clean hands. Wash gloves with water before removing them. After using gloves, hands should be washed and dried thoroughly.

Other protective equipment : Wear safety shoes. Wear rubber boots to clean up a spill.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: Liquid	Flammability limits (% by vol.)	: N/Av
Color	: Blue	Flash point	: N/Av
Odor	: Odorless	Auto-ignition temperature	: N/Av
Odor threshold	: N/Av	Sensibility to electrostatic charge	: No
pH	: 5 (50g/L, H ₂ O, 20°C)	Sensibility to sparks/friction	: No
Melting/Freezing point	: 150°C	Vapor density (Air = 1)	: N/Av
Boiling point/range	: N/Av	Relative density (Water = 1)	: 1.125 kg/L @ 25°C (77°F)
Solubility in water	: 31.6 gr/100ml of water	Partition coefficient (n-octanol/water)	: N/Av
Evaporation rate (BuAc = 1)	: N/Av	Decomposition temperature	: 280°C
Vapor pressure	: N/Av	Viscosity	: N/Av
Volatiles (% by weight)	: N/Av	Molecular mass	: N/Av
Flammability (solid, gas)	: Not flammable		

10. STABILITY AND REACTIVITY

- Reactivity** : Information not available for this product
- Chemical stability** : Stable under recommended storage conditions.
- Possibility of hazardous reactions (including polymerizations)**
 : Hazardous polymerization will not occur.
- Conditions to avoid** : Avoid contact with incompatible materials.
- Incompatible materials** : Hydroxylamine, acetylene
- Hazardous decomposition products**
 : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. TOXICOLOGICAL INFORMATION

Toxicological data

Chemical name	LC ₅₀ (Inhalation, rat)	LD ₅₀ / mg/kg	
		(Oral, rat)	(Dermal, rabbit)
Copper Sulfate	Not available	300	<2000

Likely routes of exposure

- Skin** : Yes
- Eye** : Yes
- Inhalation** : Yes
- Ingestion** : Yes

Potential Health Effects:

Signs and symptoms of delayed, immediate and chronic effects:

- Skin** : Toxic if absorbed through the skin. Extensive contact with the skin for several hours can cause harmful amounts of material to be absorbed. It can cause skin irritation. Prolonged contact can cause burns. The product is not considered corrosive to the skin based on the alkalinity and pH of the solution.
- Eye** : May cause severe eye irritation or eye damage.
- Inhalation** : Inhalation of vapors/mists can cause burns to nose, throat and respiratory tract.
- Ingestion** : May cause burns to mouth, throat and stomach.
- Sensitization to material** : Ingredients present at levels greater than or equal to 0.1% of this product are skin or respiratory sensitizers.
- IRAC/NTP Classification** : No ingredients listed
- Carcinogenicity** : Ingredients present at levels greater than or equal to 0.1% of this product are not listed as a carcinogen by IARC, ACGIH, NIOSH, NTP or OSHA.
- Mutagenicity** : Ingredients in this product present at levels greater than or equal to 0.1% are not known to cause mutagenic effect.
- Reproductive Effects** : Ingredients in this product present at levels greater than or equal to 0.1% are not known to cause effects on reproduction.
- Specific target organ effects – single exposure**
 : No target organ is listed.
- Specific target organ effects – repeated exposure**
 : No target organ is listed.
- Other information** : The oral and skin acute toxicity estimates (ATE) of the mixture were calculated to be greater than 2000 mg/kg. These values are not classified according to WHMIS 2015 and OSHA HCS 2012.

12. ECOLOGICAL INFORMATION

Ecotoxicity :

Fish -(Goldfish) 1 mg/L; 96 h OCDE 203 (Copper Sulfate)

Daphnia magna 18.9 mg/L; 48 h OCDE 202 (Copper Sulfate)

Persistence : It is persistent in the environment.

Degradability : In accordance with Annex IX of the REACH regulation n, no information is required on the hydrolysis of inorganic compounds. The rest of the sections in section 5.1 are also not applicable. of the IUCLID.

Bioaccumulation potential : Does not bioaccumulate

Mobility in soil : The copper added to the soil is mainly related to the organic matter present in the soil. The organic matter content and the pH determine the degree of bioavailability. Through the strong bond of copper with the soil components, the release of copper is extremely low. The mobility of copper in the lower layers of the soil is negligible.

Other adverse environmental effects : AOX and metal content: Does not contain organic halogens or metals.

13. DISPOSAL CONSIDERATIONS

Handling for Disposal : Important! Prevent waste generation. Use in full. DO NOT throw residual to sewer, streams, sewers or drinking water supply. Residues and empty containers must be considered as hazardous waste. Return empty container properly labeled to supplier or everywhere there is a recovery program. Dispose via a licensed waste disposal contractor. Observe all federal, state/provincial and municipal regulations. If necessary consult the Department of Environment or the relevant authorities.

14. TRANSPORTATION INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
DOT	3077	(miscellaneous dangerous substances and articles) (danger to the environment)	9	III	Corrosive
Additional Information		dangerous for the aquatic environment			
TDG	3077	(miscellaneous dangerous substances and articles) (danger to the environment)	9	II I	Corrosive
Additional Information					
IMO/IMDG	3077	(miscellaneous dangerous substances and articles) (danger to the environment)	9	II I	Corrosive
Additional Information		dangerous for the aquatic environment			
IATA	3077	(miscellaneous dangerous substances and articles) (danger to the environment)	9	II I	Corrosive
Additional Information		dangerous for the aquatic environment			

15 - REGULATORY INFORMATION

US Federal Information:



- Toxic Substance Control Act (TSCA)
All ingredients are listed in the TSCA Inventory or otherwise comply with TSCA requirements.
- EPCRA Section 313 Toxic Chemicals:

Sodium hydroxide (CAS no 1310-73-2).
- CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):
Sodium hydroxide (CAS no 1310-73-2).
- EPCRA Section 302/304 Extremely Hazardous Substances:
No material is listed.
- Clean Water Act (CWA) 311 Hazardous Substances:
Sodium hydroxide (CAS no 1310-73-2).
- Clean Water Act (CWA) Priority Pollutants:
No material is listed.
- Clean Air Act (CAA) 111:
No material is listed.
- Clean Air Act (CAA 112b) HON - Hazardous Organic National Emission Air Pollutants:
No material is listed.
- Clean Air Act (CAA 112b) HAP - Hazardous Air Pollutants:
No material is listed.
- CAA 112(r) Regulated Chemicals for Accidental Release Prevention:
No material is listed.
- California Proposition 65:
No material is listed.

Canadian Information:

- Canada DSL and NDSL:
All ingredients are listed in the Domestic Substances List (DSL).
- Canadian National Pollutant Release Inventory Substances (NPRI):
No material is listed.

WHMIS 1988:

Class E : Corrosive material

16. OTHER INFORMATION

Other special considerations for handling : Provide adequate information, instruction and training for operators.

Prepared by: Flottec, LLC

Revised by:

REASON FOR REVISION:

DISCLAIMER

The above information is believed to be accurate and represents the best information currently available to us. However, we make no warrantee of merchantability or any other warrant, expressed 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 uses.

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