



Safety Data Sheet

1. IDENTIFICATION

Product Identifier: Davis Reagent

Product Code(s): PF30102

Synonyms: Copper Chloride – Hydrochloric Acid Solution

Recommended Use: For manufacturing, industrial, and laboratory use only.

Uses Advised Against: Not for food, drug, or household use.

Supplier: Pioneer Forensics, LLC
4621 Technology Drive
Golden, CO 80403
Phone: (303) 762-0800

Emergency Phone Number: For health emergency, call poison control: (800) 222-1222.

2. HAZARDS IDENTIFICATION

Hazard Classifications:

Acute Toxicity – Inhalation:	Category 4
Skin Corrosion/Irritation:	Category 1
Eye Damage/Irritation:	Category 1
Specific Target Organ Toxicity (Single Exposure):	Category 3
Corrosive to Metals:	Category 1

Signal Word: DANGER

Hazard Statements:

- Harmful if inhaled.
- Causes severe skin burns and eye damage.
- Causes serious eye damage.
- May cause respiratory irritation.
- May be corrosive to metals.

Pictograms:



Precautionary Statements:

Prevention:	Do not breathe fume, mist, vapors, or spray. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling. Wear protective gloves, protective clothing, eye protection, and face protection. Keep only in original container.
Response:	If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center or doctor. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. 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 or doctor. Absorb spillage to prevent material damage.
Storage:	Store locked up. Store in a well-ventilated place. Keep container tightly closed. Store in corrosive resistant container with a resistant inner liner.
Disposal:	Dispose of contents and container in accordance with local, regional, national, and international regulations.
Hazards Not Otherwise	May be toxic to aquatic life with long lasting effects.
Toxicity Statement:	Not applicable.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Component	Common Name / Synonyms	CAS#	Chemical Formula	% by Weight
Water	Water	7732-18-5	H ₂ O	75.25
Hydrochloric Acid	Muriatic Acid; Hydrogen Chloride	7647-01-0	C ₂ H ₄ O ₂	19.18
Cupric Chloride, Dihydrate	Copper(II) Chloride, Dihydrate	10125-13-0	CuCl ₂ • 2H ₂ O	5.57

Trade Secret Statement: Not applicable.

4. FIRST AID MEASURES

First Aid Procedures:

Inhalation:	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. WARNING! It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious, or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediately call a poison center or doctor.
Ingestion:	Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, keep head low so that vomit does not enter lungs. Rinse mouth. Never give anything by mouth to an unconscious person. Call a poison center or doctor immediately.
Skin Contact:	Take off immediately all contaminated clothing. Wash skin with plenty of water for at least 15 minutes. Wash contaminated clothing before reuse. Call a physician immediately if symptoms occur.

Eye Contact: Flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor.

General Advice: Poison information centers in each state can provide additional assistance for scheduled poisons. Ensure that medical personnel and those providing first aid are aware of the material(s) involved and take precautions to protect themselves.

Symptoms and Effects: Harmful if inhaled. Causes severe skin burns and eye damage. Causes serious eye damage. May cause respiratory irritation. Burning sensation of the respiratory tract, coughing, hoarseness, choking sensation, dyspnea (shortness of breath and difficulty breathing), shallow respiration, salivation, burning of mouth, throat, and stomach, thirst, difficulty swallowing, abdominal pain, nausea, vomiting, diarrhea, weak and rapid pulse or rapid heart rate (tachycardia), shock, headache, cold sweat, convulsions, skin rash, allergic skin reaction, skin discoloration, conjunctivitis.

**Immediate Medical Care/
Special Treatment:** Get medical attention if feeling unwell or concerned. Treat symptomatically.

5. FIREFIGHTING MEASURES

Suitable Extinguishing Media: Water spray, dry powder, alcohol resistant foam, carbon dioxide.

Unsuitable Extinguishing Media: Do not use a solid (straight) water stream, as it may scatter and spread fire.

**Hazardous Combustion
Products:** Hydrogen, cupric oxides, hydrogen chloride.

Specific Hazards: Contact with metals may produce hydrogen gas. Excessive thermal conditions may yield corrosive and/or toxic fumes.

**Special Protective Equipment/
Precautions for Firefighters:** As in any fire, wear MSHA/NIOSH approved (or equivalent), self-contained, positive-pressure or pressure-demand breathing apparatus and full protective gear. Move containers from fire area, if you can do so without risk. In the event of fire and/or explosion, do not breathe fumes.

6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions and
Protective Equipment:** Ventilate area of leak or spill. Isolate hazard area and keep unnecessary and unprotected personnel away from the area of the leak or spill. Keep upwind. Wear appropriate personal protective equipment (see Section 8). Avoid contact with eyes, skin, and clothing.

Emergency Procedures: Evacuate surrounding personnel as necessary. In case of chemical emergency, or if unsure how to address an accidental release, consult a professional (see Section 1).

Methods for Containment: Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements, or confined areas. Dike the spilled material, where this is possible. Product should not be released to the environment. Contain and recover liquid when possible.

Methods for Cleanup: Absorb spill with an inert material (e.g. vermiculite, dry sand, earth, cloth, or fleece) and place in a non-combustible container for reclamation or disposal. Do not flush to sewer. Clean contaminated surface thoroughly. Residues from spills can be diluted with water. Never return spills in original containers for reuse. Clean up in accordance with all applicable regulations.

7. HANDLING AND STORAGE

- Handling:** Wear personal protective equipment (see Section 8). Use only in well-ventilated areas. Provide sufficient air exchange and/or exhaust in work areas. Avoid contact with skin, eyes, and clothing. Do not breathe vapors or spray mist. Do not ingest. When using, do not eat, drink, or smoke. Keep away from incompatible materials (see Section 10). Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Containers of this material may be hazardous when empty, as they retain product residues. Observe all warnings and precautions listed for this product. As with all acids, never add water directly to this product. Instead, add acids to water to prevent violent eruption of the solution.
- Storage:** Store in a cool, dry, ventilated area. Store in a segregated and approved area away from incompatible materials (see Section 10). Store in original container. Store in corrosive resistant container with a resistant inner liner. Do not store in metallic containers. Keep containers tightly closed and upright. Keep away from food, drink, and animal foodstuffs. Keep out of the reach of children. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of this product.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

- Exposure Limits:**
- | | |
|-----------------------------|---|
| Water: | No information found. |
| Hydrochloric Acid, 37%: | OSHA (PEL): 5 ppm
ACGIH (TLV): 2 ppm |
| Cupric Chloride, Dihydrate: | NIOSH (TWA): 1 mg/m ³ |
- Engineering Controls:** Ensure adequate ventilation. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.
- Personal Protective Measures:**
- Eye/Face Protection:** Wear safety glasses with side shields or safety goggles. Wear a face shield. Maintain approved eye wash station and accessible rinse facilities in work area.
- Skin Protection:** Wear appropriate chemical resistant clothing (with long sleeves) and appropriate chemical resistant gloves.
- Respiratory Protection:** An air-purifying, NIOSH-approved respirator with appropriate cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure, air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are unknown, or if any other circumstances exist where air-purifying respirators may not provide adequate protection.
- Specific Requirements for Personal Protective Equipment:** Ensure that glove material is compatible with this product. This information is available from glove manufacturers.

9. PHYSICAL AND CHEMICAL PROPERTIES

Unless otherwise indicated, all properties are given at 25 °C and standard pressure.

- Appearance:** Blue, transparent liquid.
- Odor:** Pungent, irritating.

Odor Threshold:	No information found.
Formula Weight:	Mixture.
pH:	No information found.
Melting/Freezing Point:	No information found.
Boiling Point/Range:	No information found.
Decomposition Temperature:	No information found.
Flash Point:	No information found.
Auto-ignition Temperature:	No information found.
Flammability:	Not flammable or explosive.
Flammability/Explosive Limits:	No information found.
Solubility:	Miscible with water.
Vapor Pressure:	No information found.
Vapor Density:	No information found.
Specific Gravity:	> 1 (Water = 1)
Evaporation Rate:	No information found.
Viscosity:	No information found.
Partition Coefficient (n-octanol/water):	No information found.

10. STABILITY AND REACTIVITY

Reactivity Data:	May be corrosive to several materials, especially certain metals. See Section 11.
Chemical Stability:	Stable under normal conditions.
Conditions to Avoid:	Excessive heat, incompatible materials.
Incompatible Materials:	Oxidizing agents, metals, alkalis, organic materials, cyanides, sulfides, sulfites, aldehydes, strong acids.
Hazardous Decomposition Products:	Hydrogen chloride vapor, hydrogen, cupric oxides, hydrogen chloride.
Possibility of Hazardous Reactions:	May react vigorously, violently, or explosively if exposed to excessive thermal conditions or in contact with the incompatible materials listed above. Excess thermal conditions may yield hazardous hydrogen chloride vapor. Contact with metals may produce hazardous concentrations of hydrogen gas.
Hazardous Polymerization:	Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Exposure:	Inhalation, ingestion, skin contact, eye contact.
Acute Effects:	Harmful if inhaled. Causes severe skin burns and eye damage. Causes serious eye damage. May cause respiratory irritation. May irritate gastrointestinal tract. May enter lungs if swallowed or vomited. Liquid and vapors may be corrosive. May cause tissue damage.

Chronic Effects: Prolonged or repeated exposure may affect liver function, respiratory function, kidney function, and behavioral/central nervous system function. Prolonged or repeated exposure may also cause tooth decay, dermatitis, allergic reaction, anemia, and conjunctivitis.

Toxicological Data:

Water:	Not applicable.		
Hydrochloric Acid:	LD ₅₀ Oral, Rat:	700 mg/kg	
	LD ₅₀ Dermal, Rabbit:	> 5010 mg/kg	
	LC ₅₀ Inhalation, Rat:	2.32 mg/L, 4 h	
Cupric Chloride, Dihydrate:	LD ₅₀ Oral, Rat:	336 mg/kg	
	LD ₅₀ Dermal, Rabbit:	1224 mg/kg	
	Corrosive to eyes based on animal data.		
	Irritating to skin based on animal data.		

Symptoms of Exposure: Irritation, burning, ulceration, coughing, sneezing, choking sensation, hoarseness, chest pains, headache, palpitations, dyspnea, bronchitis, gastric infection, nausea, vomiting, diarrhea, thirst, difficulty swallowing, salivation, chills, fever, uneasiness, shock, strictures, stenosis, excited behavior, weak rapid pulse, burns cold sweat jaundice, convulsions, rash, skin discoloration.

Carcinogenic Effects: No component if this product is considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

ACGIH: Hydrochloric Acid: A4 – Not classifiable as a human carcinogen.

IARC: Hydrochloric Acid: 3 – Not classifiable for human.

12. ECOLOGICAL INFORMATION

Ecotoxicological Data:

Water:	Not applicable.		
Hydrochloric Acid:	LC ₅₀ , Western Mosquitofish (<i>Gambusia affinis</i>):	282 mg/L, 96 h	
	Cupric Chloride, Dihydrate:		
	EC ₅₀ , Water Flea (<i>Daphnia magna</i>):	0.04 mg/L, 48 h	
	LC ₅₀ , Carp (<i>Cyprinus carpio</i>):	0.12 – 0.23 mg/L, 96 h	
	LC ₅₀ , Bluegill (<i>Lepomis macrochirus</i>):	0.9 mg/L, 96 h	

Persistence and Degradability: May bioaccumulate and may not be readily biodegradable.

Environmental Effects: May be toxic to aquatic life with long lasting effects. May leach into groundwater. Avoid exposure to the environment.

13. DISPOSAL INFORMATION

Disposal Instructions: All wastes must be handled in accordance with local, state, and federal regulations. Minimize exposure to product waste (see Section 8). Do not dispose unused waste down drains or into sewers.

Contaminated Packaging: Because emptied containers retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities.

Waste Codes: Hydrochloric Acid: D002: Waste Corrosive Material (pH ≤ 2 or pH ≥ 12.5 or corrosive to steel)

Cupric Chloride, Dihydrate: D002: Waste Corrosive Material (pH ≤ 2 or pH ≥ 12.5 or corrosive to steel)

14. TRANSPORT INFORMATION

DOT:

UN Number: UN3264

Proper Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (Hydrochloric acid, Cupric chloride)

Hazard Class: 8

Packing Group: II

ERG Number: 154

Environmental Hazard Regulations: Cupric Chloride, Dihydrate: IMDG Marine Pollutant

Other Transport Precautions: DOT Reportable Quantity: Cupric Chloride, Dihydrate: 10 lb

15. REGULATORY INFORMATION

U.S. Federal Regulations:

OSHA: This product is considered a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Inventory: All components of this product are on the U.S. TSCA Inventory.

U.S. EPCRA (SARA Title III):

Section 302: Reportable Quantity: Hydrogen Chloride: 5000 lb

Sections 311/312:

Hazard Category	List (Yes/No)
Section 311 – Hazardous Chemical	Yes
Immediate Hazard	Yes
Delayed Hazard	Yes
Fire Hazard	No
Pressure Hazard	No
Reactivity Hazard	Yes

Section 313: Hydrogen Chloride: 1.0% De Minimis Concentration
Cupric Chloride, Dihydrate

CERCLA Reportable Quantities: Hydrochloric Acid: 5000 lb
Cupric Chloride, Dihydrate: 10 lb

International Inventories:

Country or Region	Inventory Name	On Inventory (Yes/No)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes

*A "Yes" indicates that the listed component(s) of this product comply with the inventory requirements administered by the governing country or region.

16. OTHER INFORMATION**Disclaimer:**

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Reason for Revision:

Not applicable.