

# SAFETY DATA SHEET

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## SECTION 1. Identification

**Product Identifier:** Kalling's Reagent  
**Other Names:** Kalling's Etch, E407/095  
**Item Numbers:** PD1608-093-(250), PD1608-093-(500)  
**Identified Use:** SU24 Scientific Research and Development.

**Details of Supplier of the Safety Data Sheet:**

Waterfall & O'Brien Ltd.,  
138 Forest Road,  
Fishponds,  
Bristol, BS16 3SN,  
Tel: +(44)-117 9583448

**Emergency Telephone Number:**

CHEMTREC UK - +(44)-870-8200418

## SECTION 2. Hazard(s) Identification

**Classification of the Substance or Mixture:**

Hazard Class	Category Code
Flammable liquid	2
Skin corrosion	1A
Eye irritation	1
Skin sensitization	1
Acute toxicity (oral)	3
Acute toxicity (inhaled)	3
Specific Target Organ Toxicity – Single Exposure:	1

**Signal Word:** DANGER

**Pictograms:**



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## Hazard Statement(s):

H225	Highly flammable liquid and vapour.
H314	Cause severe skin burn and eye damage.
H317	May cause allergic skin reaction.
H301 + H331	Toxic if swallowed or inhaled.
H370	May cause damage to organs

## Precautionary Statement(s):

P210	Keep away from heat/sparks/open flames/hot surfaces – No smoking.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

## Response statement(s):

P303+P361+P353	IF ON SKIN (or hair): remove/take off immediately all contaminated clothing. Rinses skin with water/shower.
P305+P351+ P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+P330+P331+P310	IF SWALLOWED: rinse mouth. DO NOT induce vomiting. Call a POISON CENTER or doctor/physician.

## Storage statement(s):

P403+P233+P235.	Store in a well-ventilated place. Keep container tightly closed. Keep cool.
P405	Stored locked up

## Disposal statement(s):

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.
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## Hazard(s) not otherwise classified:

None.

## Label elements:

See tables above

## HMIS Ratings:

Health: 3

Health: 3

Flammability: 3

Flammability: 3

Reactivity: 1

Reactivity: 1

Special hazard: None

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## SECTION 3. Composition/Information on Ingredients

Ingredient	CAS No	Percent
Ethanol	64-17-5	33.4%
Water	7732-18-5	32.5%
Hydrochloric Acid	7647-01-0	32.5%
Cupric Chloride, dihydrate	10125-13-0	1.6%

## SECTION 4. First-Aid Measures

**Eye contact:** Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Get medical aid immediately.

**Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid immediately.

**Skin contact:** Wash the areas of contact with water for at least 15 minutes while removing contaminated clothing and shoes. Skin stains may be removed using reagent alcohol or dilute Ammonium Hydroxide Solution. Get medical aid immediately.

**Ingestion:** Rinse mouth. Do not induce vomiting. Get medical aid immediately.

**Most important symptoms and effects, both acute and delayed:**

Causes severe burns to all areas of contact. May be fatal or cause blindness if swallowed. Impair liver or kidney function.

**Recommendation for immediate medical care and special treatment needed, when necessary:**

No further relevant information.

## SECTION 5. Fire Fighting Measures

**Extinguishing Media:**

Dry chemical, foam or carbon dioxide. Water may be ineffective.

**Special hazards arising from the substance or mixture:**

In the case of fire, the following can be released: acidic liquid, carbon monoxide, and carbon dioxide.

**Special protective equipment or precautions for firefighters:**

Wear full protective clothing and self-contained respirator. Water or water spray.

## SECTION 6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:**

Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation. Keep away from ignition sources.

**Environmental precautions:**

Do not allow the material to be released to the environment without proper government permits.

**Methods and materials for containment and cleaning up:**

Use neutralising agent. Absorb with a liquid binding material (sand, diatomite, acid binder, universal binders, sawdust). Dispose of contaminated material as waste according to section 13. Ensure adequate ventilation. Keep

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away from ignition sources.

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## SECTION 7. Handling and Storage

### Precautions for safe handling:

Keep container tightly sealed. Store in cool, dry place in tightly closed containers. Ensure good ventilation in the workplace. Open and handle the container with care. Protect against electrostatic charges. Fume can combine with air to form an explosive mixture.

### Condition for safe storage:

Keep container tightly sealed. Store in an approved flammable liquid storage container/area.

### Incompatibilities:

Store away from oxidizing agents and strong bases.

### Specific storage requirement(s):

No information.

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## SECTION 8. Exposure Controls/Personal Protection

### CONTROL PARAMETERS

Component	CAS No.	ACGIH TLV	OSHA PEL
Ethanol (ethyl alcohol)	64-17-5	1000 ppm STEL	1000 ppm TWA
Hydrochloric acid	7647-01-0	C 5 ppm	C 2 ppm
Cupric Chloride, dihydrate	10125-13-0	1 mg/m <sup>3</sup> dust 0.2mg/m <sup>3</sup> fume	0.1 mg/m <sup>3</sup>

### EXPOSURE CONTROLS

**Engineering Controls:** A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits.

**Respirators Protection:** Use self-contained breathing apparatus in emergency situations.

**Skin Protection:** Wear impervious protective clothing, and chemical resistant gloves to prevent skin contact.

**Eye Protection:** Use chemical safety glasses or goggles. Maintain eye wash fountain and quick-drench facilities in work area.

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## SECTION 9. Physical and Chemical Properties

<b>Appearance:</b>	Dark green liquid
<b>Odour:</b>	Acidic, alcohol-like
<b>Odour Threshold</b>	No information found.
<b>Solubility:</b>	Miscible
<b>Density:</b>	ca 1
<b>pH:</b>	Acidic
<b>% Volatiles by volume @ 21°C:</b>	98 (as water and acid)
<b>Melting Point:</b>	Not determined.
<b>Boiling Point:</b>	ca. 80°C
<b>Flash Point:</b>	ca. 35°C
<b>Vapour Density (Air=1):</b>	No information found.
<b>Vapour Pressure (mm Hg):</b>	No information found.
<b>Evaporation Rate (BuAc=1):</b>	No information found.

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## SECTION 10. Stability and Reactivity

<b>Reactivity and Chemical Stability:</b>	Stable under ordinary conditions of use and storage.
<b>Thermal Decomposition:</b>	Decomposition will not occur if used and stored according to specifications.
<b>Hazardous Decomposition Products:</b>	When heated to decomposition, emits oxides carbon.
<b>Incompatibilities:</b>	Strong bases and oxidizers. Heat, sparks and open flames.
<b>Conditions to Avoid:</b>	Keep away from heat and other sources of ignition, avoid incompatibles. Do not allow the product to dry out.
<b>Safety Issues During Use:</b>	Keep container tightly closed. Keep only in original container.

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## SECTION 11. Toxicological Information

### Acute Toxicity

#### Oral Exposure:

Toxic if swallowed. Wash arms, hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. IF SWALLOWED: Immediately call a POISON CENTER or physician. Specific treatment (Wash areas of contact with water). Rinse mouth. Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

#### Dermal Exposure:

Toxic in contact with skin. Wear protective gloves and eye protection. IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or physician if you feel unwell. Specific treatment (Wash areas of contact with water). Take off immediately all contaminated clothing and wash it before reuse. Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

#### Inhalation Exposure:

Toxic if inhaled. Avoid breathing dust, fumes or mist. Use only outdoors or in a well-ventilated area. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician. Specific treatment (Wash areas of contact with water). Store in a well-ventilated place. Keep

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container tightly closed. Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

## Other Information:

LD50, Oral, Rat: (Ethanol) 5628 mg/kg, (Hydrochloric Acid) 900 mg/kg, (Cupric Chloride) 584 mg/kg, details of toxic effects not reported other than lethal dose value. Cupric Chloride is investigated as a mutagen.

## Skin Corrosion and Irritation:

Causes severe skin burns and eye damage. Do not breathe dust, fumes or mist. Wash arms, hands and face thoroughly after handling. Wear protective gloves and eye protection. 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 INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. Specific treatment (Wash areas of contact with water). IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

## Serious Eye Damage and Irritation:

Causes serious eye damage. Wear protective gloves and eye protection. 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 physician.

## Respiratory Sensitization:

May cause allergy or asthma symptoms or breathing difficulties if inhaled. Avoid breathing dust, fumes or mist. In case of inadequate ventilation wear respiratory protection. IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or physician. Dispose of contents in accordance with local, state, federal and international regulations.

## Skin Sensitization:

May cause an allergic skin reaction. Avoid breathing dust, fumes or mist. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves and eye protection. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical attention. Specific treatment (Wash areas of contact with water). Wash contaminated clothing before reuse. Dispose of contents in accordance with local, state, federal and international regulations.

## Germ Cell Mutagenicity:

Not applicable.

## Carcinogenicity:

Not applicable.

## Reproductive Toxicity:

May damage fertility or the unborn child. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves and eye protection. IF exposed or concerned: Get medical attention. Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

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## Specific Target Organ Toxicity from Single Exposure:

Causes damage to organs. Do not breathe dust, fumes or mist. Wash arms, hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. IF exposed: Call a POISON CENTER or physician. Specific treatment (Wash areas of contact with water). Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

## Specific Target Organ Toxicity from Repeated Exposure:

Causes damage to organs through prolonged or repeated exposure. Do not breathe dust, fumes or mist. Wash arms, hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. Get medical attention if you feel unwell. Dispose of contents in accordance with local, state, federal and international regulations.

## Aspiration Hazard:

Not applicable.

## Additional Toxicology Information:

Data not available.

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## SECTION 12. Ecological Information

### Toxicity

**Aquatic Toxicity:** Cupric Chloride is very toxic to aquatic organisms.

**Persistence & Biodegradability:** Cupric Chloride may cause long lasting harmful effects to aquatic life.

### Behaviour in Environmental Systems

**Bioaccumulation Potential:** Cupric Chloride is expected to significantly bioaccumulate.

**Mobility in Soil** No information found.

**Additional Ecological Information:** Avoid transfer into the environment.

**Other Adverse Effects:** No information found.

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## SECTION 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

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## SECTION 14. Transport Information

### Domestic (Land, D.O.T.)

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**Sizes:** 250mL, 500mL, 1L  
**UN Number** UN2924  
**Proper Shipping Name:** Flammable liquid, corrosive, n.o.s (Ethanol, Hydrochloric Acid)  
**Hazard Class:** 3 (8)  
**Packing Group** II  
**Hazard Placard Labels:**



### International (Water, I.M.O.)

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**Sizes:** 250mL, 500mL, 1L  
**UN Number** UN2924  
**Proper Shipping Name:** Flammable liquid, corrosive, n.o.s (Ethanol, Hydrochloric Acid)  
**Hazard Class:** 3 (8)  
**Packing Group** II  
**Hazard Placard Labels:**



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## 15. Regulatory Information

### Occupational Safety and Health Administration (OSHA) Hazards

These items meet the OSHA Hazard Communication Standard (29 CFR 1910.1200) definition of a hazardous material.

### TSCA status:

All components are listed.

### European Inventory of Existing Commercial Chemical Substances (EINECS) status:

All components are listed.

### European List of Notified Chemical Substances (ELINCS), and No Longer Polymers (NLP) status:

Not listed.

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## 16. Other Information

**NFPA Ratings:** Health: **3** Flammability: **2** Reactivity: **0** Other:

**Label Hazard Warning:**

POISON! FLAMMABLE! CORROSIVE. LIQUID AND MIST CAUSE SEVERE IRRITATION TO ALL BODY TISSUE. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.

**Label Precautions:**

- Do not get in eyes, on skin, or on clothing.
- Do not breathe vapor or mist.
- Use only with adequate ventilation.
- Wash thoroughly after handling.
- Store in a tightly closed container.
- Remove and wash contaminated clothing promptly.

**Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases call a physician.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

SDS Section(s) changed since last revision of document include: N/A.

**Disclaimer:**

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