

# Safety Data Sheet (SDS)

## Section 1: Identification

**Product identifier:** Kroll's Reagent

**Other name(s):** Kroll's Etch

**Item number(s):** 171, 172

**Identified use:** SU24 Scientific research and development.

**Details of the supplier of the safety data sheet:**

ES Laboratory, LLC

2041 E. Gladstone St. Unit N Glendora, CA 91740 USA

Tel: 626-208-9011

**Emergency telephone number:**

CHEMTREC® 1-800-424-9300 (US & Canada Only)

## Section 2: Hazard(s) Identification

**Hazardous classification of the substance or mixture:**

Hazard Class	Category code
Skin Corrosion	1A
Serious Eye Damage	1

**Signal word:** Danger

**Pictogram:**



**Hazard statement(s):**

H314 Cause severe skin burn and eye damage.

**Precautionary statement(s):**

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.  
P321 Specific treatment (see section 4 on this label)

**Storage statement(s):**

P405 Store locked up.

**Disposal statement(s):**

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**Hazard(s) not otherwise classified:** No information.

**Label elements:** See tables above

**HMIS Ratings:**

Health: 3  
Flammability: 0  
Reactivity: 0

**NFPA Ratings:**

Health: 3  
Flammability: 0  
Reactivity: 0  
Special hazard: None

## Section 3: Composition/Information on Ingredients

Component	CAS No.	Concentration
Nitric acid	7697-37-2	5-7%
Hydrofluoric acid	7664-39-3	2-4%

Any concentration shown as a range is to protect the confidentiality or is due to batch variation. Only hazardous components are shown.

## Section 4: First-Aid Measures

**General information:** First aid procedures should be pre-planned for Hydrofluoric Acid emergencies.

**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. Rub in calcium gluconate solution or calcium gluconate gel immediately. Get medical aid immediately.

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

**Most important symptoms and effects, both acute and delayed:** This product contains hydrofluoric acid which is a contact-poison with the potential for deep, initially painless burns and ensuing bone/tissue damages.

**Recommendation for immediate medical care and special treatment needed, when necessary:** Use the specific treatment for hydrofluoric acid.

## Section 5: Fire-Fighting Measures

**Extinguishing media:** Water, dry chemical, foam, or carbon dioxide.

**Special hazards arising from the substance or mixture:** In the case of fire, the following can be released: acidic liquid and irritating fumes.

**Special protective equipment or precautions for firefighters:** Wear full protective clothing and self-contained respirator.

## Section 6: Accidental Release Measures

**Personal precautions, protective equipment, and emergency procedures:** This product contains hydrofluoric acid which is a contact-poison. Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation.

**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:** Neutralize the spill with sodium carbonate or a soda ash-slaked lime mixture (50:50). 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.

**Condition for safe storage:** Keep container tightly sealed. Store in an approved corrosive liquid storage container/area.

## Section 7: Handling and Storage

**Precautions for safe handling:** Wear protective equipment. Ensure good ventilation in the workplace. Open and handle with care.

**Incompatibilities:** Store away from strong bases and reducing agents.

**Specific storage requirement(s):** No information.

## Section 8: Exposure Controls/Personal Protection

### Exposure Limits

Component	CAS No.	ACGIH TLV	OSHA PEL
Nitric acid	7697-37-2	2 ppm TWA	2 ppm TWA 4 ppm STEL
Hydrofluoric acid	7664-39-3	3 ppm TWA	3 ppm F STEL

**Engineering controls:** Use general and/or local exhaust ventilation to control the vapor concentration.

**Eye protection:** Wear safety glasses/goggles/full-face splash shield.  
**Skin protection:** Wear protective clothing and chemical resistant gloves.

**Respiratory protection:** Use self-contained respiratory device in an emergency situation.

## Section 9: Physical and Chemical Properties

<b>Appearance:</b>	Clear, colorless liquid
<b>UFL/LEL:</b>	Not determined
<b>LFL/LEL:</b>	Not determined
<b>Odor:</b>	Acidic
<b>Vapor pressure:</b>	Not determined
<b>Odor threshold:</b>	Not determined
<b>Vapor density:</b>	Not determined
<b>pH:</b>	Not determined
<b>Relative density:</b>	Not determined
<b>Melting Point/Freezing point:</b>	Not determined
<b>Solubility in water:</b>	Miscible
<b>Boiling point/boiling range:</b>	Not determined
<b>Flash point:</b>	Not determined
<b>Evaporation Rate:</b>	Not determined
<b>Flammability (solid, gas):</b>	Not applicable
<b>Partition coefficient (n-octanol/water):</b>	Not determined
<b>Auto-ignition temperature:</b>	Not determined
<b>Decomposition temperature:</b>	Not determined
<b>Viscosity:</b>	Not determined

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### Section 10: Stability and Reactivity

**Reactivity:** No information.  
**Chemical stability:** Stable under recommended conditions.  
**Stabilizer(s):** Not required.  
**Safety issues that may arise should the product change in appearance:** No information.  
**Thermal decomposition/ conditions to Avoid:** Avoid excessive heat.  
**Possibility of hazardous reactions:** see incompatibilities.  
**Incompatibilities:** Strong bases and reducing agents. Will attack some forms of plastics, rubber, and coatings. May react with metallic aluminum and generate hydrogen gas.  
**Hazardous decomposition products:** Acidic and irritating fumes when heated to decomposition.

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### Section 11: Toxicological Information

#### For Nitric Acid:

**Acute toxicity:**

Inhalation rat LC50/4H: 0.13 mg/1/4H  
 Oral (human) LDLo: 430 mg/kg.

**Other exposure effect:**

On the Skin: Strong corrosive effect.  
 On the Eye: Strong corrosive effect.  
 Sensitization: No sensitizing effects were known.

**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. No classification data on carcinogenic properties of this material is available from NTP, IARC or OSHA.

#### For Hydrofluoric Acid:

**Acute toxicity:**

Inhalation rat LD50/1H: 1276 ppm/1H.

**Other exposure effect:**

Oral: Toxic effect.  
 On the Skin: Strong corrosive effect.  
 On the Eye: Strong corrosive effect.  
 Sensitization: No sensitizing effects were known.

**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. No classification data on carcinogenic properties of this material is available from NTP, IARC or OSHA. Danger through skin absorption.

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### Section 12: Ecological Information

**Toxicity:**

**Aquatic toxicity:** No information.  
**Persistence and degradability:** No information.

**Behavior in environmental system:**

**Bioaccumulative potential:** No information.

**Mobility in soil:** No information.

**Additional ecological information:** No information.

**Other adverse effects:** No information.

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### Section 13: Disposal Considerations

Place in a chemical waste container for proper disposal in an approved waste disposal facility. Dispose of the content and container in accordance with local, regional, national, international regulations.

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### Section 14: Transport Information

**D.O.T. shipping name:** Corrosive liquid, acidic, inorganic, n.o.s. (Nitric Acid, Hydrofluoric Acid)  
**D.O.T. hazard class:** 8  
**UN number:** UN3264  
**Packing group:** III

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### Section 15: Regulatory Information

**Not meant to be all inclusive, selected regulation represented**

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

**TSCA status:** All components are listed.

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### Section 16: Other Information

**Disclaimer:** The information above is believed to be accurate and represents the best information currently available to us. ES Laboratory, LLC makes no warranty, express or implied, as to its accuracy, 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 purposes. We shall not be liable for any damages to person or property resulting from its use.  
**Revised Date:** 1/4/2019