

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 (wt%)
Nitric acid	7697-37-2	6-8%
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 a 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 governmental 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.

Section 7: Handling and Storage

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

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

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 a self-contained respiratory device in an emergency situation.

Section 9: Physical and Chemical Properties

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

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.

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.

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.

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.

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

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.

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.

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