



Suite 450
One North Shore Center
12 Federal Street
Pittsburgh, PA 15212

Safety Data Sheet

KRO-320

1. IDENTIFICATION

Product name KRO-320
Description Proprietary aqueous solution
Product class Cleaner
Supplier address Suite 450
One North Shore Center
12 Federal Street
Pittsburgh, PA 16212
Telephone numbers
Company Phone Number (412) 321-9800
Emergency Telephone CHEMTREC 800-424-9200

2. HAZARDS IDENTIFICATION

Hazard classification Skin Corrosion, Category 1
Serious Eye Damage, Category 1
Signal word Danger
Hazard statements Causes severe skin burns and eye damage.
Causes serious eye damage.

Pictograms of related hazards



Precautionary statements

Prevention

Wash skin thoroughly after handling.
Wear protective gloves, protective clothing, eye protection, and face protection.

Response

Wash contaminated clothing before reuse.
Specific treatment—see "First Aid Measures."
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. Immediately contact a POISON CENTER or health care provider.
IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water or emergency shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if

present and easy to do. Continue rinsing. Immediately contact a POISON CENTER or health care provider.

Storage

Store locked up.

Disposal

Dispose of contents and container in accordance with local, state, and federal regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS #	Weight %
Citric acid	77-92-9	10-20
1-Hydroxyethylidene-1,1-diphosphonic acid (HEDP)	2809-21-4	1-10
Non-hazardous substances	Proprietary	>70

4. FIRST-AID MEASURES

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally to ensure complete rinsing. Remove contact lenses if present and easy to do, then resume rinsing. Get medical attention immediately.
Skin contact	Immediately remove all contaminated clothing. Rinse with copious amounts of water; use an emergency shower if available. Wash contaminated clothing before reuse.
Ingestion	If swallowed, DO NOT induce vomiting. Rinse mouth and get emergency medical attention. Do not give anything by mouth unless instructed to do so by a poison center or health care provider.
Inhalation	If inhaled, move victim to fresh air. Seek emergency medical attention if breathing is difficult; perform artificial respiration if breathing stops.
Note to health care provider	Esophageal corrosion may contraindicate the use of gastric lavage and/or activated charcoal.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	Use extinguishing media appropriate for the surrounding fire.
Unsuitable extinguishing media	No information available
Protective equipment and precautions for firefighters	Exercise caution when fighting any chemical fire. A self-contained breathing apparatus and protective clothing are essential. Use water to keep fire-exposed containers cool.
Specific hazards	Reaction with metals may produce highly flammable hydrogen gas.
Hazardous combustion products	Carbon oxides, nitrogen oxides, sulfur oxides, phosphorous oxides

6. ACCIDENTAL RELEASE MEASURES

Personal precautions Evacuate the area of all non-essential personnel. Do not touch spilled material without proper protective equipment. Ventilate the area and mitigate further release if it is safe to do so. Avoid contact with eyes.

Methods for clean-up

Small spills Contain spill and soak up with an inert absorbent material and place residues in a properly labeled container for disposal. Avoid discharge into sewer or surface water.

Large spills Contain spill using trenches, diking, or absorption with an inert material (i.e. sand or earth). Reclaim spilled material into recovery or salvage drums or tank truck for proper disposal.

7. HANDLING AND STORAGE

Advice on safe handling Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Wash hands thoroughly after handling.

Storage conditions Store in a cool, dry, well-ventilated area away from incompatible materials. Keep containers closed when not in use.

Suitable materials of construction No information available

Unsuitable materials of construction No information available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye/face protection Chemical splash goggles, face shield

Skin protection Chemical-resistant gloves and body-covering clothing

Respiratory protection Observe published airborne exposure limits. NIOSH approved respirator should be used in accordance with OSHA respiratory protection requirements (29 CFR 1910.134).

Engineering controls Adequate ventilation, eye-wash station, and emergency shower

General hygiene considerations Do not eat, drink, or smoke while handling this product.

Chemical Name	OSHA PEL	ACGIH TLV
Citric acid	None established	None established
1-Hydroxyethylidene-1,1-diphosphonic acid (HEDP)	None established	None established
Non-hazardous substances	None established	None established

9. PHYSICAL AND CHEMICAL PROPERTIES

pH	0.5-2.0
Appearance	Clear colorless liquid
Odor	Mild
Odor Threshold	No information available
Melting/freezing point	21°F (-6.1°C); becomes cloudy at 23°F
Initial boiling point/boiling range	No information available
Flash point	No information available
Evaporation rate	No information available
Flammability (solid, gas)	No information available
Upper/lower flammability or explosive limits	No information available
Vapor pressure	No information available
Vapor density	No information available
VOC content	No information available
Specific gravity	1.105-1.185
Solubility	Complete
Partition coefficient n-octanol/water	No information available
Auto-ignition temperature	No information available
Decomposition temperature	No information available
Viscosity	No information available

10. STABILITY AND REACTIVITY

Chemical stability	Stable under normal conditions of storage and handling.
Hazardous polymerization	Polymerization will not occur.
Conditions to avoid	Extreme temperatures, incompatibilities
Incompatibilities	Strong bases, oxidizers
Hazardous decomposition products	No known non-thermal decomposition hazards.

11. TOXICOLOGICAL INFORMATION

Likely routes of exposure Skin, eyes, ingestion

Acute toxicity*Citric Acid*

Parameter	Result
LD ₅₀ , Oral (rat)	3,000 mg/kg
LD ₅₀ , Oral (mouse)	5,040 mg/kg
Draize, Skin (rabbit)	Not irritating
Draize, Eye (rabbit)	Permanent damage

1-Hydroxyethylidene-1,1-diphosphonic acid (HEDP)

Parameter	Result
LD ₅₀ , Oral (rat)	1,536-2,003 mg/kg
LD ₅₀ , Oral (mouse)	1,100 mg/kg
LD ₅₀ , Dermal (rabbit)	>6,000 mg/kg
Draize, Eye (rabbit)	Severe corrosion

Acute symptoms and effects

Eye	Severe eye irritation with serious damage including, but not limited to, tissue destruction, corneal opacification, and temporary or permanent blindness.
Skin	Skin irritation with or without pain, burning, itching, redness, and swelling. Symptoms may be exacerbated by open wounds, excoriations, rashes, or other skin breaches.
Ingestion	Gastrointestinal distress with or without nausea, vomiting, and diarrhea. May cause irritation or corrosion of the oral and esophageal mucosa.
Inhalation	Upper respiratory irritation with or without cough, watering of the eyes, and postnasal drip. Aspiration of liquid or vomit may cause severe respiratory distress, airway corrosion, and acute lung damage.
Reproductive effects	No information available
Teratogenicity	No information available
Mutagenicity	No information available
Embryotoxicity	No information available
Sensitization to product	No information available
Synergistic products	No information available
Carcinogenicity	No components have been identified as carcinogenic by OSHA, NTP, or IARC.

Chronic

Repeat, long-term, or high-dose exposure to HEDP has been implicated in dysregulation of blood calcium levels and shown adverse effects on bone mineralization.

12. ECOLOGICAL INFORMATION

Aquatic toxicity**Product**

Parameter	Result
96 hr LC ₅₀ , Pimephales promelas (Fathead minnow)	347.16 mg/L
48 hr EC ₅₀ , Daphnia magna	347.16 mg/L

Persistence

No information available

Bioaccumulative potential

No information available

Mobility

No information available

13. DISPOSAL CONSIDERATIONS

Disposal

Dispose of in accordance with federal, state, and local regulations.

RCRA status

As sold, discarded product would be considered a RCRA hazardous waste based on the corrosive characteristics. The EPA hazardous waste number is D002.

14. TRANSPORT INFORMATION

US Department of Transportation (DOT)**UN Number**

UN3265

Proper shipping name

Corrosive liquid, acidic, organic, n.o.s. (contains citric acid, 1-hydroxyethylidene-1, 1-diphosphonic acid)

Primary hazard class/division

8

Secondary hazard

None

Packing group

III

Label

Corrosive

15. REGULATORY INFORMATION

OSHA Hazard Communication Status

Skin Corrosion, Category 1
Serious Eye Damage, Category 1

EPA Registration Number

Not applicable

TSCA

The ingredients of this product are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory.

CERCLA

EPA Hazardous Substances (40 CFR 302)

Chemical Name	Reportable Quantity (RQ)
Citric acid	None
1-Hydroxyethylidene-1,1-diphosphonic acid (HEDP)	None
Non-hazardous substances	None

SARA Title III (Sections 302, 311, 312, and 313)

Section 302 Extremely Hazardous Substances (40 CFR 355)

Chemical Name	CAS#	RQ	TPQ
None			

Section 311 and 312 Health and Physical Hazards

Immediate	Delayed	Fire	Pressure	Reactivity
Yes	No	No	No	No

Section 313 Toxic Chemicals (40 CFR 372)

Chemical Name	CAS Number	Percent by Weight
None		

16. OTHER INFORMATION

HMIS Ratings Health—2; Flammability—0; Reactivity—0

NFPA Ratings Health—2; Flammability—0; Reactivity—0; Special Hazard—None

HMIS and NFPA Rating Scale Minimal—0; Slight—1; Moderate—2; Serious—3; Severe—4

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