



STERIS®

ProKlenz® RESTORE

High Performance Acid-Based Cleaner

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Date of issue: 02/27/2019

Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

10.1. Product identifier

Product form : Mixture
Trade name : ProKlenz® RESTORE High-Performance Acid-Based Cleaner
Product code : 1423

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Stainless Steel Corrosion Remediation

1.3. Details of the supplier of the safety data sheet

STERIS Corporation
P. O. Box 147, St. Louis, MO 63166, US
Telephone Number for Information: 1-800-444-9009 (Customer Service-Scientific Products)

1.4. Emergency telephone number

Emergency number : US Emergency Telephone No.1-314-535-1395 (STERIS); 1-800-424-9300 (CHEMTREC)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Met. Corr. 1 H290
Flam. Liq. 4 H227
Skin Corr. 1B H314
Eye Dam. 1 H318

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :



GHS05

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H227- Combustible liquid
H290- May be corrosive to metals

Precautionary statements (GHS-US) : H314 - Causes severe skin burns and eye damage.
P210 – Keep away from flames and hot surfaces. No smoking.
P234 – Keep only in original container.
P260 - Do not breathe mist, spray, vapours
P264 - Wash hands thoroughly after handling
P280 - Wear protective gloves/protective clothing and eye/face protection
P301+P330+P331 – If SWALLOWED: Rinse mouth. Do NOT induce vomiting
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 – Immediately call a POISON CENTER or the competent authority to specify the appropriate source of emergency medical advice
P363 -Wash contaminated clothing before reuse
P390 – Absorb spillage to prevent material damage.
P403+P235 – Store in a well-ventilated place. Keep cool.
P405 -Store locked up
P501 – Dispose of contents/container in accordance with regional regulations

2.3. Other hazards

No additional information available.

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable.

3.2. Mixture

Name	Product identifier	%	GHS-US classification
1-Hydroxyethane-1, 1-diphosphonic acid	(CAS No) 2809-21-4	15 – 20	Met. Corr. 1, H290 Acute Tox. 4 (Oral), H302 Eye Dam. 1, H318

ProKlenz® RESTORE

High Performance Acid-Based Cleaner

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Name	Product identifier	%	GHS-US classification
Oxalic acid	(CAS No) 144-62-7	1 - 5	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Eye Dam. 1, H318
1-Amino-2-propanol	(CAS No) 78-96-6	5 – 10	Flam. Liq. 4, H227 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Skin Corr. 1B, H314 Eye Dam. 1, H318

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. Get medical attention.
- First-aid measures after skin contact : Immediately flush skin with plenty of water for at least 15 minutes. Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Get medical advice/attention.
- First-aid measures after eye contact : In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately get medical attention.
- First-aid measures after ingestion : If victim completely conscious/alert. Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries : Symptoms may be delayed. Corrosive to eyes and skin.
- Symptoms/injuries after inhalation : Irritating to respiratory tract, if inhaled.
- Symptoms/injuries after skin contact : Corrosive to eyes and skin.
- Symptoms/injuries after eye contact : Causes serious eye damage.
- Symptoms/injuries after ingestion : Likely to be irritating to the gastrointestinal tract, if ingested

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire. Foam. Dry powder. Carbon dioxide. Sand.
- Unsuitable extinguishing media : None known.

5.2. Special hazards arising from the substance or mixture

- Hazardous decomposition products in case of fire : Thermal decomposition generates: Fume. Carbon monoxide. Carbon dioxide. Phosphorous oxides, phosphine.

5.3. Advice for firefighters

- Firefighting instructions : Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
- Protective equipment for firefighters : Use self-contained breathing apparatus. Do not enter fire area without proper protective equipment, including respiratory protection.
- Other information : Not known.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Do not breathe fumes, vapors. Avoid contact with skin, eyes and clothes.

6.1.1. For non-emergency personnel

- Protective equipment : Wear protective gloves and eye/face protection. For further information refer to Section 8: "Exposure controls/personal protection".
- Emergency procedures : Stop leak if safe to do so. Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
- Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

ProKlenz® RESTORE

High Performance Acid-Based Cleaner

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Absorb spillage to prevent material damage. Collect spillage. Comply with applicable local, national and international regulation.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : May be corrosive to metals.

Precautions for safe handling : Product for industrial use only. Read label before use. Provide good ventilation in process area to prevent formation of vapor. Avoid all eye and skin contact and do not breathe vapor and mist. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Hygiene measures : Take care for general good hygiene and housekeeping. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Provide adequate ventilation. A washing facility/water for eye and skin cleaning purposes should be present.

Storage conditions : Keep only in the original container in a cool, well ventilated place. Keep container closed when not in use.

Incompatible materials : Strong oxidizing agents. Alkalis.

Storage area : Store in dry, cool, well-ventilated area.

Special rules on packaging : Correctly labelled.

Packaging materials : Keep only in the original container.

7.3. Specific end use(s)

No additional information available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Oxalic acid (144-62-7)		
USA ACGIH	ACGIH TWA (mg/m ³)	1 mg/m ³
USA ACGIH	ACGIH STEL (mg/m ³)	2 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³)	1 mg/m ³

8.2. Exposure controls

Appropriate engineering controls : Ensure adequate ventilation. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Personal protective equipment : Avoid all unnecessary exposure. Personal protective equipment should be selected based upon the conditions under which this product is handled or used. Protective clothing. Gloves. Protective goggles.



Hand protection : Wear rubber gloves.

Eye protection : Wear chemical splash goggle.

Skin and body protection : Wear suitable protective clothing. Wear long sleeves.

Respiratory protection : Work in well-ventilated zones or use proper respiratory protection.

Other information : Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : Clear

Color : Colorless

Odor : No data available

Odor threshold : No data available

ProKlenz® RESTORE

High Performance Acid-Based Cleaner

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

pH (1% w/w)	: 2.2
pH (conc.)	: 1.4
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: > 180°F
Self ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: No data available
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Density	: ca. 1.123 g/ml Specific Gravity
Solubility	: Water: Completely soluble
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: No data available

9.2. Other information

No additional information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available.

10.2. Chemical stability

Stable under normal conditions of use.

10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4. Conditions to avoid

Extremely high or low temperatures.

10.5. Incompatible materials

Strong oxidizers. Alkalis.

10.6. Hazardous decomposition products

Thermal decomposition generates: Corrosive vapours. Phosphorous oxide. Fume. Carbon monoxide. Carbon dioxide. May release phosphine under certain conditions.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity:

ProKlenz® RESTORE High Performance Acid-Based Cleaner	
LD50 oral rat (estimated)	>5000 mg/kg
LD50 dermal rabbit (estimated)	>5000 mg/kg

1-Hydroxyethane-1, 1-diphosphonic acid (2809-21-4)

LD50 oral rat	2400 mg/kg
LD50 dermal rabbit	>6000 mg/kg

Skin corrosion/irritation: Causes skin irritation. (pH: 9.2 – 9.8)

Serious Eye Damage/Irritation: Causes serious eye irritation. (pH: 9.2 – 9.8)

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: No data available

ProKlenz® RESTORE

High Performance Acid-Based Cleaner

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: May cause respiratory irritation.

Symptoms/Injuries After Skin Contact: Causes skin irritation.

Symptoms/Injuries After Eye Contact: Causes serious eye irritation.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Oxalic acid (144-62-7)	
LD50 oral rat	7500 mg/kg
LD50 dermal rat	20000 mg/kg
ATE (oral)	500.000 mg/kg bodyweight
ATE (dermal)	1100.000 mg/kg bodyweight

Skin corrosion/irritation : Causes severe skin burns and eye damage

pH: 1.2 Approximately

Serious eye damage/irritation : Causes serious eye damage

pH: 1.2 Approximately

Respiratory or skin sensitisation : Not classified

Based on available data, the classification criteria are not met

Germ cell mutagenicity : Not classified

Based on available data, the classification criteria are not met

Carcinogenicity : Not classified.

1-Amino-2-propanol (78-96-6)	
LD50 oral rat	2813 mg/kg
LD50 dermal rabbit	1851 mg/kg

Skin corrosion/irritation: Brief contact may cause skin burns.

Serious Eye Damage/Irritation: May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness.

Respiratory or Skin Sensitization: Not classified

Mutagenicity: Not classified

Teratogenicity: No data available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Material is corrosive. Material is not classified as a respiratory irritant; however, upper respiratory tract irritation or corrosivity may be expected.

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/injuries after skin contact : Adverse symptoms include pain, severe local redness and tissue damage.

Symptoms/injuries after eye contact : Chemical burns may occur.

SECTION 12: Ecological information

12.1. Toxicity

ProKlenz® RESTORE High Performance Acid-Based Cleaner	
LC50 fishes	>750 mg/l (Exposure time: 96 h - Species: Fathead Minnow)

1-Hydroxyethane-1, 1-diphosphonic acid (2809-21-4)	
LC50 fishes	368 mg/l (Exposure time: 96 h - Species: Rainbow trout, Donaldson trout)
LC50 fishes	868 mg/l (Exposure time: 96 h - Species: Bluegill)
EC50 Daphnia 1	527 mg/l (Exposure time: 72 h - Species: Daphnia magna)

1-Amino-2-propanol (78-96-6)	
EC50 Daphnia 1	109 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fishes	215 – 464 mg/l (Exposure time: 96 h - Species: Leuciscus idus [Static])

ProKlenz® RESTORE

High Performance Acid-Based Cleaner

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

1-Amino-2-propanol (78-96-6)	
ErC50 algae	32.7 mg/l (Exposure time: 72 h – Species: Scenedesmus sp. [Static])

Oxalic acid (144-62-7)	
EC50 Daphnia 1	125 - 150 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

12.2. Persistence and degradability

ProKlenz® RESTORE High Performance Acid-Based Cleaner	
Persistence and degradability	The surfactant(s) contained in this preparation complies(comply) with the biodegradability criteria as laid down in Regulation (EC) No. 648/2004 on detergents. Data to support this assertion are held at the disposal of the competent authorities of the Member States and will be made available to them, at their direct request or at the request of a detergent manufacturer.

12.3. Bioaccumulative potential

1-Hydroxyethane-1, 1-diphosphonic acid (2809-21-4)	
Log Pow	-3.5

1-Amino-2-propanol (78-96-6)	
Log Pow	-0.93 (at 23 °C)

Oxalic acid (144-62-7)	
BCF fish 1	(no bioaccumulation)
Log Pow	-0.81 (at 30 °C)

12.4. Mobility in soil

No additional information available.

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.
Additional information : Unused product: Hazardous waste (corrosive) based on pH.
Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with DOT

14.1. UN number

UN-No.(DOT) : 3265
DOT NA no. UN3265

14.2. UN proper shipping name

DOT Proper Shipping Name : UN3265, Corrosive Liquid, Acidic, Organic, N.O.S. (Phosphonic Acid Solution), 8, PG III
Department of Transportation (DOT) Hazard Classes : 8 - Class 8 - Corrosive material 49 CFR 173.136
Hazard labels (DOT) : 8 - Corrosive substances.



DOT Symbols : G - Identifies PSN requiring a technical name
Packing group (DOT) : III - Minor Danger

14.3. Additional information

Other information : Corrosive.
Special transport precautions : 4 x 1 gal package not approved for air shipment.

Overland transport

Packing group (ADR) : III
Class (ADR) : 8 - Corrosive substances.
Hazard identification number (Kemler No.) : 80

ProKlenz® RESTORE

High Performance Acid-Based Cleaner

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Classification code (ADR) : C3
Danger labels (ADR) : 8 - Corrosive substances.



Orange plates



Tunnel restriction code : E
Excepted quantities (ADR) : E1

Transport by sea

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.
DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"

Air transport

DOT Quantity Limitations Passenger aircraft/rail : 5 L package not approved for air (49 CFR 173.27)
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 4 x 1 gal package not approved for air shipment

SECTION 15: Regulatory information

15.1. US Federal regulations

1-Hydroxyethane-1, 1-diphosphonic acid (2809-21-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory or exempted

1-Amino-2-propanol (78-96-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Oxalic acid (144-62-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

Not applicable.

15.3. US State regulations

Not applicable.

SECTION 16: Other information

Revision Date : 02/27/2019
Sources of Key data : None.
Other information : None.

Full text of H-phrases:

Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Met. Corr. 1	Corrosive to metals, Category 1
Skin Corr. 1B	Skin corrosion/irritation Category 1B
Flam. Liq. 4	Combustible liquid
H227	Combustible liquid
H290	May be corrosive to metals
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage

NFPA health hazard : 3 – Materials that, under emergency conditions, can cause serious or permanent injury.
NFPA fire hazard : 1 - Materials that must be preheated before ignition can occur
NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



ProKlenz® RESTORE

High Performance Acid-Based Cleaner

Safety Data Sheet

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SDS US (GHS HazCom 2012)

The information on this sheet is not a specification and does not guarantee specific properties. The information is intended to provide general knowledge as to health and safety based upon our knowledge of the handling, storage and use of the product. It is not applicable to unusual or non-standard uses of the product or where instruction or recommendations are not followed.