Safety data sheet

Buffered Oxide Etchant 7:1
Version 5.2
Effective date: 01-11-2023

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1 Product identifier.

Trade name: Buffered Oxide Etchant 7:1

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

Product use: Professional use.
Electronics chemical.

1.3 Details of the supplier of the safety data sheet

Company: Sunchem AB
Box 69
S-433 21 Partille
Sverige
T +46 31 44 73 10 F +46 31 44 95 81 www.sunchem.se

Contact: info@sunco.se

1.4 Emergency telephone number:
Use your national or local emergency number.
United Kingdom: Contact The National Poisons Information Service (dial 111, 24 h service).

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture according to CLP No. 1272/2008/GB CLP.
Acute Tox. 3; H301, Acute Tox. 1; H310, Skin Corr. 1A; H314, Eye Dam. 1; H318, Acute Tox. 3; H331.

2.2 Label elements CLP No. 1272/2008/GB CLP.

Hazard pictograms:

Signal word: Danger

Contains: Hydrogen fluoride, Ammonium flouride.

Hazard statements:
H301+ H331Toxic if swallowed or inhaled.
H310 Fatal in contact with skin.
H314 Causes severe skin burns and eye damage.

Precautionary statements:
General:
-
Prevention:
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P262 Do not get in eyes, on skin, or on clothing.
P280 Wear protective gloves/protective clothing/eye protection/face protection. P284 Wear respiratory protection.

Response:
P301 + 310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P301 + 330 + 331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + 361 + 353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Specific rinsing fluid required.
P304 + 340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P305 + P351 + P338 + P310 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 doctor.

Storage:
-
Disposal:
P501 Dispose of contents/ container in accordance with national regulations.

Additional labelling:
-
2.3 Other hazards.
This mixture does not meet the criteria for PBT or vPvB according to regulation 1907/2006 REACH, annex XIII.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance:

The product is a mixture.

3.2 Mixture:

CAS/EC-no.	REACH-no. /Index nr	Name	Content %	Classification CLP
12125-01-8 235-185-9	01-2119974147-30 009-006-00-8	Ammonium fluoride	30-40	Acute Tox. 3; H301, Acute Tox. 3; H311, Acute Tox. 3; H331.
7664-39-3 / 231-634-8	01-211945886033 009-002-00-6	Hydrogen fluoride*	<7	Acute Tox. 2; H300, Acute Tox. 1; H310, Skin Corr. 1A; H314, Acute Tox. 2; H330.

*Specific concentration limits Hydrogen fluoride – CAS 7664-39-3: Skin Corr. 1A;
H314: C ≥ 7 %.

See full text of H-phrases in section 16. Occupational limits, where applicable, are listed in section 8.

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

General information: Take off immediately all contaminated clothing. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Discard any shoes or clothing items that cannot be decontaminated.

Inhalation: Remove casualty from exposure, while ensuring one's own safety. If conscious, ensure the casualty sits or lies down. If unconscious, check for breathing and apply artificial respiration if necessary. If unconscious and breathing is OK, place in the recovery position. If breathing becomes bubbly, have the casualty sit and provide oxygen if available. Transfer to hospital as soon as possible.

Skin contact: Without delay flush Hydrofluoric acid from the skin with copious amounts of cool water for approximately one minute. If calcium gluconate gel is not immediately available CONTINUE TO FLUSH with water until it is. Specific rinsing fluid required: Application of 2.5% calcium gluconate gel (HF Antidote Gel) and massage into the burnt area wearing gloves appropriate to the level of contamination and taking into consideration the First Aider's safety. Continue to massage while repeatedly applying gel until 15 minutes after the pain in the burnt area is relieved. If skin contamination is more extensive and clothing affected, be aware of the possibility of inhalation injury. Remove contaminated clothing by cutting if necessary and do not reuse before washing it. Obtain medical attention immediately, but do not delay the above management until medical attention is available.

Eye contact:

Without delay flush the eyes with copious amounts of water or eye wash solution (sterile isotonic saline solution) until medical help arrives. Do not attempt to remove contact lenses. Irrigation should be continued while en route to hospital. Do not put 2.5% Calcium Gluconate gel in the eyes.

Ingestion: Do not induce vomiting. Wash out mouth with water. If conscious, give half a litre of water to drink immediately. If unconscious, check for breathing and apply artificial respiration if necessary. If unconscious and breathing is OK, place in the recovery position. Transfer to hospital as soon as possible.

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

Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Causes digestive tract burns. May be fatal if inhaled, absorbed through skin, or swallowed.

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

Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation.

Treatment : This advice is provided to the attending physician because of the specific properties of hydrogen fluoride and hydrofluoric acid. All cases of ingestion and airway exposure, and skin burns with hydrofluoric acid >20% should be regarded as potentially fatal. Patients who have burns and pain within minutes of exposure can be assumed to have been exposed to concentrated acid and are at risk of rapid clinical deterioration and death. Burns can be accompanied by absorption of fluoride through the skin with sequestration of circulating calcium leading to hypocalcemia and hyperkalemia from the release of cell contents. Fatal cardiac dysrhythmias may ensue. A person who has HF burns greater than 25 square inches or who has been burned with concentrated HF should be admitted immediately to an intensive care unit and carefully monitored by EKG for 24 to 48 hours. Blood sampling should be taken to monitor circulating fluoride, potassium and calcium levels. Hemodialysis may be necessary for fluoride removal and correction of hyperkalemia.

HF inhaled in high concentrations may cause acute inflammation and edema of the airway and acute pulmonary edema. Anyone who has been exposed to HF gas or mists and experiences respiratory irritation should be admitted to and monitored in an intensive care unit. In some cases, if the eyes are exposed to HF, it may penetrate to internal structures resulting in irreversible damage. HF skin burns are usually accompanied by severe, throbbing pain, which is thought to be due to irritation of nerve endings by increased levels of potassium ions entering the extracellular space to compensate for the reduced levels of calcium ions, which have been bound to the fluoride. RELIEF OF PAIN IS AN IMPORTANT GUIDE TO THE SUCCESS OF TREATMENT.

SECTION 5. FIRE FIGHTING MEASURES

5.1 Extinguishing media: Use an extinguishing agent suitable for the surrounding fire.

Extinguishing media which must not be used for safety reasons:
Water jets should not be used, since they can spread the fire.

5.2 Special hazards arising from the substance or mixture:
Not flammable.
Emits toxic and corrosive gases. Hydrogen fluoride (HF).

5.3 Advice for firefighters: Do not enter fire area without proper protective equipment, including respiratory protection. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk.

Move containers from fire area if you can do so without risk. Dike fire control water for later disposal. Avoid discharge into drains, water courses or onto the ground.

Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:
See section 8 for recommendations on the use of personal protective equipment. Avoid contact with skin, eyes and clothes. Keep unprotected persons away. Ensure adequate ventilation, especially in confined areas. Do not breathe vapor or mist. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep unnecessary personnel away. Avoid inhalation of vapours and spray mists. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained.

6.2 Environmental precautions:
Prevent undiluted entry to sewers and public waters.

6.3 Methods and material for containment and cleaning up:

Clean up all spills immediately. Product can react with silica based materials (for example, glass, concrete, sand, vermiculite, and others) to generate highly toxic silicon tetrafluoride gas. Use only absorbents designated and approved for response to spills of Hydrofluoric acid. If suitable absorbents are unavailable, treat the spill with an excess of dilute, aqueous calcium or magnesium hydroxide.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use Polypropylene spill control pads or other inert absorbent materials to soak up the spill. Do not use silica based absorbents (such as sand and vermiculite). Collect absorbent in plastic containers. Collect all waste for proper disposal. Following product recovery, flush area with water.
Small Spills: Absorb spillage with suitable absorbent material. Do not use silica based absorbents (such as sand and vermiculite). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

6.4 Reference to other sections:

See section 8 for personal protection.
See section 13 for disposal.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling:
Store as a toxic and corrosive product. Do not breathe mist or vapour. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. When using, do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Wash contaminated clothing before reuse. Observe good industrial hygiene practices.
In case of accident, always have 2.5% calcium gluconate gel on hand (prescription).

Hygiene measures:

Do not eat, drink or smoke when using this product. Wash face, hands and any exposed skin thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities:

Store locked up. Store only in containers made of compatible materials. Store in tightly closed container. Provide appropriate secondary containment. Store in a well-ventilated place. Store away from incompatible materials (see section 10 of the SDS).

7.3 Specific end use(s): See section 1.2.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Occupational exposure limits EH40:

Occupational exposure limits

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value
Ammonium fluoride (CAS 12125-01-8)	TWA	2.5 mg/m3
Hydrofluoric acid (CAS 7664-39-3)	STEL	2.5 mg/m3
		3 ppm
	TWA	1.5 mg/m3
		1.8 ppm

EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU, 2017/164/EU

Components	Type	Value
Ammonium fluoride (CAS 12125-01-8)	TWA	2.5 mg/m3
Hydrofluoric acid (CAS 7664-39-3)	STEL	2.5 mg/m3
		3 ppm
	TWA	1.5 mg/m3
		1.8 ppm

DNEL :

Derived no effect levels (DNELs)

General Population

Components	Value	Assessment factor	Notes
Hydrofluoric acid (CAS 7664-39-3)			
Long-term, Local, Inhalation	0.2 mg/m3		respiratory tract irritation
Long-term, Systemic, Inhalation	0.03 mg/m3		Repeated dose toxicity
Long-term, Systemic, Oral	0.01 mg/kg bw/day		Repeated dose toxicity
Short-term, Local, Inhalation	1.25 mg/m3		respiratory tract irritation
Short-term, Systemic, Inhalation	0.03 mg/m3		Repeated dose toxicity
Short-term, Systemic, Oral	0.01 mg/kg bw/day		Repeated dose toxicity

Workers

Components	Value	Assessment factor	Notes
Ammonium fluoride (CAS 12125-01-8)			
Long-term, Local, Inhalation	2.5 mg/m3		Repeated dose toxicity
Long-term, Systemic, Dermal	0.36 mg/kg bw/day		
Long-term, Systemic, Inhalation	2.5 mg/m3		
Short-term, Systemic, Dermal	0.36 mg/kg bw/day		
Short-term, Systemic, Inhalation	2.5 mg/m3		Repeated dose toxicity
Hydrofluoric acid (CAS 7664-39-3)			
Long-term, Local, Inhalation	1.5 µg/m3		Repeated dose toxicity
Long-term, Systemic, Inhalation	1.5 mg/m3		Repeated dose toxicity
Short-term, Local, Inhalation	2.5 mg/m3		respiratory tract irritation
Short-term, Systemic, Inhalation	2.5 mg/m3		respiratory tract irritation

8.2 Exposure controls.

Appropriate technical measures:

Airborne concentrations must be kept as low as possible. Use for example an exhaust system if the normal air flow in the work room is not sufficient.

General information: Smoking, consumption of food or liquid, and storage of tobacco, food or liquid, are not allowed in the workroom. Always wash hands, forearms and face. Make sure that eyewash and emergency showers are clearly marked and available. Avoid contact with skin and eyes. Avoid breathing mist/vapors. In case of accident, always have 2.5% calcium gluconate gel on hand (prescription).

Personal protective equipment:
Only CE-marked personal protection equipment should be used.

Respiratory protection: If risk of inhalation, use respiratory protection with filter E – EN 149.

Hand protection: If there is a risk of skin contact, wear suitable protective gloves: Butyl rubber, laminate, neoprene, nitrile. Breakthrough time: 6 (≥480 minutes). Thickness: >0.4 mm. STANDARD EN 374.

Eye protection: Tightly fitting safety goggles and face shield. EN 166.

Body protection: Wear appropriate chemical resistant clothing. The following protective clothing is recommended for tasks with potential for splash: apron, boots, coveralls, protective sleeves. Suitable items can be recommended by the protective equipment supplier or by a qualified industrial hygienist. **Measures to avoid environmental exposure:**

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties.

a	**Physical state**	Liquid
b	**Colour**	Clear liquid
c	**Odour/odour threshold**	Pungent
d	**Melting point/Freezing point**	< -20 °C (< -4 °F).
e	**Initial boiling point/boiling range**	107.2 °C (224.96 °F) (101.3 kPa)
f	**Flammability (solid, gas)**	No data available/not applicable
g	**Lower and upper explosion limit**	No data available/not applicable
h	**Flash point**	No data available/not applicable
i	**Auto-ignition temperature**	No data available/not applicable
j	**Decomposition temperature**	No data available/not applicable
k	**pH**	4,18
l	**Kinematic viscosity**	No data available/not applicable
m	**Solubility**	Completely soluble in water
n	**Partition coefficient (n-octanol/water)**	No data available/not applicable
o	**Vapour pressure**	10.02 mmHg (20 °C (68 °F))

p	**Density and/or relative density**	1.199 g/cm3 / 1.13 (Water=1) (20 °C (68 °F))
q	**Relative vapour density**	No data available/not applicable
r	**Particle characteristics**	No data available/not applicable

9.2 Other information
No more specific data, and the product is not flammable nor explosive.

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity: No dangerous reaction known under conditions of normal use and storage. Thermal decomposition produces: Corrosive vapors.

10.2 Chemical stability: Stable under normal storage conditions.

10.3 Possibility of hazardous reactions:
None known if used and storage as recommended.
Never pour water on or in the product, but pour the product into water.

10.4 Conditions to avoid:

Stable under normal temperature conditions and recommended use. See section 7. High temperatures. Contact with incompatible materials.

10.5 Incompatible materials:

Strong oxidising agents. Strong alkalis. Metals. Glass. Cyanides. Sulfides. Upon contact with metals, hydrogen gas is formed which, together with air, can form an explosive mixture.

10.6 Hazardous decomposition products:
Under normal conditions of storage and use, hazardous decomposition products should not be produced. Thermal decomposition produces: Corrosive vapors.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects.

Acute toxicity: Toxic if swallowed or inhaled. Fatal in contact with skin.

Product **ATE:** Oral: >50-300 mg/kg
Dermal: ~10 mg/kg
Inhalation: ~2 mg/L/4 h.

Ammonium fluoride - CAS 12125-01-8: Oral
– LD50 – Rat: 200-2000 mg/kg

Hydrogen fluoride - CAS 7664-39-3:
Oral – LD50 – Rat: 33 mg/kg
Inhalation – LC50 – Rat: 1,05 mg/L and 4970 ppm, 5 Minutes 2689 ppm, 15 Minutes

Skin corrosion/irritation: Causes severe skin burns.

Serious eye damage/irritation: Causes eye damage.

Respiratory or skin sensitization: Not classified.

Germ cell mutagenicity: Not classified.

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.

11.2 Information on other hazards:

Endocrine disrupting properties: The product/substance has no endocrine disrupting properties.

Additional information: Absorbed fluoride can cause metabolic imbalances as well as heartbeat problems, discomfort, dizziness, vomiting and seizures. May have skeletal effects and lead to fluorosis.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity: Not classified harmful to the environment.

Large amounts of the product may affect the acidity (pH-factor) in water with possible risk of harmful effects to aquatic organisms.

Product (BOE 7:1)
Daphnia – LC50 – 48 t.: 10-26 mg/l Algae
– LC50: 43-81 mg/l

12.2 Persistence and degradability:

The product solely consists of inorganic compounds which are not biodegradable.

12.3 Bioaccumulative potential:

Ammonium fluoride:
Fluoride accumulates in the endo- and exoskeleton of aquatic organisms.
Log Pow: -4,37.

12.4 Mobility in soil: The product contains substances that are water-soluble and can be spread in the aquatic environment.

12.5 Result of PBT and vPvB assessment:

This mixture does not meet the criteria for PBT or vPvB according to regulation 1907/2006 REACH, annex XIII.

12.6 Endocrine disrupting properties:

The product/substance has no endocrine disrupting properties.

12.7 Other adverse effects:

None known.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods:

Avoid release to the environment. This product is hazardous waste.
Dispose in a safe manner in accordance with local/national regulations. The coding of a waste stream is based on the application of the product by the consumer – end-user.

Option:

EWC-Code: 06 07 04* solutions and acids, for example contact acid.
16 05 07* discarded inorganic chemicals consisting of or containing dangerous substances.

Contaminated packing: Properly cleaned container is disposed of according to packaging material, otherwise:
15 01 10* packaging containing residues of or contaminated by dangerous substances.

SECTION 14. TRANSPORT INFORMATION

This product is classified as dangerous to transport.

	ADR/RID	**IMDG/IMO**
14.1 UN number	2922	2922
14.2 UN proper shipping name	CORROSIVE LIQUID, TOXIC, N.O.S. (Hydrofluoric acid; Ammonium fluoride)	CORROSIVE LIQUID, TOXIC, N.O.S. (Hydrofluoric acid; Ammonium fluoride)
14.3 Transport hazard class(es)	8 (6.1)	8 (6.1)
14.4 Packing group	II	II
14.5 Environmental hazards - MP	No F-A, S-B	NO F-A, S-B
Other informations	LQ: 1 L. Tunnel: E	LQ: 1 L. Tunnel: E

14.6 Special precautions for user:

Not relevant.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:

Not relevant.

SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Pressure Equipment (Amendment) Regulations 2011. Chemicals (Hazard Information and Packaging for Supply) Regulations 2009. Control of Substances Hazardous to Health Regulations 2002 (as amended). Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997. Reporting of Injuries,
Personal Protective Equipment Regulations 2002. Personal Protective Equipment at Work Regulations 1992. Hazardous Waste (England and Wales) Regulations 2005(as amended). EC regulation 1907/2006 (REACH) Directive 2000/532/EC. EU No. 2020/878. CLP No. 1272/2008. GB CLP.

Additional information: People under the age of 18 must not be exposed to this product. Council Directive 94/33/EC.

15.2 Chemical safety assessment:

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16. OTHER INFORMATION

Full text of H-phrases as mentioned in section 2/3:
H300 Fatal if swallowed.
H301 Toxic if swallowed.
H310 Fatal in contact with skin.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H330 Fatal if inhaled.
H331 Toxic if inhaled.

Additional information:
This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.