Safety Data Sheet

BOE 20:1

SECTION 1: Identification

1.1 GHS Product identifier

Product name	BOE 20:1

1.2 Other means of identification

Buffer Oxide Etch

1.3 Recommended use of the chemical and restrictions on use

Industrial, Manufacturing or Laboratory use

1.4 Supplier's details

Name	High Purity Products
Address	14546 N. Lombard Street Portland OR 97203 United States of America
Telephone	503-227-1616
email	help.desk@highpp.com

1.5 Emergency phone number

CHEMTREC: 1-800-424-9300

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

GHS classification in accordance with: OSHA (29 CFR 1910.1200)

- Acute toxicity, oral, Cat. 4
- Eye damage/irritation, Cat. 1
- Acute toxicity, dermal, Cat. 3
- Skin corrosion/irritation, Cat. 1A

2.2 GHS label elements, including precautionary statements

Pictogram

Signal word	**Danger**

Hazard statement(s)

H302	Harmful if swallowed
H311	Toxic in contact with skin
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage

Precautionary statement(s)

P260	Do not breathe vapors.
P264	Wash hands thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear eye protection/face protection/protective gloves/protective clothing.
P284	In case of inadequate ventilation wear respiratory protection.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor
P302+P352	IF ON SKIN: Wash and use calcium gluconate gel
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.
P361+P364	Take off immediately all contaminated clothing and wash it before reuse.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

SECTION 3: Composition/information on ingredients

3.1 Mixture

Components	CAS #	Percent (weight)
Ammonium fluoride	12125-01-8	35-40%
Hydrofluoric acid	7664-39-3	2-6%
Water	7732-18-5	65-70%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

General advice	Consult a physician. Show this safety data sheet to the doctor in attendance.
If inhaled	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact	Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. If available, apply calcium gluconate gel (2.5%) into burn area continuously for 15 minutes or until pain relief. Take patient to a physician or hospital.

In case of eye contact	Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention/advice.
If swallowed	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms/effects, acute and delayed
No data available.

4.3 Indication of immediate medical attention and special treatment needed, if necessary
For large exposures, systemic effects (hypocalcemia and hypomagnesia) may occur.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media
Not considered to be a fire hazard.

5.2 Specific hazards arising from the chemical
If involved in a fire, can emit toxic fumes and irritating and corrosive gases.

5.3 Special protective actions for fire-fighters
Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

6.2 Environmental precautions
Do not let product enter drains. Prevent further leakage or spillage if safe to do so. Do not contaminate the water.

6.3 Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Keep in tightly closed polyethylene containers. Store in a cool, dry place with adequate ventilation separated from other chemicals. Protect from physical damage. Storage facilities should be constructed for containment and neutralization of spills.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Hydrofluoric acid**:**
NIOSH REL TWA 3 ppm (2.5 mg/m3) C 6 ppm (5 mg/m3) [15-minute]

8.2 Appropriate engineering controls

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Pictograms

Eye/face protection
Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH.

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Respiratory protection
If the exposure limit is exceeded and engineering controls are not feasible, a full face piece respirator with an acid gas cartridge and particulate filter (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Liquid
Appearance	Clear Liquid
Color	Colorless
Odor	Slight smell
Odor threshold	No data available.
pH	4
Melting point/freezing point	No data available.
Boiling point or initial boiling point and boiling range	No data available.
Flash point	Not Flammable
Evaporation rate	No data available.
Flammability	No data available.
Vapor pressure	No data available.
Relative vapor density	No data available.
Density and/or relative density	1.113
Solubility	Miscible
Partition coefficient n-octanol/water (log value)	No data available.
Auto-ignition temperature	No data available.
Decomposition temperature	No data available.
Kinematic viscosity	No data available.

Particle characteristics
No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity
None under normal use conditions.

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
Reaction with strong acids to produce hazardous HF gas or Hydrofluoric Acid, with strong bases to yield Ammonia. Avoid strong oxidizing agents. Corrodes glass and metals. On heating to decomposition, could yield toxic fumes of fluorides, nitric oxides, and ammonia. On contact with metals, liberates hydrogen gas. Attacks glass and other silicon containing compounds. Reacts with silica to produce silicon tetrafluoride, a hazardous colorless gas.

10.4 Conditions to avoid
Glass & Metals

10.5 Incompatible materials
Oxidizing agents, strong acids, Moisture, bases, organic material, metals, glass, ceramics, aluminum, stainless steel, carbonates, cyanides, sulfides.
Reacts violently with acetic anhydride, ammonium hydroxide, arsenic trioxide, calcium oxide, potassium permanganate, sodium, sodium hydroxide, sulfuric acid

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions - Nitrogen oxides (NOx), Hydrogen Fluoride, Ammonia.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Ammonium Fluoride:
LD50 – oral – rat – 223 mg/kg
LD50 – dermal – rat – 2.00 mg/kg

Hydrofluoric Acid:
LC50 – inhalation – rat – 1,276 ppm/1H

Skin corrosion/irritation
Irritation, burns, dermatitis.

Serious eye damage/irritation
Irritation, burns

Respiratory or skin sensitization
Irritation, chills, difficulty breathing, coughing, fever.

Germ cell mutagenicity
May cause genetic effects based on animal data.

Carcinogenicity
No data available.

Reproductive toxicity
May cause fetal toxicity based on animal data.

STOT-single exposure
Liver, Kidneys, Bone.

STOT-repeated exposure
No data available.

Aspiration hazard
No data available.

SECTION 12: Ecological information

Toxicity
Ammonium Fluoride:
The LC50/96-hour values for fish are over 100 mg/l.
Hydrofluoric Acid:
Aquatic fish; EC50 (48 hours): 270 mg/l
This material is expected to be slightly toxic to aquatic life.

Persistence and degradability
Expected to be readily biodegradable.

Bioaccumulative potential
No data available.

SECTION 13: Disposal considerations

Disposal methods
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

DOT (US)
UN Number: UN2922
Class: 8 (6.1)
Packing Group: II
Proper Shipping Name: Corrosive liquids, toxic, n.o.s., (Hydrofluoric Acid, Ammonium Fluoride)
Reportable quantity (RQ): 260 lbs.

IMDG
UN Number: UN2922
Class: 8 (6.1)
Packing Group: II
Proper Shipping Name: Corrosive liquids, toxic, n.o.s., (Hydrofluoric Acid, Ammonium Fluoride)

IATA
UN Number: UN2922
Class: 8 (6.1)
Packing Group: II
Proper Shipping Name: Corrosive liquids, toxic, n.o.s., (Hydrofluoric Acid, Ammonium Fluoride)

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Massachusetts Right To Know Components
Chemical name: Ammonium fluoride

CAS number: 12125-01-8

New Jersey Right To Know Components
Common name: AMMONIUM FLUORIDE
CAS number: 12125-01-8

Pennsylvania Right To Know Components
Chemical name: Ammonium fluoride
CAS number: 12125-01-8

Canadian Domestic Substances List (DSL)
Chemical name: Ammonium fluoride ((NH4)F)
CAS: 12125-01-8

Massachusetts Right To Know Components
Chemical name: Hydrofluoric acid
CAS number: 7664-39-3

New Jersey Right To Know Components
Common name: HYDROGEN FLUORIDE
CAS number: 7664-39-3

Pennsylvania Right To Know Components
Chemical name: Hydrofluoric acid
CAS number: 7664-39-3

Canadian Domestic Substances List (DSL)
Chemical name: Hydrofluoric acid
CAS: 7664-39-3

EPCRA Section 302 (EHS) TPQ Extremely Hazardous Substances
Hydrofluoric Acid: 100 lbs

EPCRA Section 304 EHS RQ Reportable Quantities
Hydrofluoric Acid: 100 lbs

CERCLA RQ Hazardous Substances
Ammonium Fluoride: 100 lbs
Hydrofluoric Acid: 100 lbs

EPCRA Section 313 Toxic chemicals
Hydrofluoric Acid

HMIS Rating

BOE 20:1	
HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	

NFPA Rating

SECTION 16: Other information

16.1 Further information/disclaimer

High Purity Products provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. HIGH PURITY PRODUCTS MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, HIGH PURITY PRODUCTS WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.