Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name | **0.77% Buffered Oxide Etch**

Synonyms | 1% Buffered HF; Ammonium Fluoride Solution

Product Code | 70045

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

Relevant identified use(s) | Oxide Etching

1.3 Details of the supplier of the safety data sheet

Manufacturer | Air Liquide

2700 Post Oak Blvd.
Houston, TX 77056
United States
www.us.airliquide.com
sds@airliquide.com

Telephone (Technical) | 713-896-2896

Telephone (Technical) | 800-819-1704

1.4 Emergency telephone number

Manufacturer | 800-424-9300 - CHEMTREC

Manufacturer | +1 703-527-3887 - Outside United States

Section 2: Hazards Identification

EU/EEC

According to Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]
According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

CLP | Acute Toxicity Oral 3 - H301
Acute Toxicity Dermal 3 - H311
Acute Toxicity Inhalation 3 - H331

DSD/DPD | Toxic (T)

R23/24/25

2.2 Label Elements

CLP

DANGER

Hazard statements | H301 - Toxic if swallowed
H311 - Toxic in contact with skin
H331 - Toxic if inhaled

Precautionary statements

Prevention | P261 - Avoid breathing mist/vapours/spray.
P264 - Wash thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.

Response | P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P311 - Call a POISON CENTER or doctor/physician.
P321 - Specific treatment, see supplemental first aid information.
P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
P322 - Specific measures, see supplemental first aid information.
P361 - Remove/Take off immediately all contaminated clothing.
P363 - Wash contaminated clothing before reuse.
P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P330 - Rinse mouth.

Storage/Disposal | P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD

Risk phrases | R23/24/25 - Toxic by inhalation, in contact with skin and if swallowed.

Safety phrases | S27 - Take off immediately all contaminated clothing.
S36 - Wear suitable protective clothing.
S37 - Wear suitable gloves.
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

2.3 Other Hazards

CLP | According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD | According to European Directive 1999/45/EC this preparation is considered dangerous.

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012 | Eye Irritation 2A - H319
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335

2.2 Label elements

OSHA HCS 2012

DANGER

Hazard statements | Causes serious eye irritation - H319
May cause respiratory irritation - H335

Precautionary statements

Prevention	Avoid breathing mist/vapours/spray. - P261 Wash thoroughly after handling. - P264 Use only outdoors or in a well-ventilated area. - P271 Wear protective gloves/protective clothing/eye protection/face protection. - P280
Response	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340 Call a POISON CENTER or doctor/physician if you feel unwell. - P312 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. - P305+P351+P338 If eye irritation persists: Get medical advice/attention. - P337+P313
Storage/Disposal	Store in a well-ventilated place. Keep container tightly closed. - P403+P233 Store locked up. - P405 Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

2.3 Other hazards

OSHA HCS 2012 | Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to WHMIS

2.1 Classification of the substance or mixture

WHMIS | Toxic - D1B
Other Toxic Effects - D2A

2.2 Label elements

WHMIS

| Toxic - D1B
Other Toxic Effects - D2A |
|---|

2.3 Other hazards

WHMIS | In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

2.4 Other information

NFPA

Section 3 - Composition/Information on Ingredients

3.1 Substances

Material does not meet the criteria of a substance in accordance with Regulation (EC) No 1272/2008.

3.2 Mixtures

Composition			
Chemical Name	**Identifiers**	**%**	**Classifications According to Regulation/Directive**
Hydrofluoric acid	**CAS:**7664-39-3 **EC Number:**231-634-8 **EU Index:**009-002-00-6	< 1%	**EU DSD/DPD:** Annex I - T+ R26/27/28; C R35 **EU CLP:** Annex VI - Acute Tox. 2, H330; Acute Tox. 1, H310; Acute Tox. 2, H300; Skin Corr. 1A, H314 **OSHA HCS 2012:** Acute Tox. 3 (Inhl); Eye Dam. 1; Skin Corr. 1A
Ammonium fluoride	**CAS:**12125-01-8 **EC Number:**235-185-9 **EU Index:**009-006-00-8	21% TO 42%	**EU DSD/DPD:** Annex I - T; R23/24/25 **EU CLP:** Annex VI - Acute Tox. 3, H331; Acute Tox. 3, H311; Acute Tox. 3, H301 **OSHA HCS 2012:** Eye Irrit. 2A; STOT SE 3: Resp. Irrit.

See Section 16 for full text of H-statements and R-phrases.

Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation | Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention immediately.

Skin | In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Remove and isolate contaminated clothing. Get medical attention immediately.

Eye | Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye.

Ingestion | Obtain medical attention immediately if ingested.

4.2 Most important symptoms and effects, both acute and delayed

| Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician | All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media | LARGE FIRES: Dry chemical, CO2, alcohol-resistant foam or water spray.
SMALL FIRES: Dry chemical, CO2 or water spray.

Unsuitable Extinguishing Media | No data available

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards | Containers may explode when heated.
This solution can give off a small amount of heat when mixed with water.

Hazardous Combustion Products | When involved in a fire, this material may decompose and produce irritating vapors, and toxic gases (e.g., fluorine and other fluoride compounds, ammonia compounds).

5.3 Advice for firefighters

| Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is

possible.
Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
Wear positive pressure self-contained breathing apparatus (SCBA).
SMALL FIRES: Move containers from fire area if you can do it without risk.
Runoff from fire control may cause pollution.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions

Ventilate enclosed areas. Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Emergency Procedures

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Do not get water inside container.

6.2 Environmental precautions

Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
Dike to collect large liquid spills.
A vapor suppressing foam may be used to reduce vapors.
Use water spray to reduce vapors or divert vapor cloud drift.

6.4 Reference to other sections

Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling

Handle and open container with care. Use only with adequate ventilation. Wear appropriate personal protective equipment, avoid direct contact. Avoid breathing mist/vapors/spray. Avoid contact with skin, eyes, and clothing. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

7.2 Conditions for safe storage, including any incompatibilities

Storage

Keep container tightly closed. Store in a cool, dry, well-ventilated place. Keep away from incompatible materials. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged.

7.3 Specific end use(s)

Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	**ACGIH**	**Canada Ontario**	**Canada Quebec**	**China**	**China Highly Toxic Goods**
Hydrofluoric acid (7664-39-3)	Ceilings	2 ppm Ceiling (as F)	2 ppm Ceiling (as F)	3 ppm Ceiling (as F); 2.6 mg/m3 Ceiling (as F)	2 mg/m3 Ceiling [MAC] (as F)	2 mg/m3 Ceiling

	TWAs	0.5 ppm TWA (as F)	0.5 ppm TWA (as F)	Not established	Not established	Not established

Exposure Limits/Guidelines (Con't.)

	Result	France	Germany DFG	Germany TRGS	Ireland	Israel
Hydrofluoric acid (7664-39-3)	STELs	3 ppm STEL [VLCT] (restrictive limit); 2.5 mg/m3 STEL [VLCT] (restrictive limit)	Not established	Not established	3 ppm STEL (as F); 2.5 mg/m3 STEL (as F)	Not established
	TWAs	1.8 ppm TWA [VME] (restrictive limit); 1.5 mg/m3 TWA [VME] (restrictive limit)	Not established	1 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2); 0.83 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2)	1.8 ppm TWA (as F); 1.5 mg/m3 TWA (as F)	0.5 ppm TWA (as F)
	Ceilings	Not established	2 ppm Peak; 1.66 mg/m3 Peak	Not established	Not established	2 ppm Ceiling (as F)
	MAKs	Not established	1 ppm TWA MAK; 0.83 mg/m3 TWA MAK	Not established	Not established	Not established

Exposure Limits/Guidelines (Con't.)

	Result	Italy	NIOSH	OSHA	OSHA Vacated	Portugal
Hydrofluoric acid (7664-39-3)	Ceilings	Not established	6 ppm Ceiling (15 min); 5 mg/m3 Ceiling (15 min)	Not established	Not established	2 ppm Ceiling [VLE-CM] (as F)
	TWAs	1.8 ppm TWA; 1.5 mg/m3 TWA	3 ppm TWA; 2.5 mg/m3 TWA	3 ppm TWA (as F)	3 ppm TWA (as F)	0.5 ppm TWA [VLE-MP] (as F)
	STELs	3 ppm STEL; 2.5 mg/m3 STEL	Not established	Not established	6 ppm STEL (as F)	Not established

Exposure Limits/Guidelines (Con't.)

	Result	Spain	Sweden
Hydrofluoric acid (7664-39-3)	STELs	3 ppm STEL [VLA-EC]; 2.5 mg/m3 STEL [VLA-EC]	Not established
	TWAs	1.8 ppm TWA [VLA-ED] (indicative limit value); 1.5 mg/m3 TWA [VLA-ED] (indicative limit value)	Not established
	Biological Limit Values (BLV)	8 mg/L urine end of shift Fluorides (2,F,I)	Not established
	Ceilings	Not established	2 ppm CLV; 1.7 mg/m3 CLV

Exposure Control Notations

Ireland

•Hydrofluoric acid (7664-39-3): **Skin:** (Potential for cutaneous absorption)

Germany TRGS

•Hydrofluoric acid (7664-39-3): **Skin:** (skin notation)

Germany DFG

•Hydrofluoric acid (7664-39-3): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

8.2 Exposure controls

Engineering Measures/Controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.
Personal Protective Equipment	
Respiratory	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.
Eye/Face	Wear chemical splash safety goggles.
Skin/Body	Wear appropriate gloves.
Environmental Exposure Controls	Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

STEL = Short Term Exposure Limits are based on 15-minute exposures

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	Clear solution with an ammonia-like odor.
Color	Clear	Odor	Ammonia-like
Odor Threshold	0.042 ppm		
General Properties			
Boiling Point	> 100 C(> 212 F)	Melting Point	< 20 F(< -6.6667 C)
Decomposition Temperature	Data lacking	pH	4 to 6
Specific Gravity/Relative Density	1.11 Water=1	Water Solubility	Data lacking
Viscosity	Data lacking	Explosive Properties	Data lacking
Oxidizing Properties:	Data lacking		
Volatility			
Vapor Pressure	Data lacking	Vapor Density	< 1 Air=1
Evaporation Rate	< 1		
Flammability			
Flash Point	Data lacking	UEL	Data lacking
LEL	Data lacking	Autoignition	Data lacking
Flammability (solid, gas)	Data lacking		
Environmental			

Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

Note, crystallization of ammonium bifluoride can begin at <0C.

Section 10: Stability and Reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable

10.3 Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4 Conditions to avoid

Excess heat.

10.5 Incompatible materials

Contact of this product with most common metals (except aluminum) will produce flammable hydrogen gas. This product is not compatible with bases and can react violently. Hydrofluoric Acid can dissolve glass, ceramics, metals containing silica, natural rubber and leather. Hydrofluoric Acid also reacts with many other materials such as cyanogen fluoride, sodium (with aqueous acid), methanesulfonic acid, acetic anhydride, chlorosulfonic acid, ethylene diamine, ethylene imine, oleum, propylene oxide, vinyl acetate, sodium tetrafluoro silicate, and N-phenyl azo piperdine. Due to the presence of the Hydrofluoric Acid in this product, this solution must be considered incompatible with glass and other silica based compounds.

10.6 Hazardous decomposition products

Products of thermal decomposition include fluorides, and ammonia compounds.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Hydrofluoric acid (< 1%)	7664-39-3	**Acute Toxicity:** Inhalation-Rat LC50 • 1276 ppm 1 Hour(s); *Sense Organs and Special Senses:Eye*:**Lacrimation**; *Behavioral*:**Changes in motor activity (specific assay)**; *Gastrointestinal*:**Changes in structure or function of salivary glands**; **Irritation:** Eye-Human • 50 mg • Severe irritation; Skin-Rat • 50 % 3 Minute(s) • Severe irritation; **Mutagen:** DNA damage • Inhalation-Drosophila melanogaster • 1300 ppb 6 Week(s); Sex chromosome loss & nondisjunction • Inhalation-Drosophila melanogaster • 2900 ppb; Cytogenetic analysis • Inhalation-Rat • 1 mg/m³ 6 Hour (s) 24 Day(s)-Intermittent; **Reproductive:** Inhalation-Rat TCLo • 470 µg/m³ 4 Hour(s)(1-22D preg); *Reproductive Effects:Effects on Fertility*:**Pre-implantation mortality**; *Reproductive Effects:Effects on Fertility*:**Post-implantation mortality**

GHS Properties	Classification
Acute toxicity	**EU/CLP** • Acute Toxicity - Dermal 3; Acute Toxicity - Inhalation 3; Acute Toxicity - Oral 3 **OSHA HCS 2012** • Classification criteria not met
Aspiration Hazard	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met

Carcinogenicity	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Germ Cell Mutagenicity	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Skin corrosion/Irritation	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Skin sensitization	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
STOT-RE	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
STOT-SE	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
Toxicity for Reproduction	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Respiratory sensitization	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Serious eye damage/Irritation	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Eye Irritation 2A

Potential Health Effects

Inhalation

Acute (Immediate) | Toxic if inhaled. May cause respiratory irritation.

Chronic (Delayed) | No data available

Skin

Acute (Immediate) | Toxic in contact with skin.

Chronic (Delayed) | No data available

Eye

Acute (Immediate) | Causes serious eye irritation.

Chronic (Delayed) | No data available

Ingestion

Acute (Immediate) | Toxic if swallowed.

Chronic (Delayed) | No data available

Key to abbreviations

LC = Lethal Concentration

TC = Toxic Concentration

Section 12 - Ecological Information

12.1 Toxicity

| Material data lacking.

12.2 Persistence and degradability

| Material data lacking.

12.3 Bioaccumulative potential

Material data lacking.

12.4 Mobility in Soil

Material data lacking.

12.5 Results of PBT and vPvB assessment

No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects

No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	UN3287	Toxic liquid, inorganic, n.o.s. (Ammonium Fluoride, Hydrofluoric acid)	6.1	III	NDA
TDG	UN3287	TOXIC LIQUID, INORGANIC, N.O.S. (Ammonium Fluoride, Hydrofluoric acid)	6.1	III	NDA
IMO/IMDG	UN3287	TOXIC LIQUID, INORGANIC, N.O.S. (Ammonium Fluoride, Hydrofluoric acid)	6.1	III	NDA
IATA/ICAO	UN3287	Toxic liquid, inorganic, n.o.s. (Ammonium Fluoride, Hydrofluoric acid)	6.1	III	NDA

14.6 Special precautions for user None known.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not relevant.

14.8 Other information

DOT Ammonia Fluoride has a reportable quantity of 100 lbs (45.4 kg) as listed in Appendix A to 49 CFR 172.101. Hydrofluoric Acid has a reportable quantity of 100 lbs (45.4 kg) as listed in Appendix A to 49 CFR 172.101.

Section 15 - Regulatory Information

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

SARA Hazard Classifications Acute

State Right To Know				
Component	**CAS**	**MA**	**NJ**	**PA**
Ammonium fluoride	12125-01-8	Yes	Yes	Yes

Hydrofluoric acid	7664-39-3	Yes	Yes	Yes

Inventory						
Component	**CAS**	**Canada DSL**	**Canada NDSL**	**China**	**EU EINECS**	**EU ELNICS**
Ammonium fluoride	12125-01-8	Yes	No	Yes	Yes	No
Hydrofluoric acid	7664-39-3	Yes	No	Yes	Yes	No

Inventory (Con't.)		
Component	**CAS**	**TSCA**
Ammonium fluoride	12125-01-8	Yes
Hydrofluoric acid	7664-39-3	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Ammonium fluoride	12125-01-8	D1B, D2A
• Hydrofluoric acid	7664-39-3	D1A, D2A, E; D1B, D2A, E (40%, 50%, 70%, listed under Hydrofluoric acid)

Canada - WHMIS - Ingredient Disclosure List

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	1 %

Environment

Canada - CEPA - Priority Substances List

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

China

Environment

China - Ozone Depleting Substances - First Schedule

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

China - Ozone Depleting Substances - Second Schedule

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

China - Ozone Depleting Substances - Third Schedule

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

Other

China - Annex I & II - Controlled Chemicals Lists

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

China - Dangerous Goods List

• Ammonium fluoride	12125-01-8	(anhydrous or solution, with

• Hydrofluoric acid	7664-39-3	>60% Hydrofluoric acid; solution, with not >60% Hydrofluoric acid)

China - Export Control List - Part I Chemicals

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	

Europe

Other

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification

• Ammonium fluoride	12125-01-8	T; R23/24/25
• Hydrofluoric acid	7664-39-3	T+; R26/27/28 C; R35

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling

• Ammonium fluoride	12125-01-8	T R:23/24/25 S:(1/2)-26-45
• Hydrofluoric acid	7664-39-3	T+ C R:26/27/28-35 S:(1/2)-7/9-26-36/37/39-45

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases

• Ammonium fluoride	12125-01-8	S:(1/2)-26-45
• Hydrofluoric acid	7664-39-3	S:(1/2)-7/9-26-36/37/39-45

Germany

Environment

Germany - TA Luft - Types and Classes

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

Germany - Water Classification (VwVwS) - Annex 1

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

• Ammonium fluoride	12125-01-8	ID Number 291, hazard class 1 - low hazard to waters
• Hydrofluoric acid	7664-39-3	Not Listed

Germany - Water Classification (VwVwS) - Annex 3

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	ID Number 254, hazard class 2 - hazard to waters

Other

Germany - Specifically Regulated Chemicals in TRGS

• Ammonium fluoride	12125-01-8	Not Listed

• Hydrofluoric acid	7664-39-3	Not Listed

Portugal

Other

Portugal - Prohibited Substances

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

United Kingdom

Environment

United Kingdom - Pollution Inventory - Schedule 1 - Thresholds for Releases to Air

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

Other

United Kingdom - Workplace Exposure Limits (WELs) - Substances in Review

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

United Kingdom - List of Dangerous Substances in Water

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	1000 lb TQ; 1000 lb TQ (anhydrous)

U.S. - OSHA - Specifically Regulated Chemicals

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Ammonium fluoride	12125-01-8	100 lb final RQ; 45.4 kg final RQ
• Hydrofluoric acid	7664-39-3	100 lb final RQ; 45.4 kg final RQ

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	100 lb EPCRA RQ

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	100 lb TPQ

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	1.0 % de minimis concentration

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

U.S. - EPA - Designated Generic Categories - Aqueous Ammonia

• Ammonium fluoride	12125-01-8	NH3 Equiv. Wt. % = 45.98
• Hydrofluoric acid	7664-39-3	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	waste number U134

U.S. - RCRA (Resource Conservation & Recovery Act) - U Series Wastes - Acutely Toxic Wastes & Other Hazardous Characteristics

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	waste number U134 (Corrosive waste, Toxic waste)

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

• Ammonium fluoride	12125-01-8	
• Hydrofluoric acid	7664-39-3	

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

• Ammonium fluoride	12125-01-8	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Relevant Phrases (code & full text)

H300 - Fatal if swallowed
H314 - Causes severe skin burns and eye damage.
H330 - Fatal if inhaled

R26/27/28 - Very toxic by inhalation, in contact with skin and if swallowed.
R35 - Causes severe burns.

Last Revision Date 26/June/2013

Preparation Date 26/June/2013

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Key to abbreviations

NDA = No data available