

SAFETY DATA SHEET

AMMONIUM FLUORIDE SOLUTION

Product Trade Name:

Revision Date: 20-Apr-2015

Revision Number: 14

1. Identification

1.1. Product Identifier

Product Trade Name: AMMONIUM FLUORIDE SOLUTION
Synonyms: None
Chemical Family: Fluoride
Internal ID Code: HM000060

1.2 Recommended use and restrictions on use

Application: Additive
Uses Advised Against: No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier: Halliburton Energy Services
P.O. Box 1431
Duncan, Oklahoma 73536-0431
Emergency Telephone: (281) 575-5000

Prepared By: Chemical Stewardship
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number

Emergency Telephone Number: (281) 575-5000

2. Hazard(s) Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

Acute Oral Toxicity	Category 4 - H302
Acute Inhalation Toxicity - Vapors	Category 4 - H332
Serious Eye Damage / Eye Irritation	Category 1 - H318
Specific Target Organ Toxicity - (Single Exposure)	Category 3 - H335
Acute Aquatic Toxicity	Acute 2 - H401

2.2. Label Elements

Hazard Pictograms**Signal Word**

Danger

Hazard Statements

H302 - Harmful if swallowed
 H318 - Causes serious eye damage
 H332 - Harmful if inhaled
 H335 - May cause respiratory irritation
 H401 - Toxic to aquatic life

Precautionary Statements**Prevention**

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
 P264 - Wash face, hands and any exposed skin thoroughly after handling
 P270 - Do not eat, drink or smoke when using this product
 P271 - Use only outdoors or in a well-ventilated area
 P273 - Avoid release to the environment
 P280 - Wear eye protection/face protection

Response

P301+ P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
 P330 - Rinse mouth
 P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing
 P312 - Call a POISON CENTER or doctor/physician if you feel unwell
 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 doctor/physician

Storage

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

Disposal

P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

Contains Substances

Ammonium fluoride

CAS Number

12125-01-8

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Ammonium fluoride	12125-01-8	30 - 60%	Acute Tox. 3 (H301) Acute Tox. 3 (H331) Eye Corr. 1 (H318) STOT SE 3 (H335) Aquatic Acute 2 (H401)

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First-Aid Measures

4.1. Description of first aid measures

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Eyes	In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.
Skin	In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.
Ingestion	Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

4.2 Most important symptoms/effects, acute and delayed

Causes severe eye irritation which may damage tissue. May cause respiratory irritation. Harmful if swallowed. Harmful if inhaled.

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

Notes to Physician	Treat symptomatically.
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5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture

Special Exposure Hazards

Use water spray to cool fire exposed surfaces. Do not allow runoff to enter waterways. Decomposition in fire may produce toxic gases.

5.3 Special protective equipment and precautions for fire-fighters

Special Protective Equipment for Fire-Fighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation. Evacuate all persons from the area.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas. Consult local authorities.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. Handling and storage

7.1. Precautions for Safe Handling**Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities**Storage Information**

Store away from acids. Store in a cool well ventilated area. Keep container closed when not in use. Product has a shelf life of 24 months.

8. Exposure Controls/Personal Protection**8.1 Occupational Exposure Limits**

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Ammonium fluoride	12125-01-8	2.5 mg/m ³	2.5 mg/m ³

8.2 Appropriate engineering controls**Engineering Controls**

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

8.3 Individual protection measures, such as personal protective equipment**Respiratory Protection**

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

Ammonia respirator. Positive pressure self-contained breathing apparatus in enclosed areas.

Hand Protection

Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Butyl rubber gloves. (>= 0.7 mm thickness) This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.

Skin Protection

Rubber apron.

Eye Protection

Chemical goggles; also wear a face shield if splashing hazard exists.

Other Precautions

Eyewash fountains and safety showers must be easily accessible.

9. Physical and Chemical Properties**9.1. Information on basic physical and chemical properties**

Physical State:	Liquid	Color:	Colorless to slight yellow
Odor:	Odorless	Odor Threshold:	No information available

Property	Values
Remarks/ - Method	
pH:	7-7.8

Freezing Point/Range	°C / -9 °F
Melting Point/Range	No data available
Boiling Point/Range	82 - 116 °C /
Flash Point	No data available
Flammability (solid, gas)	No data available
upper flammability limit	No data available
lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.11
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

Molecular Weight	37
VOC Content (%)	No data available

10. Stability and Reactivity**10.1. Reactivity**

Not expected to be reactive.

10.2. Chemical Stability

Stable

10.3. Possibility of Hazardous Reactions

Will Not Occur

10.4. Conditions to Avoid

Keep away from heat, sparks and flame.

10.5. Incompatible Materials

Strong acids.

10.6. Hazardous Decomposition Products

Ammonia. Hydrogen fluoride. Ammonium bifluoride.

11. Toxicological Information**11.1 Information on likely routes of exposure**

Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics**Acute Toxicity**

Inhalation	Harmful if inhaled. May cause respiratory irritation.
Eye Contact	Causes severe eye irritation which may damage tissue.
Skin Contact	May cause skin irritation.
Ingestion	Toxic if swallowed. May cause damage to bones and teeth.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ammonium fluoride	12125-01-8	> 200 mg/kg < 2000 mg/kg (Rat)	No data available	1 mg/L (Rat, 4h, dust) (similar substance)

Substances	CAS Number	Skin corrosion/irritation
Ammonium fluoride	12125-01-8	May cause mild skin irritation. (Rabbit) (similar substances)

Substances	CAS Number	Eye damage/irritation
Ammonium fluoride	12125-01-8	May cause mild eye irritation. (Rabbit) (similar substances)

Substances	CAS Number	Skin Sensitization
Ammonium fluoride	12125-01-8	Did not cause sensitization on laboratory animals (guinea pig) (similar substances)

Substances	CAS Number	Respiratory Sensitization
Ammonium fluoride	12125-01-8	No information available

Substances	CAS Number	Mutagenic Effects
Ammonium fluoride	12125-01-8	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects. (similar substances)

Substances	CAS Number	Carcinogenic Effects
Ammonium fluoride	12125-01-8	Did not show carcinogenic effects in animal experiments (similar substances)

Substances	CAS Number	Reproductive toxicity
Ammonium fluoride	12125-01-8	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. (similar substances)

Substances	CAS Number	STOT - single exposure
Ammonium fluoride	12125-01-8	No information available

Substances	CAS Number	STOT - repeated exposure
Ammonium fluoride	12125-01-8	No data of sufficient quality are available.

Substances	CAS Number	Aspiration hazard
Ammonium fluoride	12125-01-8	Not applicable

12. Ecological Information

12.1. Toxicity

Ecotoxicity Effects

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates

Ammonium fluoride	12125-01-8	EC50(10d): 90.4 mg/L (Navicula salinarum) (similar substance)	LC50: 364.0 mg/l (Pimephales promelas) LC5-(96h): 209 mg/L (Cyprinus carpio) (similar substance)	EC50(30m): 1300 mg/L (activated sludge, domestic) (similar substance)	EC50(48h): 2.94 mg/L (Daphnia magna) (similar substance) NOEC(21d): 3.7 mg/L (Daphnia magna) (similar substance)
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12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Ammonium fluoride	12125-01-8	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Ammonium fluoride	12125-01-8	No information available

12.4. Mobility in soil

No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations**13.1. Waste treatment methods****Disposal Method**

Disposal should be made in accordance with federal, state, and local regulations.

Contaminated Packaging

Follow all applicable national or local regulations.

14. Transport Information**US DOT**

UN Number: UN3287
UN Proper Shipping Name: Toxic Liquid, Inorganic, N.O.S. (Contains Ammonium Fluoride)
Transport Hazard Class(es): 6.1
Packing Group: III
Environmental Hazards: Not applicable
Reportable Quantity: RQ (Ammonium Fluoride - 45.4 kg.)
NAERG: NAERG 151

US DOT Bulk

DOT (Bulk) Not applicable

Canadian TDG

UN Number: UN3287
UN Proper Shipping Name: Toxic Liquid, Inorganic, N.O.S. (Contains Ammonium Fluoride)
Transport Hazard Class(es): 6.1
Packing Group: III
Environmental Hazards: Not applicable

IMDG/IMO

UN Number: UN3287
UN Proper Shipping Name: Toxic Liquid, Inorganic, N.O.S. (Contains Ammonium Fluoride)
Transport Hazard Class(es): 6.1
Packing Group: III

Environmental Hazards:	Not applicable
Reportable Quantity:	RQ (Ammonium Fluoride - 45.4 kg.)
EMS:	EmS F-A, S-A

IATA/ICAO

UN Number:	UN3287
UN Proper Shipping Name:	Toxic Liquid, Inorganic, N.O.S. (Contains Ammonium Fluoride)
Transport Hazard Class(es):	6.1
Packing Group:	III
Environmental Hazards:	Not applicable
Reportable Quantity:	RQ (Ammonium Fluoride - 45.4 kg.)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

Special Precautions for User: None

15. Regulatory Information

US Regulations

US TSCA Inventory	All components listed on inventory or are exempt.
EPA SARA Title III Extremely Hazardous Substances	Not applicable
EPA SARA (311,312) Hazard Class	Acute Health Hazard
EPA SARA (313) Chemicals	This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).
EPA CERCLA/Superfund Reportable Spill Quantity	EPA Reportable Spill Quantity is 33 Gallons based on Ammonium fluoride (CAS: 12125-01-8).
EPA RCRA Hazardous Waste Classification	If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.
California Proposition 65	All components listed do not apply to the California Proposition 65 Regulation.
MA Right-to-Know Law	One or more components listed.
NJ Right-to-Know Law	One or more components listed.
PA Right-to-Know Law	One or more components listed.

Canadian Regulations

Canadian DSL Inventory	All components listed on inventory or are exempt.
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16. Other information

Preparation Information

Prepared By	Chemical Stewardship Telephone: 1-580-251-4335 e-mail: fdunexchem@halliburton.com
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Revision Date: 20-Apr-2015

Reason for Revision SDS sections updated 2 3 4 6 7 8 10 11 12 16

Additional information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

Key or legend to abbreviations and acronyms

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

ErC50 – Effective Concentration growth rate 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NIOSH – National Institute for Occupational Safety and Health

NTP – National Toxicology Program

OEL – Occupational Exposure Limit

PEL – Permissible Exposure Limit

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

UN – United Nations

h - hour

mg/m³ - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

w/w - weight/weight

d - day

Key literature references and sources for data

www.ChemADVISOR.com/

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

End of Safety Data Sheet