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**Precautionary statements - prevention**

Do not breathe dust/fume/gas/mist/vapors/spray.  
Wear protective gloves/eye protection/face protection.

**Precautionary statements - response**

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.  
Continue rinsing.  
Specific treatment (see on this label).

**Precautionary statements - disposal**

Dispose of contents/container to industrial combustion plant.

**Hazardous ingredients for labelling**

ammonium hydrogendifluoride

**2.3 Other hazards**

There is no additional information.

**SECTION 3: Composition/information on ingredients****3.1 Substances**

not relevant (mixture)

**3.2 Mixtures****3.2.1**

Name of substance	Identifier	Wt%
Ammonium hydrogendifluoride	CAS No 1341-49-7	5 - < 15

For full text of abbreviations: see SECTION 16.

**SECTION 4: First-aid measures****4.1 Description of first-aid measures****General notes**

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

**Following inhalation**

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician. Provide fresh air.

**Following skin contact**

Brush off loose particles from skin. - Rinse skin with water/shower.

**Following eye contact**

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

**Following ingestion**

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.

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- 4.2 Most important symptoms and effects, both acute and delayed**  
Symptoms and effects are not known to date.
- 4.3 Indication of any immediate medical attention and special treatment needed**  
none

**SECTION 5: Fire-fighting measures**

- 5.1 Extinguishing media**
- Suitable extinguishing media**  
water spray, alcohol resistant foam, BC-powder, carbon dioxide (CO<sub>2</sub>)
- Unsuitable extinguishing media**  
water jet
- 5.2 Special hazards arising from the substance or mixture**
- Hazardous combustion products**  
nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>)
- 5.3 Advice for firefighters**  
In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

**SECTION 6: Accidental release measures**

- 6.1 Personal precautions, protective equipment and emergency procedures**
- For non-emergency personnel**  
Remove persons to safety.
- For emergency responders**  
Wear breathing apparatus if exposed to vapors/dust/aerosols/gases.
- 6.2 Environmental precautions**  
Keep away from drains, surface and ground water. Retain contaminated washing water and dispose it.
- 6.3 Methods and material for containment and cleaning up**
- Advices on how to contain a spill**  
Covering of drains.
- Advices on how to clean up a spill**  
Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage (sawdust, kieselgur (diatomite), sand, universalbinder).
- Appropriate containment techniques**  
Use of adsorbent materials.
- Other information relating to spills and releases**  
Place in appropriate containers for disposal. Ventilate affected area.
- 6.4 Reference to other sections**  
Hazardous combustion products: see section 5. Personal precautions: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

**SECTION 7: Handling and storage****7.1 Precautions for safe handling****Recommendations****Measures to prevent fire as well as aerosol and dust generation**

Use local and general ventilation. Take precautionary measures against static discharge. Use only in well-ventilated areas.

**Advice on general occupational hygiene**

Wash hands after use. Do not to eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

**7.2 Conditions for safe storage, including any incompatibilities****Managing of associated risks****Incompatible substances or mixtures**

Observe compatible storage of chemicals.

**Consideration of other advice****Ventilation requirements**

Use local and general ventilation.

**Packaging compatibilities**

Only packagings which are approved (e.g. acc. to DOT) may be used.

**7.3 Specific end use(s)**

See section 16 for a general overview.

**SECTION 8: Exposure controls/personal protection****8.1 Control parameters****National limit values****Occupational exposure limit values (Workplace Exposure Limits)****Relevant DNELs/DMELs/PNECs and other threshold levels**

No data available.

**8.2 Exposure controls****Appropriate engineering controls**

General ventilation.

**Individual protection measures (personal protective equipment)****Eye/face protection**

Wear eye/face protection.

**Skin protection****• hand protection**

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

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**• other protection measures**

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

**Respiratory protection**

Particulate filter device (EN 143).

**Environmental exposure controls**

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

**SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties****Appearance**

Physical state	liquid
Color	different
Odor	characteristic

**Other physical and chemical parameters**

pH (value)	3.5
Melting point/freezing point	125.6 °C
Initial boiling point and boiling range	not determined
Flash point	not determined
Evaporation rate	not determined
Flammability (solid, gas)	not relevant(fluid)
Explosive limits	not determined
Vapor pressure	1.08 Pa at 20 °C
Density	not determined
Relative density	not determined
Solubility(ies)	not determined
Auto-ignition temperature	not determined
Viscosity	not determined
Explosive properties	none
Oxidizing properties	none

**SECTION 10: Stability and reactivity****10.1 Reactivity**

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials".

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**10.2 Chemical stability**

See below "Conditions to avoid".

**10.3 Possibility of hazardous reactions**

No known hazardous reactions.

**10.4 Conditions to avoid**

There are no specific conditions known which have to be avoided.

**Physical stresses which might result in a hazardous situation and have to be avoided**

strong shocks

**10.5 Incompatible materials**

There is no additional information.

**10.6 Hazardous decomposition products**

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

**SECTION 11: Toxicological information****11.1 Information on toxicological effects**

Test data are not available for the complete mixture.

**Classification procedure**

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

**Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)****Acute toxicity**

Harmful if swallowed.

**Acute toxicity estimate (ATE)**

oral 1,083

**Acute toxicity of components of the mixture**

Name of substance	CAS No	Exposure route	ATE
ammonium hydrogendifluoride	1341-49-7	oral	130

**Skin corrosion/irritation**

Causes severe skin burns and eye damage.

**Serious eye damage/eye irritation**

Causes serious eye damage.

**Respiratory or skin sensitization**

Shall not be classified as a respiratory or skin sensitizer.

**Summary of evaluation of the CMR properties**

Shall not be classified as germ cell mutagenic, carcinogenic nor as a reproductive toxicant.

**Carcinogenicity**

- National Toxicology Program (United States): none of the ingredients are listed
- IARC Monographs none of the ingredients are listed

**Specific target organ toxicity (STOT)**

Shall not be classified as a specific target organ toxicant.

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**Aspiration hazard**

Shall not be classified as presenting an aspiration hazard.

**SECTION 12: Ecological information****12.1 Toxicity**

Shall not be classified as hazardous to the aquatic environment.

**Aquatic toxicity (acute)****Aquatic toxicity (acute) of components of the mixture**

Name of substance	CAS No	Endpoint	Value	Species	Exposure time
ammonium hydrogendi-fluoride	1341-49-7	LC50	421.4 mg/l	fish	96 hours

**12.2 Persistence and degradability**

Data are not available.

**12.3 Bioaccumulative potential**

Data are not available.

**12.4 Mobility in soil**

Data are not available.

**12.5 Results of PBT and vPvB assessment**

Data are not available.

**12.6 Other adverse effects**

Data are not available.

**SECTION 13: Disposal considerations****13.1 Waste treatment methods****Sewage disposal-relevant information**

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

**Waste treatment of containers/packages**

Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

**Remarks**


Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

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**SECTION 14: Transport information**

<b>14.1</b>	UN number	<b>2817</b>
<b>14.2</b>	UN proper shipping name	<b>AMMONIUM HYDROGENDIFLUORIDE SOLUTIONS</b>
	<b>Hazardous constituents</b>	ammonium hydrogendifluoride
<b>14.3</b>	Transport hazardclass(es)	
	Class	8 (corrosive substances)
	Subsidiary risk(s)	acute toxicity
<b>14.4</b>	Packing group	III (substance presenting low danger)
<b>14.5</b>	Environmental hazards	none (non-environmentally hazardous acc. to the dangerous goods regulations)
<b>14.6</b>	Special precautions for user	
	There is no additional information.	
<b>14.7</b>	Transport in bulk according to Annex II of MARPOL and the IBC Code	
	The cargo is not intended to be carried in bulk.	

**Information for each of the UN Model Regulations****• Transport of dangerous goods by road or rail (49 CFR US DOT)**



Index number	2817
Proper shipping name	Ammonium hydrogendifluoride solutions
Class	8
Packing group	III
Danger label(s)	8+6.1
	
Special provisions (SP)	IB3, N3, T4, TP1, TP12, TP13
ERG No	154

**• International Maritime Dangerous Goods Code (IMDG)**

UN number	2817
Proper shipping name	AMMONIUM HYDROGENDIFLUORIDE SOLUTIONS
Class	8
Subsidiary risk(s)	6.1
Packing group	III
Danger label(s)	8+6.1
	
Special provisions (SP)	223
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
EmS	F-A, S-B



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Stowage category	B
Segregation group	1 - Acids 2 - Ammonium compounds
<b>• International Civil Aviation Organization (ICAO-IATA/DGR)</b>	
UN number	2817
Proper shipping name	Ammonium hydrogendifluoride solutions
Class	8
Subsidiary risk(s)	6.1
Packing group	III
Danger label(s)	8+6.1
 	
Special provisions (SP)	A3
Excepted quantities (EQ)	E1
Limited quantities (LQ)	1 L

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations specific for the product in question****National regulations (United States)****Industry or sector specific available guidance(s)****NPCA-HMIS® III**

Hazardous Materials Identification System (American Coatings Association)

Category	Rating	Description
Chronic	/	None.
Health	3	Major injury likely unless prompt action is taken and medical treatment is given.
Flammability	1	Material that must be preheated before ignition can occur.
Physical hazard	0	Material that is normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosive.
Personal protective equipment	-	

**NFPA® 704**

National Fire Protection Association: Standard System for the Identification of the Hazards of Materials for Emergency Response (United States)

Category	Degree of hazard	Description
Flammability	1	Material that must be preheated before ignition can occur.
Health	3	Material that, under emergency conditions, can cause serious or permanent injury.
Instability	0	Material that is normally stable, even under fire conditions.
Special hazard		

**Relevant European Union (EU) safety, health and environmental provisions****Classification according to GHS (1272/2008/EC, CLP)****Hazard class**

acute toxicity (oral)

skin corrosion/irritation

serious eyedamage/eye irritation

**Category Hazard class and category**

4 (Acute Tox. 4)

1B (Skin Corr. 1B)

1 (Eye Dam. 1)

**SECTION 16: Other information, including date of preparation or last revision****Abbreviations and acronyms**

Abbr.	Descriptions of used abbreviations
49 CFR US DOT	49 CFR § 40 U.S. Department of Transportation
ATE	Acute Toxicity Estimate
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CLP	Regulation (EC) No 1272/2008 on classification, labeling and packaging of substances and mixtures
CMR	Carcinogenic, Mutagenic or toxic for Reproduction
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
DOT	Department of Transportation (USA)
EmS	Emergency Schedule
ERG No	Emergency Response Guidebook - Number
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
HMIS	Hazardous Materials Identification System
IARC Mono-graphs	IARC Monographs on the Evaluation of Carcinogenic Risks to Humans
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
NFPA® 704	National Fire Protection Association: Standard System for the Identification of the Hazards of Materials for Emergency Response (United States)
NPCA-HMIS® III	National Paint and Coatings Association: Hazardous Materials Identification System - HMIS® III, Third Edition
OSHA	Occupational Safety and Health Administration (United States)
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
vPvB	very Persistent and very Bioaccumulative

**Key literature references and sources for data**

- OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200
- 49 CFR § 172.101 Hazardous Materials Table (DOT)

**Classification procedure**

Physical and chemical properties: The classification is based on tested mixture.

Health hazards/Environmental hazards: The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

**List of relevant phrases (code and full text as stated in chapter 2 and 3)**

Code	Text
H302	harmful if swallowed
H314	causes severe skin burns and eye damage
H318	causes serious eye damage

**Disclaimer**

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.