
1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name AMMONIUM BIFLUORIDE
Synonyms AMMONIUM ACID FLUORIDE • AMMONIUM HYDROGEN FLUORIDE SOLID

1.2 Uses and uses advised against

Uses LABORATORY APPLICATIONS • LABORATORY REAGENT • MANUFACTURING

1.3 Details of the supplier of the product

Supplier name DUBOIS CHEMICALS AUSTRALIA PTY LIMITED
Address 305 Frankston Dandenong Rd, Dandenong South, VIC, 3175, AUSTRALIA
Telephone (03) 9768 3860
Email sales@duboischchemicals.com.au
Website <http://duboischchemicals.com.au/>

1.4 Emergency telephone numbers

Emergency 13 11 26 (Poisons Information Centre)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Corrosive to Metals: Category 1

Health Hazards

Acute Toxicity: Oral: Category 3
Skin Corrosion/Irritation: Category 1B
Serious Eye Damage / Eye Irritation: Category 1
Acute Toxicity: Inhalation: Category 4

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word DANGER

Pictograms**Hazard statements**

H290 May be corrosive to metals.
H301 Toxic if swallowed.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H332 Harmful if inhaled.

PRODUCT NAME AMMONIUM BIFLUORIDE**Prevention statements**

P234	Keep only in original packaging.
P260	Do not breathe dust/fume/gas/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.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

Response statements

P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
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.
P310	Immediately call a POISON CENTRE or doctor/physician.
P321	Specific treatment is advised - see first aid instructions.
P363	Wash contaminated clothing before reuse.
P390	Absorb spillage to prevent material damage.

Storage statements

P405	Store locked up.
P406	Store in corrosive resistant container with a resistant inner liner.

Disposal statements

P501	Dispose of contents/container in accordance with relevant regulations.
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2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
AMMONIUM HYDROGEN DIFLUORIDE (AMMONIUM BIFLUORIDE)	1341-49-7	215-676-4	>98%
AMMONIUM FLUORIDE	12125-01-8	235-185-9	<=2%
AMMONIUM HEXAFLUOROSILICATE	16919-19-0	240-968-3	<0.05%
HYDROGEN FLUORIDE	7664-39-3	231-634-8	<0.01%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	Keep patient calm. Immediately hold eyelids apart and irrigate entire eyeball with gentle flow of water for 15 to 20 minutes. Urgently seek eye specialist attention while continuing irrigation. Calcium gluconate gel may be applied to eyes if medical attention is delayed, or use a dedicated first aid device such as HEXAFLUORINE ® as per supplier's instructions.
Inhalation	Quickly remove from exposure. Remove contaminated clothing, check there is no obstruction to the airway if breathing is weak or has ceased and give artificial respiration, preferably using an oxygen resuscitator. Administer 2.5% calcium gluconate via nebuliser if available. In all cases summon ambulance and transport to hospital for further observation.
Skin	Flush affected area with copious quantities of water. Use an emergency shower for large areas. Remove affected clothing as quickly as possible. Decontaminate with saline or water. Apply calcium gluconate 2.5% gel to contaminated skin, repeating every 15 minutes until pain ceases. If calcium gluconate gel is not available, an extemporaneous gel can be prepared by adding 10 mL of calcium gluconate injection 10% to 30 mL of sterile surgical lubricant. Alternatively, use a dedicated first aid device such as HEXAFLUORINE ® Autonomous Portable Shower as per supplier's instructions. Urgently transport to hospital and recommend admission.
Ingestion	For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.
First aid facilities	Emergency shower and eye wash basin. Calcium gluconate gel or injection should also be available and/or dedicated first aid devices such as the HEXAFLUORINE ® range. Rescue personnel should use self contained breathing apparatus and a full chemical suit or full cover overalls. Air-Viva™ or Oxy-Viva™. Water or sterile saline solution for irrigation.

4.2 Most important symptoms and effects, both acute and delayed

Exposure to high concentrations may result in immediate, severe, burning pain and whitish discoloration proceeding to blister formation. Exposure to lower concentrations may result in pain, redness, swelling and blistering - symptoms may be delayed. Eye exposure may result in severe burns with corneal destruction or opacification. If left untreated, blindness may result. Acute symptoms of inhalation may include coughing, choking, chest tightness, chills, fever and cyanosis. Ingestion may result in severe burns to the mouth, esophagus and stomach. Systemic fluoride toxicity may result from ingestion, inhalation, or extensive dermal burns; hypocalcaemia, hypomagnesemia, hyperkalaemia (potassium), pulmonary oedema, metabolic acidosis, ventricular arrhythmias and death may occur.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Water fog. Prevent contamination of drains and waterways.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases (nitrogen oxides, fluorides and hydrogen fluoride) when heated to decomposition.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

2X
2 Fine Water Spray.
X Wear liquid-tight chemical protective clothing and breathing apparatus. Contain spill and run-off.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in plastic containers (high density polypropylene) in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills.

7.3 Specific end uses

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Fluorides (as F)	SWA [AUS]	--	2.5	--	--
Fluorides, as F	SWA [AUS]	--	2.5	--	--
Hydrogen fluoride	SWA [AUS]	3 (Peak)	2.6 (Peak)	--	--
Hydrogen fluoride (as F)	SWA [Proposed]	2 (Peak)	1.6 (Peak)	--	--

Biological limits

Ingredient	Determinant	Sampling Time	BEI
AMMONIUM FLUORIDE	Fluoride in urine	Prior to shift	2 mg/L
	Fluoride in urine	End of shift	3 mg/L
AMMONIUM HYDROGEN DIFLUORIDE (AMMONIUM BIFLUORIDE)	Fluoride in urine	Prior to shift	2 mg/L
	Fluoride in urine	End of shift	3 mg/L
HYDROGEN FLUORIDE	Fluoride in urine	Prior to shift	2 mg/L
	Fluoride in urine	End of shift	3 mg/L

Reference: ACGIH Biological Exposure Indices

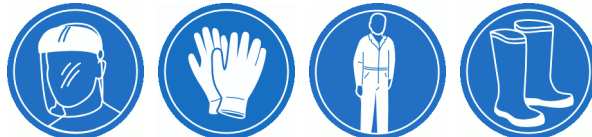
8.2 Exposure controls

Engineering controls

Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

PPE

- Eye / Face** Wear a faceshield.
- Hands** Wear butyl or viton® gloves.
- Body** Wear rubber boots and impervious coveralls.
- Respiratory** Where an inhalation risk exists, wear a Full-face Type B-Class P1 (Inorganic and Acid Gas and Particulate) respirator. With prolonged use, wear an Air-line respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE CRYSTALLINE SOLID
Odour	CHARACTERISTIC ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	239°C
Melting point	125°C
Evaporation rate	NOT AVAILABLE
pH	3.5 (5% solution)
Vapour density	NOT AVAILABLE
Relative density	1.5
Solubility (water)	SOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE

PRODUCT NAME AMMONIUM BIFLUORIDE

9.1 Information on basic physical and chemical properties

Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), alkalis (e.g. sodium hydroxide) and metals. Will evolve highly toxic/corrosive hydrofluoric acid in contact with water.

10.6 Hazardous decomposition products

May evolve toxic gases when strongly heated.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity Toxic if swallowed. Harmful if inhaled. Ingestion may result in burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
AMMONIUM HYDROGEN DIFLUORIDE (AMMONIUM BIFLUORIDE)	130 mg/kg (rat)	--	--
AMMONIUM HEXAFLUOROSILICATE	70 mg/kg (mouse)	--	--
HYDROGEN FLUORIDE	--	--	1276 ppm/1 hour (rat)

Skin Contact may result in burning sensation and deep burns with tissue damage.

Eye Contact may result in irritation, lacrimation, pain, redness, corneal burns and possible serious eye damage.

Sensitisation Not classified as causing skin or respiratory sensitisation.

Mutagenicity Not classified as a mutagen.

Carcinogenicity Not classified as a carcinogen.

Reproductive Not classified as a reproductive toxin.

STOT - single exposure Over exposure may result in mucous membrane irritation of the respiratory tract, coughing, bronchitis, ulceration, bloody nose, lung tissue damage, chemical pneumonitis, and pulmonary oedema.

STOT - repeated exposure Repeated exposure may result in discolouration of teeth; as well as lung, kidney, liver, ligament and bone (osteosclerosis, skeletal fluorosis) damage.

Aspiration Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

12.2 Persistence and degradability

No information provided.

PRODUCT NAME AMMONIUM BIFLUORIDE

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

WATER: If ammonium fluoride is released to water, the fluoride component may be toxic to fish and aquatic plants above 1.5 ppm. ATMOSPHERE: Dust/fumes are toxic, however dust will be removed by gravity and washout by rain. SOIL: Ammonium compounds will biodegrade and not accumulate in the food chain. Soil binds fluorides if the pH is high or if there are high calcium levels.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal For small amounts (as determined by risk assessment or similar): Wearing the protective equipment detailed above, neutralise to pH 6-8 by SLOW addition to a saturated sodium bicarbonate solution or similar basic solution. Dilute with excess water and flush to drain. Waste disposal should only be undertaken in a well ventilated area. For larger amounts: Dispose in accordance with local regulations.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE



	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	1727	1727	1727
14.2 Proper Shipping Name	AMMONIUM HYDROGENDIFLUORIDE, SOLID	AMMONIUM HYDROGENDIFLUORIDE, SOLID	AMMONIUM HYDROGENDIFLUORIDE, SOLID
14.3 Transport hazard class	8	8	8
14.4 Packing Group	II	II	II

14.5 Environmental hazards

Not a Marine Pollutant.

14.6 Special precautions for user

Hazchem code	2X
GTEPG	8C2
EmS	F-A, S-B

15. REGULATORY INFORMATION

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

Poison schedule Classified as a Schedule 7 (S7) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

PRODUCT NAME AMMONIUM BIFLUORIDE

Additional information

ACIDS: When mixing acids with water (diluting), caution must be taken as heat will be generated which causes violent spattering. Always add a small volume of acid to a large volume of water, NEVER the reverse.

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: form of product; frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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