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**Safety Data Sheet****1. Chemical product and company identification****Product name** : Ammonium fluoride**SDS code** : E2-05**Company/undertaking identification** :

HAYASHI PURE CHEMICAL IND.,LTD.

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URL : <https://www.hpc-j.co.jp/>**Emergency number** : 06-6910-7305**Recommended use** : For research and experimental use only.**Restrictions on use** : Do not use on a human body or for animal medicines, foods, household products, cosmetics, etc.**2. Hazards identification****GHS classification**

Physical hazards	Explosives	No classification	
	Flammable gases	No classification	
	Aerosol	No classification	
	Oxidizing gases	No classification	
	Gases under pressure	No classification	
	Flammable liquids	No classification	
	Flammable solids	No classification	
	Self-reactive substances and mixtures	No classification	
	Pyrophoric liquids	No classification	
	Pyrophoric solids	No classification	
	Self-heating substances and mixtures	No classification	
	Substances and mixtures which in contact with water emit flammable gases	No classification	
	Oxidizing liquids	No classification	
	Oxidizing solids	classification not possible	
	Organic peroxides	No classification	
	Corrosive to metals	classification not possible	
	Desensitized explosives	classification not possible	
	Health hazards	Acute toxicity (oral)	classification not possible
		Acute toxicity (dermal)	classification not possible
Acute toxicity (inhalation:gas)		No classification	
Acute toxicity (inhalation:vapors)		No classification	
Acute toxicity (inhalation:dust/mist)		classification not possible	
Skin corrosion/irritation		classification not possible	
Serious eye damage/eye irritation		Category 2	
Respiratory sensitization		classification not possible	
Skin sensitization		classification not possible	
Germ cell mutagenicity		classification not possible	
Carcinogenicity	classification not possible		
Reproductive toxicity	classification not possible		
Specific target organ toxicity (single exposure)	classification not possible		

Environmental hazards	Specific target organ toxicity (repeated exposure)	Category 1 (bone)
	Aspiration hazard	classification not possible
	Hazardous to the aquatic environment, short-term (acute)	Category 3
	Hazardous to the aquatic environment, long-term (chronic)	Category 3
	Hazardous to the ozone layer	classification not possible

Hazard pictograms (GHS JP)



GHS07



GHS08

Signal word (GHS JP)	: Danger
Hazard statements (GHS JP)	: Causes serious eye irritation (H319) Causes damage to organs (bone) through prolonged or repeated exposure (H372) Harmful to aquatic life with long lasting effects (H412)
Precautionary statements (GHS JP)	
Prevention	: Do not breathe dust/fume/gas/mist/vapors/spray. (P260) Wash hands, forearms and face thoroughly after handling. (P264) Do not eat, drink or smoke when using this product. (P270) Avoid release to the environment. (P273) Wear protective gloves/protective clothing/eye protection/face protection. (P280)
Response	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338) Get medical advice/attention if you feel unwell. (P314) If eye irritation persists: Get medical advice/attention. (P337+P313)
Disposal	: Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. (P501)

### 3. Composition/information on ingredients

Distinction of substance or mixture : Substance

Name	Concentration or Concentration range	Formula	Kanpo number		CAS RN
			CSCL no	ISHL no	
Ammonium fluoride	≥92.0%, ≤100%	NH <sub>4</sub> F	(1)-311	Existing Chemical Substance	12125-01-8

The above concentration or concentration range are not product specification.  
All percentages listed in the above concentration or concentration range are wt%, unless otherwise specified.

### 4. First aid measures

#### First aid measures

First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. Get immediate medical advice/attention.
First-aid measures after skin contact	: Remove/Take off immediately all contaminated clothing. Gently wash with plenty of soap and water. Get immediate medical advice/attention.
First-aid measures after eye contact	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.
First-aid measures after ingestion	: Rinse mouth. Get immediate medical advice/attention.

## 5. Fire fighting measures

- Suitable extinguishing media : Water spray, Alcohol-resistant foam, Dry powder, Carbon dioxide, Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.
- Fire hazard : This product is unburnable.
- Explosion hazard : May induce explosion of containers by heating.
- Hazardous decomposition products in case of fire : In case of fire, product may produce irritative or toxic fumes/gases.
- Firefighting instructions : If ignited, for the initial fire-fighting, cut off combustion sources, extinguish fire at a stroke using appropriate fire-extinguishers.  
In the case of peripheral fire, quickly remove movable containers to safe places.  
If unable to be moved containers, sprinkle water to containers and surrounding equipment, etc. to cool.  
Avoid (reject) fire-fighting water to enter environment.  
Even after extinguishing fire, thoroughly cool containers by using plenty of water.
- Protection during firefighting : Wear appropriate fire-resistant clothing including self contained-compressed air breathing apparatus.

## 6. Accidental release measures

### Personal Precautions, Protective Equipment and Emergency Procedures

- General measures : Before entering, ventilate the area.  
Do not let unauthorized persons come close to the area.  
Immediately place the leakage area in isolation, with taking proper distances for all directions.  
Wear appropriate personal protective devices to prevent inhalation and contact with eye, skin, and clothing, and never attempt to work on the lee.

### Environmental precautions

- Environmental precautions : Avoid release to the environment.  
Prevent entry to sewers and public waters.

### Methods and Equipment for Containment and Cleaning up

- Methods for cleaning up : Take care not to generate dust, sweep it up as much as possible, collect it in an empty container that can be sealed, and move it to a safe place.  
Wash out the spilled area with large amounts of water.

## 7. Handling and storage

### Handling

- Technical measures : Work with appropriate personal protective equipment to prevent inhalation or contact to eyes, skin, and clothing.  
Handle with care to prevent leakage, overflowing, or scattering, minimize generation of mist or vapor, and thoroughly ventilate.
- Precautions for safe handling : Do not eat, drink or smoke when using this product.  
Thoroughly wash your hands and gargle after handling.  
Ensure good ventilation of the work station.  
Do not contact, breathe or swallow.
- Prevents handling of incompatible substances or mixtures : Avoid prolonged or repeated exposure.

### Storage

- Storage conditions : Store locked up.  
Store in a well-ventilated place, away from direct sunlight. Keep container tightly closed and keep away from fire and heat sources.
- Material used in packaging/containers : Airtight container.  
Storage prohibition in glass, ceramic, or a metal container.
- Technical measures : Comply with applicable regulations.
- Storage temperature : Cool and dark place

## 8. Exposure controls / Personal protection equipment

### Exposure limit values

#### Ammonium fluoride

Exposure limits (ACGIH)	TWA 2.5 mg/m <sup>3</sup> , STEL - (as F)
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Appropriate engineering controls : Cover up tightly the generation source at the handling place or install local exhaust equipment or overall ventilation equipment. Install safety showers and eye-fountains near a handling place. Clearly indicate the location.

### Protective equipment

Respiratory protection : Dustproof mask  
 Hand protection : Protective gloves  
 Eye protection : Protective glasses (general glasses, glasses with side-shields, goggles)  
 Skin and body protection : Protective clothing, Protective boots, Protective apron

## 9. Physical and chemical properties

Physical state : Solid  
 Appearance : Crystals ~ Crystalline powder  
 Color : white  
 Odor : Ammonia odor  
 pH : No data available  
 Melting point : No data available  
 Freezing point : No data available  
 Boiling point : No data available  
 Flash point : No data available  
 Auto-ignition temperature : No data available  
 Decomposition temperature : No data available  
 Flammability (solid, gas) : No data available  
 Vapor pressure : No data available  
 Relative density : No data available  
 Density : 1.01 g/cm<sup>3</sup> (25°C)  
 Relative gas density : No data available  
 Solubility : Sparingly soluble in ethanol.  
 Water: 45.3 g/100ml (25°C)  
 Partition coefficient n-octanol/water (Log Pow) : No data available  
 Explosive limits (vol %) : No data available  
 Viscosity, kinematic : No data available  
 Particle characteristics : No data available

## 10. Stability and reactivity

Reactivity : No data available  
 Chemical stability : Stable under normal handling conditions. Shows hygroscopicity. When exposed to air, it gradually decomposes to produce corrosive and toxic ammonium hydrogen fluoride and hydrogen fluoride (gas). Decomposition occurs on contact with moisture or water to produce toxic and corrosive hydrofluoric acid.  
 Possibility of hazardous reactions : When in contact with alkaline solutions, it produces corrosive and flame-retardant ammonia gas. Reacts with chlorine trifluoride causing explosion hazard. Erodes glass and metals.  
 Conditions to avoid : Sunlight, moisture, heat. Contact with acids, alkalis, chlorine trifluoride and metals.  
 Incompatible materials : Acids, Alkalis, Chlorine trifluoride, Metals  
 Hazardous decomposition products : Hydrogen fluoride, Fluorine compounds, Ammonia, Nitrogen oxides

## 11. Toxicological information

The information in this section is based on the "GHS Classification Results" by NITE.

Ammonium fluoride	
Acute toxicity (oral)	classification not possible
Acute toxicity (dermal)	classification not possible
Acute toxicity (gas)	No classification
Acute toxicity (vapour)	No classification
Acute toxicity (inhalation:dust/mist)	classification not possible
Skin corrosion/irritation	classification not possible
Serious eye damage/irritation	Category 2
Respiratory sensitization	classification not possible
Skin sensitization	classification not possible
Germ cell mutagenicity	classification not possible
Carcinogenicity	classification not possible
Reproductive toxicity	classification not possible
STOT-single exposure	classification not possible
STOT-repeated exposure	Category 1
Aspiration hazard	classification not possible

## 12. Ecological information

The information in this section is based on the "GHS Classification Results" by NITE.

Ammonium fluoride	
Hazardous to Aquatic Environment - Acute Hazard	Category 3
Hazardous to Aquatic Environment - Chronic Hazard	Category 3
Persistence and degradability	No data available
Bioaccumulative potential	No data available
Mobility in soil	No data available
Hazardous to the ozone layer	No data available

## 13. Disposal considerations

- Ecology - waste materials : With the detail information of the waste, subcontract its disposal to a waste disposer authorized by a Prefectural Governor.
- Contaminated container and packaging : Empty the packaging completely prior to disposal.  
Empty containers should be taken for recycle, recovery or waste in accordance with local regulation.

## 14. Transport information

### International Regulations

#### Transport by sea(IMDG)

- UN-No. (IMDG) : 2505
- Proper Shipping Name (IMDG) : AMMONIUM FLUORIDE
- Packing group (IMDG) : III
- Transport hazard class(es) (IMDG) : 6.1
- Hazard labels (IMDG) : 6.1
- Class (IMDG) : 6.1
- Division (IMDG) : 6.1
- Packing instructions (IMDG) : P002, LP02
- IBC packing instructions (IMDG) : IBC08
- IBC special provisions (IMDG) : B3
- Tank instructions (IMDG) : T1
- Tank special provisions (IMDG) : TP33
- Stowage category (IMDG) : A

Properties and observations (IMDG)	: Colourless crystals or powder with an ammonia-like odour. Readily soluble in water. Decomposes in contact with acids, evolving hydrogen fluoride, a corrosive gas. Toxic if swallowed, by skin contact or by dust inhalation.
MFAG-No	: 154
<b>Air transport(IATA)</b>	
UN-No. (IATA)	: 2505
Proper Shipping Name (IATA)	: Ammonium fluoride
Packing group (IATA)	: III
Transport hazard class(es) (IATA)	: 6.1
Hazard labels (IATA)	: 6.1
Class (IATA)	: 6.1
Division (IATA)	: 6.1
PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y645
PCA limited quantity max net quantity (IATA)	: 10kg
PCA packing instructions (IATA)	: 670
PCA max net quantity (IATA)	: 100kg
CAO packing instructions (IATA)	: 677
CAO max net quantity (IATA)	: 200kg
ERG code (IATA)	: 6L
<b>Marine pollutant</b>	: Not applicable
<b>Regulations in Japan</b>	
Regulatory information by sea	: Conform to the provisions of the Ship Safety Law.
Regulatory information by air	: Conform to the provisions of the Civil Aeronautics Law.
MFAG-No	: 154
<b>Special transport precautions</b>	: When transporting, load containers so that they do not tip over, damage, drop or collapse. Make sure there is no leak in containers.

## 15. Regulatory information

### National law

Industrial Safety and Health Law	: Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57, Para.1, Enforcement Order Art.18 Item 1, Item 2, Attached Table No.9) Notifiable Substances (Law Art.57-2, Enforcement Order Art.18-2 Item 1, Item 2, Attached Table No.9) Fluorine and its water-soluble inorganic compounds (Ordinance number : 487)
Japanese Poisonous and Deleterious Substances Control Law	: Deleterious Substances (Designated Order Art.2) Ammonium fluoride and preparations containing it
Water Pollution Prevention Law	: Hazardous Substances (Act, Art.2, Enforcement Order Art.2, Ministerial Ordinance to Provide for Effluent Standards, Art.1)
Fire Service Law	: Not applicable
Air Pollution Control Law	: Hazardous Air Pollutants (Central Environment Council Report No. 9)
Foreign Exchange and Foreign Trade Control Act	: Export Trade Control Ordinance appendix 1-16
Ship Safety Act	: Toxic and infectious substances/Toxic substances (Dangerous Goods Notification Schedule first second and third Article Dangerous Goods Regulations)
Civil Aeronautics Law	: Toxic and infectious substances/Toxic substances (Hazardous materials notice Appended Table 1 Article 194 of the Enforcement Regulations)
Port Regulation Law	: Toxic and infectious substances/Toxic substances (Article 21, Paragraph 2 of Law, Article 12 rule, notice attached table that defines the type of dangerous goods)
Waterworks Law	: Hazardous Substances (Act Article 4 paragraph 2), Standard for Water Quality (Ministry Order No.101 of 2003)
Sewerage Law	: Substances for Water Quality Standard (Act Art.12-2 Para.2, Enforcement Order Art.9-4)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)	: Class 1 Designated Chemical Substances (Act Art.2 para.2, Enforcement Order Art.1 Appended Table No.1) Hydrogen fluoride and its water-soluble salts as fluorine( $\geq 47\%$ )

- Labor Standards Act : Chemical Substances Causing Occupational Illnesses (Act Art.75, Para.2, Ordinance Attached Table 1-2, Item 4-1, MHLW Notification No.36 of 1978)
- Soil Contamination Countermeasures Law : Designated Hazardous Substances (Act Art.2 Para.3, Enforcement Order Art.1)

## 16. Other information

- Data sources : Handbook of 17423 Chemical Products, The Chemical Daily Co, Ltd. International Chemical Safety Cards. National Institute of Technology and Evaluation (NITE). 2020 Emergency Response Guidebook (ERG 2020).
- Other information : The SDS is copyrighted material of Hayashi Pure Chemical Ind, Ltd. This Safety Data Sheet is intended to be provided for business operators who handle chemical substance products of the relevant product and is not intended to assure safety in any way. The Safety Data Sheet does not verify all the information on the applicable chemical substance in the present time. With the recognition in that unknown danger constantly exists in the relevant chemical substance, the product shall be used in the principle of self-responsibility of the user with the highest priority to safety from transport and unpacking to disposal. When the relevant chemical substance is used, the user him/herself shall collect safety information and shall investigate laws and regulations at the place, organizations, countries, etc. where the substance is actually used and give the highest priority to them. The Company shall take no responsibility for investigating state and local regulations and the user shall handle this problem on his/her own responsibility. In the event that SDS in Japanese and SDS translated into other languages exist, the document described in Japanese is prior to all other documents whether or not there is any difference in contents, and documents in other languages shall be references.