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Version number 1

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*** SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier****Trade name: AMMONIUM FLUORIDE****Article number: NH4F STD****1.2 Relevant identified uses of the substance or mixture and uses advised against:**

No further relevant information available.

1.3 Details of the supplier of the safety data sheet**Manufacturer/Supplier:**

DAIKIN INDUSTRIES, LTD. CHEMICALS DIVISION:

Umeda Center Bldg., 4-12, Nakazaki-Nishi 2-chome, Kita-Ku, Osaka, JAPAN

Phone: (+81) 6-6373-4345 Fax: (+81) 6-6373-4281

Further information obtainable from: <http://www.daikin.com/>**1.4 Emergency telephone number:**

Japan: +81-6-6349-7521

China: +86-512-5-232-0949, +86-21-34151689

South Korea: +82-2-568-1722

Americas: CHEMTREC +1-800-424-9300 (Outside US/Canada: +1-703-527-3887)

Europe: +49-211-179 225-0

*** SECTION 2: Hazard identification****2.1 Classification of the substance or mixture****Classification according to Regulation (EC) No 1272/2008**

Acute Tox. 3 H301 Toxic if swallowed.



STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.



Met. Corr.1 H290 May be corrosive to metals.



STOT SE 3 H335 May cause respiratory irritation.

Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.

2.2 Label elements**Labelling according to Regulation (EC) No 1272/2008:**

The product is classified and labelled according to the CLP regulation.

Signal word: Danger**Precautionary statements:**

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P330 Rinse mouth.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P405 Store locked up.

P406 Store in a corrosion resistant container / container with a resistant inner liner.

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

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SECTION 3: Composition/information on ingredients**Information on ingredients:**

CAS: 12125-01-8 Ammonium fluoride 40%
Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331

CAS: 7732-18-5 Water 60%

Additional information: For the wording of the listed hazard phrases refer to section 16.

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

In case of irregular breathing or respiratory arrest provide artificial respiration.

Immediately remove any clothing soiled by the product.

Remove breathing equipment only after contaminated clothing have been completely removed.

Seek immediate medical advice.

First aiders shall pay attention to self-protection.

After inhalation:

Supply fresh air or oxygen; call for doctor.

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult a doctor if symptoms persist.

In case of unconsciousness place patient stably in side position for transportation.

After skin contact:

After rinsing with water thoroughly, apply 2.5% Ca-gluconate solution or Ca-gluconate gel immediately. Do not rub hard.

Apply the solution or the gel every 1-2 hours. Continue applying them every several hours even after the pain is eased.

If they are not at hand, keep rinsing with warm water for at least 30 minutes and call for a doctor immediately. Hand this SDS to the doctor.

Consult a doctor in case of complaints.

After eye contact:

Rinse opened eye for several minutes under running water. Then consult an ophthalmologist.

Consult an ophthalmologist in case of complaints.

After swallowing: Do not induce vomiting; Consult a doctor immediately.

4.2 Most important symptoms and effects, both acute and chronic:

After skin contact: the affected skin becomes painful and red.

After eye contact: irritation of the mucous membranes.

After swallowing: nausea, stomachache.

Protection of rescuers: Wear self-contained breathing apparatus and fully protective suit to avoid contact with toxic substances.

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

Medical supervision for at least 48 hours.

*** SECTION 5: Firefighting measures****5.1 Extinguishing media****Suitable extinguishing agents:**

CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Water spray

Foam

Fire-extinguishing powder

Dry sand

CO₂

5.2 Special hazards arising from the substance or mixture:

Can form explosive gas-air mixtures.

Formation of toxic gases is possible during heating or in case of fire.

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Cool the container thoroughly with a large amount of water even after extinguishment.

In case of a large fire: stay a safe distance away from the fire and use unmanned hose holder or monitor nozzles.

If impossible, evacuate from the fire and burn in until the materials disappear.

Remove receptacles from area of fire if possible.

Protective equipment:

Wear fully protective suit.

Wear self-contained breathing apparatus and protective suit.

Do not inhale explosion gases or combustion gases.

*** SECTION 6: Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures:**

Wear protective clothing.

Ensure adequate ventilation before entering the area.

Stay on the windward side.

Keep out unauthorized persons.

Wear appropriate protective devices (See Section 8 Exposure Controls/Personal Protection).

Avoid contact with eyes and skin.

Do not swallow the product.

6.2 Environmental precautions:

Dilute with plenty of water.

Do not allow to enter sewers/surface or ground water.

Must not be emitted into the environment.

6.3 Methods and material for containment and cleaning up:

For a small amount of leakage: Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders) or collect in an empty container that can be sealed tightly.

Use neutralising agent.

Ensure adequate ventilation.

For a large amount of leakage: Enclose with banks to avoid outflow. Lead the leakage to a safe place and collect.

Remove gas with water haze. After recovering it, rinse with a large amount of water.

6.4 Reference to other sections:

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

*** SECTION 7: Handling and storage****7.1 Precautions for safe handling:**

Open and handle receptacle with care.

Prevent formation of aerosols.

Ensure good ventilation/exhaustion at the workplace.

Do not handle until all safety precautions have been read and understood.

Information about fire - and explosion protection:

Keep ignition sources away - Do not smoke.

Keep respiratory protective device available.

7.2 Conditions for safe storage, including any incompatibilities:**Storage****Requirements to be met by storerooms and receptacles:**

Store only in the original receptacle.

Store in a cool and dry location.

Provide acid-resistant floor.

Prevent any seepage into the ground.

Information about storage in one common storage facility:

Do not store together with acids.

Do not store together with alkalis (caustic solutions).

See section 10 for information on incompatible materials.

Further information about storage conditions:

Keep container tightly sealed.

Protect from heat and direct sunlight.

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Store containers in a well ventilated area.

Store locked up.

7.3 **Specific end use(s):** No further relevant information available.

* SECTION 8: Exposure controls/personal protection

Additional information about design of technical facilities:

Install eyewash containers and safety showers in worksites where the product is stored or handled.

Keep the process closed, equip with local exhaust ventilation and take other engineering measurements to control airborne concentration below administrative level or threshold limit value.

8.1 **Control parameters** No further information available.

Ingredients with limit values that require monitoring at the workplace:

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Additional information: The lists valid during the making were used as basis.

8.2 Exposure controls

Personal protective equipment

General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.

Store protective clothing separately.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

Do not eat or drink while working.

Keep away from tobacco products.

Respiratory protection: Use respiratory protective device with filters for acid gases.

Protection of hands:



Protective gloves

Material of gloves: Fluorocarbon rubber

Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:



Goggles are recommended during refilling

Safety glasses

Tightly sealed goggles

Body protection:

Boots

Apron

Protective work clothing

Full head, face and neck protection



Acid resistant protective clothing including boots and apron

* SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information

Appearance

Form: Liquid

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Trade name: AMMONIUM FLUORIDE

Colour:	Colourless
Odour:	Pungent
Odour threshold:	Not determined.
pH-value:	No further information available.
Melting point/freezing point:	-12 - -13 °C (Crystal deposition)
Initial boiling point and boiling range:	No further information available.
Flash point:	Not applicable.
Flammability (solid, gas):	Not applicable.
Decomposition temperature:	No further information available.
Auto-ignition temperature:	Product is not selfigniting.
Explosive properties:	Product does not present an explosion hazard.
Explosion limits:	
Lower explosive limit:	No further information available.
Upper explosive limit:	No further information available.
Vapour pressure:	No further information available.
Density at 20 °C:	1.11 g/cm ³ No further information available.
Relative density	Not determined.
Vapour density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with water:	Fully miscible.
Partition coefficient: n-octanol/water:	No further information available.
Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
9.2 Other information:	No further relevant information available.

* SECTION 10: Stability and reactivity

10.1 Reactivity May be corrosive to metals.

10.2 Chemical stability

Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

10.3 Possibility of hazardous reactions:

Reacts with alkali (lyes).

Reacts with acids.

Reacts with carbon dioxide.

10.4 Conditions to avoid: Keep away from heat, sparks, flame, high temperature.

10.5 Incompatible materials: Glass, concrete and silicon

10.6 Hazardous decomposition products:

Hydrogen fluoride

Ammonia

* SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

no data

Toxic if swallowed.

LD/LC50 values relevant for classification: No further information available.

Primary irritant effect

Skin corrosion/irritation No further information available.

Serious eye damage/irritation No further information available.

after inhalation: No further information available.

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Respiratory or skin sensitisation Based on available data, the classification criteria are not met.

Other information (about experimental toxicology): No further information available.

Subacute to chronic toxicity No further information available.

CMR effects

Germ cell mutagenicity

Not applicable

Carcinogenicity Based on available data, the classification criteria are not met.

Reproductive toxicity Based on available data, the classification criteria are not met.

STOT-single exposure

May cause respiratory irritation.

STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard Based on available data, the classification criteria are not met.

* SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity: No further relevant information available.

12.2 Persistence and degradability: No further relevant information available.

12.3 Bioaccumulative potential: No further relevant information available.

12.4 Mobility in soil: No further relevant information available.

Ecotoxicological effects: no data

Additional ecological information:

General notes:

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Must not reach sewage water or drainage ditch undiluted or unneutralised.

12.5 Results of PBT and vPvB assessment

PBT:

No further relevant information available.

Not applicable.

vPvB:

No further relevant information available.

Not applicable.

12.6 Other adverse effects: No further relevant information available.

* SECTION 13: Disposal considerations

13.1 Waste treatment methods

Recommendation:

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Disposal must be made according to official regulations.

Uncleaned packaging

Recommendation: Disposal must be made according to official regulations.

Recommended cleansing agents: Water, if necessary together with cleansing agents.

* SECTION 14: Transport information

14.1 UN-Number:

ADR, IMDG, IATA

UN3287

14.2 UN proper shipping name:

ADR, IMDG, IATA

TOXIC LIQUID, INORGANIC, N.O.S. (AMMONIUM FLUORIDE)

14.3 Transport hazard class(es):

ADR



Class:

6.1 (T4) Toxic substances.

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Label: 6.1
IMDG, IATA



Class: 6.1 Toxic substances.
Label: 6.1
14.4 Packing group:
ADR, IMDG, IATA III
14.5 Environmental hazards:
Marine pollutant: No
14.6 Special precautions for user: Warning: Toxic substances.
Hazard identification number (Kemler code): 60
EMS Number: F-A,S-A
Segregation groups: Ammonium compounds
Stowage Category A
Stowage Code SW2 Clear of living quarters.
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.
Transport/Additional information: Avoid direct sunlight. Make sure of no damage, corrosion, leaks on the receptacles.
Take necessary measures for preventing cargo shift.

ADR

Limited quantities (LQ): 5L
Excepted quantities (EQ) Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml

Transport category: 2**Tunnel restriction code:** E**IMDG**

Limited quantities (LQ) 5L
Excepted quantities (EQ) Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml

UN "Model Regulation": UN 3287 TOXIC LIQUID, INORGANIC, N.O.S. (AMMONIUM FLUORIDE), 6.1, III

*** SECTION 15: Regulatory information**

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
No further relevant information available.

Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS05 GHS06 GHS08

Signal word Danger**Hazard-determining components of labelling:**

Ammonium fluoride

Hazard statements

H290 May be corrosive to metals.

H301 Toxic if swallowed.

H335 May cause respiratory irritation.

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H373 May cause damage to organs through prolonged or repeated exposure.

H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P330 Rinse mouth.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P405 Store locked up.

P406 Store in a corrosion resistant container / container with a resistant inner liner.

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

National regulations No further information available.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

*** SECTION 16: Other information**

The product is for the industrial use only. We do not guarantee the safety in case the product is used for the other purposes. When using the product for health-care application or food/feed application, consult us in advance. This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Contact: <http://www.daikin.com/>

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Met. Corr.1: Corrosive to metals – Category 1

Acute Tox. 3: Acute toxicity - oral – Category 3

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2

Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3

*** Data compared to the previous version altered.**