

Ammonium fluoride etching mixture AF 91-9**000000017479**

Version 2.0

Issuing date 07/27/2015

Revision Date 11/19/2018

Print Date 04/13/2020

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**Product information**

Trade name : Ammonium fluoride etching mixture AF 91-9

Number : 000000017479

Recommended use of the chemical and restrictions on use : Semiconductor Production

Manufacturer or supplier's details : Honeywell Specialty Chemicals Seelze GmbH
Wunstorfer Straße 40
Seelze, 30926

For further information, please contact: : PMTEU Product Stewardship
(49) 5137-999 0
SafetyDataSheet@Honeywell.com
(Monday-Friday, 9:00am-5:00pm)

In case of emergency call : **Medical: 1-800-498-5701 or +1-303-389-1414**
: **Transportation (CHEMTREC): 1-800-424-9300 or +1-703-527-3887**
: **In Malaysia: 1-800-815-308 or +60-392125794**
: (24 hours/day, 7 days/week)

2. HAZARDS IDENTIFICATION**Classification of the substance or mixture**

Classification of the substance or mixture : Corrosive to metals, Category 1
Acute toxicity, Category 4, Oral
Acute toxicity, Category 4, Inhalation
Acute toxicity, Category 4, Dermal
Skin corrosion, Category 1B
Serious eye damage, Category 1

GHS Label elements, including precautionary statements

Symbol(s)

:



Ammonium fluoride etching mixture AF 91-9**000000017479**

Version 2.0

Issuing date 07/27/2015

Revision Date 11/19/2018

Print Date 04/13/2020

Signal word : Danger

Hazard statements : May be corrosive to metals.
Harmful in contact with skin.
Harmful if swallowed.
Harmful if inhaled.
Causes severe skin burns and eye damage.

Precautionary statements : **Prevention:**
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Wear protective gloves/protective clothing/eye protection/face protection.

Response:

IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

IF ON SKIN: Wash with plenty of water.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF exposed or concerned: Get medical advice/ attention.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Mixture

Chemical name	CAS-No.	Concentration
Ammonium fluoride Ammonium fluoride	12125-01-8	>=20.00 - <=30.00 %
Ammonium hydrogendifluoride Ammonium hydrogendifluoride	1341-49-7	>=10.00 - <=15.00 %
Water Water	7732-18-5	>=50.00 - <=70.00 %

4. FIRST AID MEASURES

Inhalation : Remove to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Use oxygen as required, provided a qualified operator is present.
Call a physician immediately.

Ammonium fluoride etching mixture AF 91-9**000000017479**

Version 2.0

Issuing date 07/27/2015

Revision Date 11/19/2018

Print Date 04/13/2020

- Skin contact** : Remove the victim from the contaminated area and immediately wash the burned area with plenty of water for a minimum of 15 minutes.
Limit washing to 15 minutes if treatment specific for HF exposure is available.
Remove all contaminated clothing while washing continuously. After thorough washing for at least 5 minutes, the burned area should be immersed in a solution of 0.13% iced aqueous Benzalkonium chloride until pain is relieved. As an alternate first aid treatment, 2.5% calcium gluconate gel may be continuously massaged into the burn area until the pain is relieved. For larger burns or burns treated with calcium gluconate gel (in which pain is present longer than 30 minutes), a physician should inject 5% aqueous calcium gluconate beneath, around and in the burned area. Use of local anesthetics is not recommended, as reduction in pain is an indicator of effectiveness of treatment.
- Eye contact** : Irrigate eyes for at least 15 minutes with copious quantities of water, keeping eyelids apart and away from eyeballs during irrigation.
- Ingestion** : If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Call a physician immediately.
- Notes to physician** : Treat symptomatically.

5. FIREFIGHTING MEASURES

- Suitable extinguishing media** : Water spray
Foam
Carbon dioxide (CO₂)
Dry chemical
- Specific hazards during firefighting** : In case of fire hazardous decomposition products may be produced such as:
Ammonia
Hydrogen fluoride
- Special protective equipment for firefighters** : Wear self-contained breathing apparatus and protective suit.
- Further information** : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
Prevent fire extinguishing water from contaminating surface

Ammonium fluoride etching mixture AF 91-9**000000017479**

Version 2.0

Issuing date 07/27/2015

Revision Date 11/19/2018

Print Date 04/13/2020

water or the ground water system.

6. ACCIDENTAL RELEASE MEASURES

- | | | |
|---|---|---|
| Personal precautions,
protective equipment and
emergency procedures | : | Wear personal protective equipment.
Immediately evacuate personnel to safe areas.
Keep people away from and upwind of spill/leak.
Ensure adequate ventilation.
Do not swallow.
Do not breathe vapours or spray mist.
Do not get in eyes, on skin, or on clothing. |
| Environmental precautions | : | Prevent further leakage or spillage if safe to do so.
Discharge into the environment must be avoided.
Do not flush into surface water or sanitary sewer system.
Do not allow run-off from fire fighting to enter drains or water courses. |
| Methods and materials for
containment and cleaning up | : | Ventilate the area.
Prevent spreading over a wide area (e.g. by containment or oil barriers).
Large spills should be collected mechanically (remove by pumping) for disposal.
Neutralise with the following product(s):
lime
soda ash
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). |

7. HANDLING AND STORAGE**Handling**

- | | | |
|--|---|---|
| Precautions for safe handling | : | Wear personal protective equipment.
Keep container tightly closed.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Use only in well-ventilated areas.
Do not swallow.
Do not breathe dust.
Do not get in eyes, on skin, or on clothing. |
| Advice on protection against
fire and explosion | : | Normal measures for preventive fire protection.
The product is not flammable.
Fire or intense heat may cause violent rupture of packages. |

Ammonium fluoride etching mixture AF 91-9**000000017479**

Version 2.0

Issuing date 07/27/2015

Revision Date 11/19/2018

Print Date 04/13/2020

Storage

Conditions for safe storage, including any incompatibilities : Store in original container.
 Keep container tightly closed in a dry and well-ventilated place.
 Keep away from heat and sources of ignition.
 Protect from physical damage.
 Store away from incompatible substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Update	Basis
Ammonium fluoride Ammonium fluoride	12125-01-8	TWA : Time Weighted Average (TWA):	2.5 mg/m3	03 2000	MY OEL:Malaysia. OELs. (Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations)
Further information	:	Expressed as : as F			

Ammonium hydrogendifluoride Ammonium hydrogendifluoride	1341-49-7	TWA : Time Weighted Average (TWA):	2.5 mg/m3	03 2000	MY OEL:Malaysia. OELs. (Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations)
Further information	:	Expressed as : as F			

Ammonium fluoride etching mixture AF 91-9**000000017479**

Version 2.0

Issuing date 07/27/2015

Revision Date 11/19/2018

Print Date 04/13/2020

Appropriate engineering controls

Use with local exhaust ventilation.

Individual protection measures, such as personal protective equipment

Respiratory protection	: In case of insufficient ventilation wear suitable respiratory equipment. Use NIOSH approved respiratory protection.
Hand protection	: Impervious gloves Viton (R) Gloves must be inspected prior to use. Replace when worn.
Eye protection	: Goggles or face shield, giving complete protection to eyes
Skin and body protection	: acid-proof protective clothing Personal protection through wearing a tightly closed chemical protection suit and a self-contained breathing apparatus.
Hygiene measures	: When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Keep working clothes separately. Remove and wash contaminated clothing before re-use. Do not swallow. Do not breathe dust. Do not get in eyes, on skin, or on clothing.
Protective measures	: Ensure that eyewash stations and safety showers are close to the workstation location.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid
Colour	: colourless
Odour	: stinging
pH	: Note: acidic
Melting point/range	: Note: no data available
Boiling point/boiling range	: ca. 100 °C at 1,013 hPa

Ammonium fluoride etching mixture AF 91-9**000000017479**

Version 2.0

Issuing date 07/27/2015

Revision Date 11/19/2018

Print Date 04/13/2020

Flash point : Note: Not applicable

Lower explosion limit : Note: Not applicable

Upper explosion limit : Note: Not applicable

Density : ca. 1.120 g/cm³ at 20 °C

Water solubility : Note: completely miscible

Ignition temperature : Note: Not applicable

Corrosivity : Note: Corrosive to metals

10. STABILITY AND REACTIVITY

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Hazardous decomposition products formed under fire conditions.
Corrosive in contact with metals

Incompatible materials to avoid : Glass and silicate-containing materials are attacked.
Contact with strong acids liberates hydrogen fluoride.
Corrosive in contact with metals

Hazardous decomposition products : In case of fire hazardous decomposition products may be produced such as:
Ammonia
Hydrogen fluoride

Ammonium fluoride etching mixture AF 91-9**000000017479**

Version 2.0

Issuing date 07/27/2015

Revision Date 11/19/2018

Print Date 04/13/2020

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	: Acute toxicity estimate: 411 mg/kg Method: Calculation method
Acute inhalation toxicity	: Acute toxicity estimate: 10.9 mg/l , vapour Method: Calculation method
Acute dermal toxicity	: Acute toxicity estimate: 1,090 mg/kg Method: Calculation method
Skin irritation	: Note: Causes skin burns.
Eye irritation	: Note: Corrosive to eyes
Sensitisation	: Note: no data available
Further information	: Note: Can cause bone and joint changes in humans (fluorosis).

12. ECOLOGICAL INFORMATION**Toxicity**

Toxicity to fish	: Note: no data available
Toxicity to daphnia and other aquatic invertebrates	: Note: no data available
Toxicity to algae	: Note: no data available

Ammonium fluoride etching mixture AF 91-9**000000017479**

Version 2.0

Issuing date 07/27/2015

Revision Date 11/19/2018

Print Date 04/13/2020

13. DISPOSAL CONSIDERATIONS

Disposal methods : In accordance with local and national regulations.

14. TRANSPORT INFORMATION**ADR**

UN/ID No. : UN 3264
Description of the goods : CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
(AMMONIUM HYDROGEN DIFLUORIDE, AMMONIUM FLUORIDE)
Class : 8
Packing group : II
Classification Code : C1
Hazard Identification Number : 80
Labels : 8

IATA

UN/ID No. : UN 3264
Description of the goods : Corrosive liquid, acidic, inorganic, n.o.s.
(Ammonium hydrogen difluoride, Ammonium fluoride)
Class : 8
Packing group : II
Labels : 8
Packing instruction (cargo aircraft) : 855
Packing instruction (passenger aircraft) : 851
Packing instruction (passenger aircraft) : Y840

IMDG

UN/ID No. : UN 3264
Description of the goods : CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
(AMMONIUM HYDROGEN DIFLUORIDE, AMMONIUM FLUORIDE)
Class : 8
Packing group : II
Labels : 8
EmS Number 1 : F-A
EmS Number 2 : S-B
Marine pollutant : no

Ammonium fluoride etching mixture AF 91-9**000000017479**

Version 2.0

Issuing date 07/27/2015

Revision Date 11/19/2018

Print Date 04/13/2020

Other information : Storage-/Transp.-Temp. > 15 °C

15. REGULATORY INFORMATION**National regulatory information**

: No information available.

Other international regulations**Notification status**

US. Toxic Substances Control Act : On TSCA Inventory

Australia. Industrial Chemical (Notification and Assessment) Act : On the inventory, or in compliance with the inventory

Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL) : All components of this product are on the Canadian DSL

Japan. Kashin-Hou Law List : On the inventory, or in compliance with the inventory

Korea. Existing Chemicals Inventory (KECI) : On the inventory, or in compliance with the inventory

Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act : On the inventory, or in compliance with the inventory

China. Inventory of Existing Chemical Substances : On the inventory, or in compliance with the inventory

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand : On the inventory, or in compliance with the inventory

Ammonium fluoride etching mixture AF 91-9**000000017479**

Version 2.0

Issuing date 07/27/2015

Revision Date 11/19/2018

Print Date 04/13/2020

16. OTHER INFORMATION**Further information**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user. This information should not constitute a guarantee for any specific product properties.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

Previous Issue Date: 07/29/2017

Prepared by Honeywell Performance Materials and Technologies Product Stewardship Group