

# Material Safety Data Sheet

Version 1.0  
Revision Date 06/01/2005MSDS Number 30000007278  
Print Date 09/09/2005

## 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Pad Etch 4

Product Use Description : General Industrial

Company : Air Products and Chemicals, Inc  
7201 Hamilton Blvd.  
Allentown, PA 18195-1501

Telephone : 1-800-345-3148 Chemicals  
1-800-752-1597 Gases and Electronic Chemicals

Emergency telephone number : 800-523-9374 USA  
01-610-481-7711 International

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Concentration (Weight)
Acetic acid	64-19-7	30% - 40 %
Ammonium Fluoride	12125-01-8	10% - 20 %
Propylene glycol	57-55-6	5% - 10 %

## 3. HAZARDS IDENTIFICATION

### Emergency Overview

Harmful in contact with skin  
Highly toxic by ingestion.  
Moderate respiratory irritant.  
Irritating to eyes.  
Symptoms may be delayed  
Can cause severe burns if inhaled or upon skin contact  
The potential for hydrogen fluoride formation exists with every exposure, therefore its toxicity must also be considered

### Potential Health Effects

Inhalation : May cause nose, throat, and lung irritation. Inhalation of vapors and/or aerosols in high concentration may cause irritation of respiratory system.

Eye contact : Contact with eyes may cause irritation. May cause blindness.

Skin contact : Harmful in contact with skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Potential for hydrogen fluoride formation exists, which may cause additional tissue destruction and possibly a systemic reaction that can be fatal.

Ingestion : Highly toxic by ingestion. May be fatal if swallowed. Causes severe digestive tract burns.

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Chronic Health Hazard : This product contains no listed carcinogens according to IARC, ACGIH, NTP and/or OSHA in concentrations of 0.1 percent or greater. Chronic fluoride exposure may cause bone or joint changes in humans (fluorosis).

## Exposure Guidelines

Target Organs : Respiratory system  
Eyes  
Skin  
Lungs  
Teeth and bone

Symptoms : Repeated and/or prolonged exposure to low concentrations of vapors and/or aerosols may cause Sore throat.

## Aggravated Medical Condition

Asthma Eye disease Skin disorders and Allergies.

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## 4. FIRST AID MEASURES

- General advice : Obtain medical attention. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. If additional information is needed call the Air Products Emergency Number or consult the Air Products Safetygram 29 Treatment Protocol for Hydrofluoric Acid Burns, available on our web site at <http://www.airproducts.com/productstewardship/>. Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.
- Eye contact : Rinse immediately with plenty of water also under the eyelids for at least 20 minutes. Hold eyelids apart, initiate and maintain gentle and continuous irrigation until the patient receives medical care. If medical care is not promptly available, continue to irrigate for one hour.
- Skin contact : Immediately remove contaminated clothing, and any extraneous chemical, if possible to do so without delay. Immediately remove contaminated clothing, and any extraneous chemical, if possible to do so without delay. Initiate and maintain gentle and continuous irrigation until the patient receives medical care. If medical care is not promptly available, continue to irrigate for one hour.
- Ingestion : Never give anything by mouth to an unconscious person. If a person vomits when lying on his back, place him in the recovery position. Drink 1 or 2 glasses of water. Do not induce vomiting. Call a physician immediately. Gastric lavage with calcium chloride or calcium gluconate may be performed by a physician. Administer several vials of 10% aqueous calcium gluconate orally. (Calcium carbonate or an antacid containing calcium carbonate or magnesium carbonate or hydroxide may also be used.) Prevent aspiration of vomit. Turn victim's head to the side.

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Inhalation · If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. Move to fresh air. Move to fresh air.

## Notes to physician

Treatment · This product contains ammonium fluoride. The effects of exposure to ammonium fluoride will depend on the strength of the solution and the route of exposure. It may be possible to absorb excessive amounts of fluoride ion from high exposures to ammonium fluoride. Acute systemic toxicity is largely dependent upon the total amount of fluoride ion absorbed. Blood sampling should be taken to monitor circulating fluoride, potassium and calcium levels. Consideration should be given to the use of calcium gluconate injections or infusions. When aqueous ammonium fluoride is acidified, it may form hydrofluoric acid. If this occurs treatment for hydrofluoric acid exposure must be started.

## 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media · Alcohol-resistant foam.  
The product itself does not burn.  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical  
Dry sand  
Limestone powder.

Specific hazards · Incomplete combustion may form carbon monoxide. Downwind personnel must be evacuated.

Special protective equipment for fire-fighters · Avoid contact with the skin. A face shield should be worn. Use personal protective equipment. Wear self-contained breathing apparatus for fire fighting if necessary.

Further information · Do not allow run-off from fire fighting to enter drains or water courses. The product, as distributed, is noncombustible.

## 6. ACCIDENTAL RELEASE MEASURES

Personal precautions · Wear suitable protective clothing, gloves and eye/face protection. Use self-contained breathing apparatus and chemically protective clothing. Evacuate personnel to safe areas.

Environmental precautions · Construct a dike to prevent spreading.

Methods for cleaning up · Approach suspected leak areas with caution. Contact Air Products' Emergency Response Center for advice. Place in appropriate chemical waste container.

Additional advice · Open enclosed spaces to outside atmosphere. If possible, stop flow of product.

## 7. HANDLING AND STORAGE

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## Handling

Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations. Avoid breathing vapors and/or aerosols. Avoid contact with eyes. Use only in well-ventilated areas. Use personal protective equipment. When using, do not eat, drink or smoke.

## Storage

Keep away from alkalis.

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Engineering measures

Provide readily accessible eye wash stations and safety showers.  
Provide natural or explosion-proof ventilation adequate to ensure concentrations are kept below exposure limits.

### Personal protective equipment

- |   |  |
|---|--|
| Respiratory protection                          | · Wear appropriate respirator when ventilation is inadequate   |
| Hand protection                                 | · Butyl-rubber<br>· Neoprene gloves.<br>· Nitrile rubber.<br>· Impervious gloves<br>· The breakthrough time of the selected glove(s) must be greater than the intended use period  |
| Eye protection                                  | · Chemical resistant goggles must be worn.   |
| Skin and body protection                        | · Impervious clothing  |
| Environmental exposure controls                 | · Construct a dike to prevent spreading  |
| Special instructions for protection and hygiene | · Provide readily accessible eye wash stations and safety showers. Wash at the end of each workshift and before eating, smoking or using the toilet. Remove contaminated clothing. Drench affected area with water for at least 15 minutes |

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

- |                        |                     |
|------------------------|---------------------|
| Form                   | : Liquid.           |
| Color                  | : Clear             |
| Odor                   | : Acidic.           |
| Relative vapor density | : 1.02 (air = 1)    |
| Relative density       | : 1.058 (water = 1) |

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Density	· 66.049 lb/ft <sup>3</sup> (1.058 g/cm <sup>3</sup> ) at
pH	· 5.9
Boiling point/range	· 212 °F (100 °C)
Melting point/range	· 32 °F (0 °C)
Flash point	: 85 °C
Water solubility	· Completely soluble.

## 10. STABILITY AND REACTIVITY

Stability	· Stable under normal conditions
Materials to avoid	· Amines Incompatible with bases. Reducing agents Dehydrating Agents Reactive metals (e.g. sodium, calcium, zinc etc.) Materials reactive with hydroxyl compounds. Aluminium Strong bases Alkali metals Alkaline earth metals Brass Acids
Hazardous decomposition products	· Organic acid vapors. Carbon monoxide. Carbon dioxide (CO <sub>2</sub> ) Aldehydes Flammable hydrocarbon fragments (e.g., acetylene). Toxic fluorides Hydrogen fluoride Nitrogen oxides (NO <sub>x</sub> )

## 11. TOXICOLOGICAL INFORMATION

### Acute Health Hazard

Ingestion · No data is available on the product itself.

#### Ingestion - Components

Acetic acid	LD50 : 3,310 mg/kg	Species : Rat.
Ammonium Fluoride	LD50 : 50 mg/kg	Species : Rat.
Propylene glycol	LD50 : 18,500 mg/kg	Species : Rabbit.
Propylene glycol	LD50 : 21,000 mg/kg	Species : Rat.

Inhalation · No data is available on the product itself

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## Inhalation - Components

Acetic acid	LC50 (1 h) : 5620 ppm	Species : Rat.
Acetic acid	LC50 (4 h) : > 16,000 ppm	Species : Rat.
Propylene glycol	LC50 (8 h) : > 105 ppm	Species : Rat.

Skin : No data is available on the product itself

## Skin - Components

Acetic acid	LD50 : 1,060 mg/kg	Species : Rabbit.
Propylene glycol	LD50 : 20,800 mg/kg	Species : Rabbit.

Eye irritation/corrosion : Eye irritation

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity effects

Aquatic toxicity : No data is available on the product itself.

### Toxicity to fish - Components

Acetic acid	LC50 (96 h) : 75 mg/l	Species : Bluegill sunfish ( <i>Lepomis macrochirus</i> ).
Acetic acid	LC50 (96 h) : 79 mg/l	Species : Fathead minnow ( <i>Pimephales promelas</i> ).
Propylene glycol	LC50 (96 h) : 710 mg/l	Species : Fathead minnow ( <i>Pimephales promelas</i> ).
Propylene glycol	LC50 (96 h) : 55,770 mg/l	Species : Fathead minnow ( <i>Pimephales promelas</i> ).

### Toxicity to daphnia - Components

Acetic acid	EC50 (48 h) : 65 mg/l	Species : Daphnia
Propylene glycol	EC50 (48 h) : > 10,000 mg/l	Species : Daphnia

Toxicity to other organisms : No data available

### Persistence and degradability

Mobility : No data available.

Bioaccumulation : No data is available on the product itself.

### Bioaccumulation - Components

Acetic acid	Negligible bioaccumulation potential
Propylene glycol	Negligible bioaccumulation potential

## 13. DISPOSAL CONSIDERATIONS

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- Waste from residues / unused products : Contact supplier if guidance is required
- Contaminated packaging : Dispose of container and unused contents in accordance with federal, state, and local requirements

## 14. TRANSPORT INFORMATION

### CFR

- Proper shipping name : Corrosive liquid, acidic, organic, n o s (Acetic acid, Ammonium Fluoride )
- Class : 8
- UN/ID No. : UN3265
- Packing group : III

### IATA

- Proper shipping name : Corrosive liquid, acidic, organic, n o s (Acetic acid, Ammonium Fluoride )
- Class : 8
- UN/ID No : UN3265
- Packing group : III

### IMDG

- Proper shipping name : CORROSIVE LIQUID, ACIDIC, ORGANIC, N O S (Acetic acid, Ammonium Fluoride )
- Class : 8
- UN/ID No : UN3265
- Packing group : III

### CTC

- Proper shipping name : CORROSIVE LIQUID, ACIDIC, ORGANIC, N O S (Acetic acid, Ammonium Fluoride )
- Class : 8
- UN/ID No : UN3265
- Packing group : III

## 15. REGULATORY INFORMATION

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory.
EU	EINECS	Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.
Canada	DSL	Included on Inventory.
Australia	AICS	Included on Inventory.
Japan	ENCS	Included on Inventory.
South Korea	ECL	Included on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Included on Inventory.

EPA SARA Title III Section 313 (40 CFR 372) Component(s) above 'de minimus' level:

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None.

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

This product does not contain any chemicals known to State of California to cause cancer, birth defects or any other harm

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## 16. OTHER INFORMATION

### HMIS Rating

Health	: 3
Flammability	: 0
Physical hazard	: 0

Prepared by : Air Products and Chemicals, Inc. Global EH&S Product Safety Department

For additional information, please visit our Product Stewardship web site at  
<http://www.airproducts.com/productstewardship/>

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