# Hydrofluoric Acid, Aqueous (70%)

## 000000001807



## SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

| | | |
|---|---|---|
| Product name | : | Hydrofluoric Acid, Aqueous (70%) |
| MSDS Number | : | 000000001807 |
| Product Use Description | : | Chemical-Technical application |
| Company | : | Honeywell International, Inc.<br>101 Columbia Road<br>Morristown, NJ 07962-1057 |
| For more information call | : | 1-800-622-5002<br>+1-973-455-6300<br>www.HFacid.com<br>(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** |
| | : | |
| | : | (24 hours/day, 7 days/week) |

## SECTION 2. HAZARDS IDENTIFICATION

### Emergency Overview

| | | |
|---|---|---|
| Form | : | liquid |
| Color | : | colourless |
| Odor | : | stinging |
| Hazard Summary | : | Extremely corrosive and destructive to tissue. Specialized medical treatment is required for all exposures. May be fatal if inhaled, absorbed through skin, or swallowed. |

### Potential Health Effects

| | | |
|---|---|---|
| Skin | : | Liquid or vapour causes burns which may be delayed. |

May be fatal if absorbed through skin.
May cause hypocalcemia (depletion of calcium in the body) which may be fatal.

Eyes : Liquid or vapour causes burns which may be delayed.

Ingestion : May be fatal if swallowed.
Causes severe burns.
May cause hypocalcemia (depletion of calcium in the body) which may be fatal.

Inhalation : Liquid or vapour causes burns which may be delayed.
Corrosive to respiratory passages.
Inhaled corrosive substances can lead to a toxic oedema of the lungs.
May cause hypocalcemia (depletion of calcium in the body) which may be fatal.

Chronic Exposure : The effects of contact with dilute solutions of hydrofluoric acid or its vapours may be delayed.
Symptoms might include pain, redness of the skin and possible tissue destruction.
May cause:
fluorosis

**Carcinogenicity**

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Mixture

| Chemical Name | CAS-No. | Concentration |
|---|---|---|
| Hydrofluoric acid | 7664-39-3 | 70.00% |
| Water | 7732-18-5 | 30.00% |

## SECTION 4. FIRST AID MEASURES

| | | |
|---|---|---|
| General advice | : | First aider needs to protect himself. Medical assistance essential. Remove all contaminated clothing while washing continuously. After thorough washing the burned area should be immersed in a solution of 0.1% iced aqueous Benzalkonium Chloride. As an alternate first aid treatment, 2.5% calcium gluconate gel may be continuously massaged into the burn area. Further treatment by physician. |
| Inhalation | : | Remove to fresh air. Keep patient warm and at rest. Get competent medical attention immediately. If breathing has stopped, start artificial respiration at once. An authorized person should administer oxygen to a victim who is having difficulty breathing, until the victim is able to breathe easily by himself. Calcium gluconate, 2.5% in normal saline may be given by nebulizer with oxygen. Do not give stimulants unless instructed to do so by a physician. Victim should be examined by a physician and held under observation for at least 24 hours. |
| Skin contact | : | Limit washing to 15 minutes if treatment specific for HF exposure is available.<br>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 | : | Protect unharmed eye. Irrigate eyes for at least 15 minutes with copious quantities of water, keeping eyelids apart and away from eyeballs during irrigation. Get competent medical attention immediately, preferably an eye specialist. If a physician is not immediately available, apply one or two drops of 0.5% tetracaine hydrochloride solution, or other aqueous, topical ophthalmic anesthetic and continue irrigation. Do not |

use the solution described for skin treatment (Benzalkonium chloride). Use no other medications unless instructed to do so by a physician. Rubbing of the eyes is to be avoided. Irrigate with 1% calcium gluconate in normal saline for 1 to 2 hours to prevent or lessen corneal damage.

Ingestion : Call a physician immediately. Drink plenty of water. Do NOT induce vomiting. Magnesium hydroxide (milk of Magnesia) as an antacid may be given.

**Notes to physician**

Treatment : For large skin area burns (totaling greater than 25 square inches), for ingestion and for significant inhalation exposure, severe systemic effects may occur. Monitor and correct for hypocalcemia, cardiac arrhythmias, hypomagnesemia and hyperkalemia. In some cases hemodialysis may be indicated. For certain burns, especially of the digits, use of intra-arterial calcium gluconate may be indicated. For inhalation exposures, treat as chemical pneumonia. Monitor for hypocalcemia. 2.5% calcium gluconate in normal saline by nebulizer or by intermittent positive pressure breathing with 100% oxygen may decrease pulmonary damage. Bronchodilators may also be administered.

## SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Water spray
Foam
Carbon dioxide (CO2)
Dry powder
The product is not flammable.

Specific hazards during firefighting : Fire may cause evolution of:
Hydrogen fluoride
Do not allow run-off from fire fighting to enter drains or water courses.

Special protective equipment for firefighters : Wear self-contained breathing apparatus and protective suit.
No unprotected exposed skin areas.

Further information : Use extinguishing measures that are appropriate to local

circumstances and the surrounding environment.
Use water spray to cool unopened containers.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

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|---|---|---|
| Personal precautions | : | Evacuate personnel to safe areas.<br>Personal protection through wearing a tightly closed chemical protection suit and a self-contained breathing apparatus. |
| Environmental precautions | : | Do not flush into surface water or sanitary sewer system. |
| Methods for cleaning up | : | Clean-up methods - large spillage<br>Suppress (knock down) gases/vapours/mists with a water spray jet.<br>Dilute with plenty of water.<br>Use chemical neutralising agents<br>Neutralise with the following product(s):<br>lime<br>Flush with water.<br>Suitable material for picking up<br>Universal binder<br>Never neutralise with the following products:<br>soda ash |
| Additional advice | : | Possible need to alert the neighbourhood. |

## SECTION 7. HANDLING AND STORAGE

### Handling

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|---|---|---|
| Handling | : | Exhaust ventilation at the object is necessary.<br>Use only acid resistant equipment.<br>Perform filling operations only at stations with exhaust ventilation facilities.<br>Plan first aid action before beginning work with this product.<br>Always have on hand a first-aid kit, together with proper instructions.<br>When diluting, add acids to water, never the other way around. |
| Advice on protection against fire and explosion | : | No special precautions required.<br>Not combustible. |

**Storage**

| | | |
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| Requirements for storage areas and containers | : | Keep containers tightly closed in a cool, well-ventilated place.<br>Store in a place accessible by authorized persons only.<br>Store away from incompatible substances. |
| Other data | : | The pressure in sealed containers can increase under the influence of heat. |

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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|---|---|---|
| Protective measures | : | Avoid exposure - obtain special instructions before use.<br>Recommended preventive skin protection<br>Keep working clothes separately.<br>Take off all contaminated clothing immediately. |
| Engineering measures | : | Emergency sprinkling nozzle<br>acid resisting floor<br>Local exhaust |
| Eye protection | : | see respiratory protection |
| Hand protection | : | Hydrofluoric acid-resistant and solvent-resistant gloves (gloves made of VITON (R)). |
| Skin and body protection | : | Complete suit protecting against chemicals |
| Respiratory protection | : | Full mask, filter B2 |
| Hygiene measures | : | Take off all contaminated clothing immediately.<br>Separate rooms are required for washing, showering and changing clothes.<br>Regular cleaning of equipment, work area and clothing.<br>Contaminated work clothing should not be allowed out of the workplace.<br>Recommended preventive skin protection<br>Wash hands before breaks and at the end of workday.<br>When using do not eat or drink. |

**Exposure Guidelines**

| Components | CAS-No. | Value | Control parameters | Update | Basis |
|---|---|---|---|---|---|
| Hydrofluoric acid | 7664-39-3 | TWA : time weighted average | (0.5 ppm) | 2008 | ACGIH:US. ACGIH Threshold Limit Values |
| Further information | : | Expressed as : as F | | | |

| | | | | | |
|---|---|---|---|---|---|
| Hydrofluoric acid | 7664-39-3 | Ceiling : Ceiling Limit Value: | (2 ppm) | 2008 | ACGIH:US. ACGIH Threshold Limit Values |
| Further information | : | Expressed as : as F | | | |

| | | | | | |
|---|---|---|---|---|---|
| Hydrofluoric acid | 7664-39-3 | SKIN_DES : Skin designation: | Can be absorbed through the skin. | 2008 | ACGIH:US. ACGIH Threshold Limit Values |
| Further information | : | Expressed as : as F | | | |

| | | | | | |
|---|---|---|---|---|---|
| Hydrofluoric acid | 7664-39-3 | Ceil_Time : Ceiling Limit Value and Time Period (if specified) : | 5 mg/m3 (6 ppm) | 2005 | NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards |

| | | | | | |
|---|---|---|---|---|---|
| Hydrofluoric acid | 7664-39-3 | REL : Recommended exposure limit (REL): | 2.5 mg/m3 (3 ppm) | 2005 | NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards |

| | | | | | |
|---|---|---|---|---|---|
| Hydrofluoric acid | 7664-39-3 | PEL : Permissible exposure limit | 2.5 mg/m3 | 02 2006 | OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) |
| Further information | : | Expressed as : as F | | | |

| | | | | | |
|---|---|---|---|---|---|
| Hydrofluoric acid | 7664-39-3 | STEL : Short term exposure limit | (6 ppm) | 1989 | Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000) |
| Further information | : | Expressed as : as F | | | |

| | | | | | |
|---|---|---|---|---|---|
| Hydrofluoric acid | 7664-39-3 | TWA : time weighted average | (3 ppm) | 1989 | Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000) |
| Further information | : | Expressed as : as F | | | |

| | | | | | |
|---|---|---|---|---|---|
| Hydrofluoric acid | 7664-39-3 | TWA : time weighted average | (3 ppm) | 02 2006 | OSHA/Z2:US. OSHA Table Z-2 (29 CFR 1910.1000) |

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| | | |
|---|---|---|
| Physical state | : | liquid |
| Color | : | colourless |
| Odor | : | stinging |
| pH | : | Note: acidic |
| Melting point/freezing point | : | ca. -76 °C |

| | | |
|---|---|---|
| Boiling point/boiling range | : | ca. 65 °C at 1,013 hPa |
| Flash point | : | Note: not applicable |
| Lower explosion limit | : | Note: not applicable |
| Upper explosion limit | : | Note: not applicable |
| Vapor pressure | : | 183 hPa<br>at 21.1 °C(70.0 °F) |
| Vapor density | : | 2.21 at 21.1 °C<br>1.76 at 26.7 °C |
| Density | : | ca. 1.230 g/cm3 at 20 °C |
| Water solubility | : | Note: completely miscible |
| Ignition temperature | : | Note: not applicable |
| Decomposition temperature | : | Note: No decomposition if used as directed., Fire or intense heat may cause violent rupture of packages. |
| Corrosivity | : | Note: Corrosive to metals |

## SECTION 10. STABILITY AND REACTIVITY

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|---|---|---|
| Chemical stability | : | No decomposition if stored and applied as directed. |

| | | |
|---|---|---|
| Possibility of hazardous reactions | : | Gives off hydrogen by reaction with metals. |
| Conditions to avoid | : | Heating will cause pressure rise with risk of bursting |
| Incompatible materials to avoid | : | Glass and silicate-containing materials are attacked.<br>Gives off hydrogen by reaction with metals.<br>Incompatible with bases.<br>Contact with carbonates, sulfides and cyanides may yield toxic gases such as:<br>Carbon dioxide (CO2)<br>hydrogen sulphide (H2S)<br>Hydrogen cyanide (hydrocyanic acid) |
| Hazardous decomposition products | : | Hydrogen fluoride |

## SECTION 11. TOXICOLOGICAL INFORMATION

| | | |
|---|---|---|
| Acute inhalation toxicity | : | LC50: 2240 ppm<br>Exposure time: 1 h<br>Species: rat<br>Note: anhydrous substance |
| Skin irritation | : | Species: rabbit<br>Classification: Corrosive<br>Method: OECD |
| Eye irritation | : | Note: no data available |
| Sensitisation | : | Note: no data available |
| Further information | : | Note: Causes severe burns. Chronic Health Hazard |

## SECTION 12. ECOLOGICAL INFORMATION

**Ecotoxicity effects**

| | | |
|---|---|---|
| Toxicity to fish | : | static test<br>LC50: 164.5 mg/l<br>Exposure time: 96 h<br>Species: Oncorhynchus mykiss |
| | : | LC50: 107.5 mg/l<br>Exposure time: 96 h<br>Species: Oncorhynchus mykiss |
| | : | LC50: 925 mg/l<br>Exposure time: 96 h<br>Species: mosquito fish |
| Toxicity to daphnia and other aquatic invertebrates | : | Note: no data available |
| Toxicity to algae | : | Note: no data available |

**Further information on ecology**

## SECTION 13. DISPOSAL CONSIDERATIONS

| | | |
|---|---|---|
| Disposal methods | : | Observe all Federal, State, and Local Environmental regulations. |

## SECTION 14. TRANSPORT INFORMATION

| | | | |
|---|---|---|---|
| **DOT** | UN/ID No. | : | UN 1790 |
| | Proper shipping name | : | Hydrofluoric acid |
| | Class | | 8 |
| | Packing group | | I |
| | Hazard Labels | | 8 (6.1) |

| | | | |
|---|---|---|---|
| **IATA** | UN/ID No. | : | UN 1790 |
| | Description of the goods | : | Hydrofluoric acid |
| | Class | : | 8 |
| | Packaging group | : | I |

| | | | |
|---|---|---|---|
| | Hazard Labels | : | 8 (6.1) |
| | Packing instruction (cargo aircraft) | : | 854 |
| | Packing instruction (passenger aircraft) | : | 850 |
| **IMDG** | UN/ID No. | : | UN 1790 |
| | Description of the goods | : | Hydrofluoric acid |
| | Class | : | 8 |
| | Packaging group | : | I |
| | Hazard Labels | : | 8 (6.1) |
| | EmS Number | : | F-A, S-B |
| | Marine pollutant | : | no |

## SECTION 15. REGULATORY INFORMATION

**Inventories**

| | | |
|---|---|---|
| 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. Toxic Chemical Control Law (TCCL) List | : | 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 |

| | | |
|---|---|---|
| NZIOC - New Zealand | : | On the inventory, or in compliance with the inventory |

**National regulatory information**

| | | |
|---|---|---|
| **SARA 302 Components** | : | The following components are subject to reporting levels established by SARA Title III, Section 302: |
| | : | Hydrofluoric acid 7664-39-3 |
| **SARA 313 Components** | : | The following components are subject to reporting levels established by SARA Title III, Section 313: |
| | : | Hydrofluoric acid 7664-39-3 |
| **SARA 311/312 Hazards** | : | Acute Health Hazard<br>Chronic Health Hazard |
| **CERCLA Reportable Quantity** | : | 143 lbs |
| **California Prop. 65** | : | This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm. |

| | | | |
|---|---|---|---|
| **Massachusetts RTK** | : | Hydrofluoric acid | 7664-39-3 |
| **New Jersey RTK** | : | Hydrofluoric acid | 7664-39-3 |
| **Pennsylvania RTK** | : | Hydrofluoric acid | 7664-39-3 |
| **WHMIS Classification** | : | D1A: Very Toxic Material Causing Immediate and Serious Toxic Effects<br>D2A: Very Toxic Material Causing Other Toxic Effects<br>E: Corrosive Material<br>This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR. | |

## SECTION 16. OTHER INFORMATION

| | | HMIS III | NFPA |
|---|---|---|---|
| Health hazard | : | 4* | 4 |
| Flammability | : | 0 | 0 |
| Physical Hazard | : | 1 | |
| Instability | : | | 1 |

* - Chronic health hazard

Hazard rating and rating systems (e.g. HMIS® III, NFPA): This information is intended solely for the use of individuals trained in the particular system.

**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.

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