Hydrofluoric acid 49 %

000000001555

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SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Hydrofluoric acid 49 %
MSDS Number	:	000000001555
Product Use Description	:	Metal Pickling, Glass Etching, Chemical derivatives, Semiconductor etching
Company	:	Honeywell International, Inc. 101 Columbia Road Morristown, NJ 07962-1057
For more information call	:	1-800-279-9998 1-480-293-9800 www.HFacid.com (Monday-Friday, 9:00am-5:00pm)
In case of emergency call	:	**Medical (PROSAR): 1-800-498-5701 or +1-651-523-0309**
	:	**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	:	The effects of contact with dilute solutions of hydrofluoric acid or its vapours may be delayed. Causes burns. Irritating to respiratory system.

Potential Health Effects

Skin	:	Causes severe burns which may not be immediately painful or visible. Hydrofluoric Acid will penetrate skin and attack underlying tissues.
Eyes	:	Corrosive to eyes Causes itching, burning, redness and tearing. May cause corneal injury.
Ingestion	:	May cause nausea, vomiting, diarrhea, and abdominal discomfort. Ingestion causes burns of the upper digestive and respiratory tracts.
Inhalation	:	May cause nose, throat, and lung irritation. May cause: Shortness of breath Inhalation causes narcotic effect/intoxication. Symptoms of overexposure are dizziness, headache, tiredness, nausea, unconsciousness, cessation of breathing.
Chronic Exposure	:	May cause: fluorosis
Primary Routes of Entry	:	Inhalation

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 Name	CAS-No.	Concentration
Water	7732-18-5	51.00 %
Hydrofluoric acid	7664-39-3	49.00 %

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. 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

Personal precautions	:	Evacuate personnel to safe areas. Use personal protective equipment. Keep people away from and upwind of spill/leak. Wear full protective clothing and self-contained breathing apparatus.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities. Clean contaminated floors and objects thoroughly while observing environmental regulations.
Methods for cleaning up	:	Clean-up methods - large spillage Suppress (knock down) gases/vapours/mists with a water spray jet. Dilute with plenty of water. Use chemical neutralising agents Neutralise with the following product(s): lime Flush with water. Suitable material for picking up Universal binder Never neutralise with the following products: soda ash
Additional advice	:	Possible need to alert the neighbourhood.

SECTION 7. HANDLING AND STORAGE

Handling

Handling	:	Exhaust ventilation at the object is necessary. Use only acid resistant equipment. Perform filling operations only at stations with exhaust ventilation facilities.

Plan first aid action before beginning work with this product.
Always have on hand a first-aid kit, together with proper instructions.

Advice on protection against fire and explosion : No special precautions required.
The product is not flammable.

Storage

Further information on storage conditions : Keep containers tightly closed in a dry, cool and well-ventilated place.
Do not leave vessels/containers open
Containers should be protected against falling down.
Avoid product residues in/on containers
Store in a place accessible by authorized persons only.

Other data : The pressure in sealed containers can increase under the influence of heat.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective measures : Avoid exposure - obtain special instructions before use.
Recommended preventive skin protection
Keep working clothes separately.
Take off all contaminated clothing immediately.

Engineering measures : acid resisting floor
Emergency sprinkling nozzle
Local exhaust

Eye protection : see respiratory protection

Hand protection : Protective gloves
Gloves must be inspected prior to use.
Replace when worn.

Skin and body protection : Complete suit protecting against chemicals

Respiratory protection : Full mask, filter B2

Hygiene measures : Separate rooms are required for washing, showering and

changing clothes.
Regular cleaning of equipment, work area and clothing.
Contaminated work clothing should not be allowed out of the workplace.

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. -35 °C
Boiling point/boiling range	:	ca. 105 °C at 1,013 hPa
Flash point	:	Note: not applicable
Lower explosion limit	:	Note: not applicable
Upper explosion limit	:	Note: not applicable
Vapor pressure	:	101 hPa at 50 °C(122 °F)
Density	:	ca. 1.170 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

Possibility of hazardous reactions	:	Corrosive in contact 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. Gives off hydrogen by reaction with metals. Incompatible with bases.
Hazardous decomposition products	:	No decomposition if stored normally. Stable under normal conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute inhalation toxicity	:	LC50: 1276 ppm Exposure time: 1 h Species: rat Note: anhydrous substance
Skin irritation	:	Species: rabbit Classification: Corrosive Method: OECD
Further information	:	Note: Can cause bone and joint changes in humans (fluorosis).

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Toxicity to fish	:	LC50: 107.5 mg/l Exposure time: 96 h

Species: Oncorhynchus mykiss

: LC50: 925 mg/l
Exposure time: 96 h
Species: mosquito fish

Toxicity to daphnia and other aquatic invertebrates : EC50: 270 mg/l
Exposure time: 48 h
Species: Daphnia

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		II
	Hazard Labels		8 (6.1)
IATA	UN/ID No.	:	UN 1790
	Description of the goods	:	Hydrofluoric acid
	Class	:	8
	Packaging group	:	II
	Hazard Labels	:	8 (6.1)
	Packing instruction (cargo aircraft)	:	855
	Packing instruction (passenger aircraft)	:	851
	Packing instruction (passenger aircraft)	:	Y840
IMDG	UN/ID No.	:	UN 1790
	Description of the goods	:	Hydrofluoric acid

Class	:	8
Packaging group	:	II
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 list.
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

National regulatory information

US. EPA CERCLA Hazardous Substances (40 CFR 302)	:	The following component(s) of this product is/are subject to release reporting under 40 CFR 302 when release exceeds the Reportable Quantity (RQ):	
		Reportable quantity: 100 lbs	
	:	Hydrofluoric acid	7664-39-3
US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A)	:	The following component(s) of this product is/are subject to the emergency planning provisions of 40 CFR 355 when there are amounts equal to or greater than the Threshold Planning Quantity (TPQ):	
		Threshold Planning Quantity:: 100 lbs	
	:		
		Reportable quantity: 100 lbs	
	:	Hydrofluoric acid	7664-39-3
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 Chronic Health Hazard	
CERCLA Reportable Quantity	:	204 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 D2A: Very Toxic Material Causing Other Toxic Effects E: Corrosive Material 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.

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