

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

- Trade name HYDROFLUORIC ACID 49%
- Chemical name Hydrofluoric acid
- Molecular formula HF

1.2 Relevant identified uses of the substance or mixture and uses advised against

Uses of the Substance / Mixture

- Chemical industry
- Glass industry
- Metallurgy.
- Fuel additive
- Chemical intermediate

- Etching agent
- Electronic industry
- Photovoltaic industry

1.3 Details of the supplier of the safety data sheet

Company

SOLVAY FLUORIDES, LLC
3737 Buffalo Speedway,
Suite 800,
Houston, TX 77098
USA
Tel: 800-515-6065

1.4 Emergency telephone

FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CONTACT CHEMTRAC (24-Hour Number): 800-424-9300 within the United States and Canada, or 703-527-3887 for international collect calls.

SECTION 2: Hazards identification

Although OSHA has not adopted the environmental portion of the GHS regulations, this document may include information on environmental effects.

2.1 Classification of the substance or mixture

HCS 2012 (29 CFR 1910.1200)

Acute toxicity, Category 2	H300: Fatal if swallowed.
Acute toxicity, Category 2	H330: Fatal if inhaled.
Acute toxicity, Category 1	H310: Fatal in contact with skin.
Skin corrosion, Category 1A	H314: Causes severe skin burns and eye damage.
Serious eye damage, Category 1	H318: Causes serious eye damage.

HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

2.2 Label elements**HCS 2012 (29 CFR 1910.1200)****Pictogram****Signal Word**

- Danger

Hazard Statements

- H300 + H310 + H330
- H314

Fatal if swallowed, in contact with skin or if inhaled.
Causes severe skin burns and eye damage.

Precautionary StatementsPrevention

- P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
- P262 Do not get in eyes, on skin, or on clothing.
- P264 Wash skin thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P284 Wear respiratory protection.

Response

- P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth.
- P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P302 + P350 + P310 IF ON SKIN: Gently wash with plenty of soap and water. Immediately call a POISON CENTER or doctor/ physician.
- P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P305 + P351 + P338 + P310 Immediately call a POISON CENTER/doctor.
- P362 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

Take off contaminated clothing and wash before reuse.

Storage

- P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
- P405 Store locked up.

Disposal

- P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards which do not result in classification

- H402: Harmful to aquatic life.
- Chronic exposure may entail dental or skeletal fluorosis

SECTION 3: Composition/information on ingredients**3.1 Substance**

- Not applicable, this product is a mixture.

P00000031491

Version : 1.05 / US (Z8)

www.solvay.com

HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

3.2 Mixture

- Formula HF

Hazardous Ingredients and Impurities

Chemical name	Identification number CAS-No.	Concentration [%]
Hydrofluoric acid	7664-39-3	>= 40 - < 50

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

- HF exposures are unique. Serious and potentially life threatening effects can occur immediately or up to 24 hours after exposure.
- Always decontaminate exposure victims before applying first aid or medical treatment.
- Rescuers should wear PPE during rescue and decontamination of victims.
- First aid providers should wear gloves when touching exposed areas or applying calcium gluconate gel to victims.
- In case of splashes to eyes and face, treat eyes first.
- Always seek medical attention if exposed to HF.

In case of inhalation

- Move to fresh air.
- Get immediate medical advice/ attention.
- Administer oxygen by mask at a rate of 12 liters/minute.
- Nebulize 2.5% calcium gluconate solution for 15 to 20 minutes minimum or until the victim reaches medical attention.
- If calcium gluconate is not available, administer oxygen as above until the victim reaches medical attention.
- If respiratory assistance is needed, use indirect methods such as "microshields" or "AMBU" bag. Do not give mouth to mouth resuscitation.
- If exposed to HF vapor, expect to see skin and eye exposure. Follow the decontamination and first aid procedures for skin and eye exposure.
- Be aware to maintain life support if necessary.

In case of skin contact

- In case of HF exposure to skin, go to the nearest source of water or safety shower. Turn water on.
- While washing, remove all clothing, shoes and jewelry.
- Finally, while closing eyes and facing the water flow, remove goggles or respirator face mask.
- HF-resistant gloves should be worn while touching contaminated skin.
- Wash the exposed areas for 5 minutes maximum if first aid treatments are immediately available. Otherwise continue to wash until first aid treatments are available.
- Immediately apply calcium gluconate gel 2.5% and massage into the affected area; continue to massage while repeatedly applying gel until 15 minutes after pain is relieved.
- If fingers/finger nails are touched, even if there is no pain, dip them in a bath of 2.5% calcium gluconate for 15 to 20 minutes.
- Seek medical attention as soon as possible. During transportation to a medical facility or while waiting for a physician to see victim, it is extremely important to continue messaging calcium gluconate gel.
- Be aware to maintain life support if necessary.

In case of eye contact

- Decontamination: Go to the nearest eye wash or clean source of water, open the water valve. Have a trained person remove contact lenses if present (contact lenses should be prohibited), put your eye(s) in the water flow and hold eyelids open while flushing.

P00000031491

Version : 1.05 / US (Z8)

www.solvay.com



HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

- After flushing, irrigate eyes with 1% calcium gluconate solution using a nasal cannula cinched over the bridge of the nose. Dispense 1000 cc of calcium gluconate solution in a continuous flush for a minimum period of 15 minutes, or if necessary until medical aid is available.
- During transportation to a medical facility or while waiting for a physician to see the victim, it is extremely important to continue the calcium gluconate irrigation.
- Always obtain specialized medical evaluation & treatment as soon as possible.
- Be aware to maintain life support if necessary.

In case of ingestion

- If HF has been ingested, the victim should be immediately transported to a medical facility.
- Do NOT induce vomiting.
- If the victim is able to swallow, give oral calcium containing antacids or solution. The recommended antidote is calcium gluconate. However, if no calcium gluconate is at hand, the oral administration of small and limited amount of milk or water might be considered if it's consistent with local practice.
- Be aware to maintain life support if necessary.

4.2 Most important symptoms and effects, both acute and delayed**In case of skin contact****Symptoms**

- Causes severe burns.
- metabolic imbalances
- Life threatening cardiac arrhythmia

Effects

- HF penetrate very fast any tissue it comes in contact with, and do not remain on its surface.
- Initially, the substances will be locally burning, and afterwards they will penetrate into deeper tissues and might cause the following significant complications:
- In case of lower concentrations, symptoms can be delayed and might appear even 48h after the exposure.
- It is completely absorbed into the body, where it causes acute and severe toxic systemic effects, mainly attributable to a rapid development of serum hypocalcaemia and hypomagnesaemia and to enzymes blocking.

In case of eye contact**Symptoms**

- Causes severe burns.
- Blindness

Effects

- HF penetrate very fast any tissue it comes in contact with, and do not remain on its surface.
- Initially, the substances will be locally burning, and afterwards they will penetrate into deeper tissues and might cause the following significant complications:
- In case of lower concentrations, symptoms can be delayed and might appear even 48h after the exposure.
- It is completely absorbed into the body, where it causes acute and severe toxic systemic effects, mainly attributable to a rapid development of serum hypocalcaemia and hypomagnesaemia and to enzymes blocking.

In case of inhalation**Symptoms**

- Causes severe burns.
- metabolic imbalances
- pulmonary edema
- Life threatening cardiac arrhythmia

Effects

- Initially, the substances will be locally burning, and afterwards they will penetrate into deeper tissues and might cause the following significant complications:

P00000031491

Version : 1.05 / US (Z8)

www.solvay.com



HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

- In case of lower concentrations, symptoms can be delayed and might appear even 48h after the exposure.
- It is completely absorbed into the body, where it causes acute and severe toxic systemic effects, mainly attributable to a rapid development of serum hypocalcaemia and hypomagnesaemia and to enzymes blocking.

In case of ingestion**Effects**

- In case of lower concentrations, symptoms can be delayed and might appear even 48h after the exposure.
- It is completely absorbed into the body, where it causes acute and severe toxic systemic effects, mainly attributable to a rapid development of serum hypocalcaemia and hypomagnesaemia and to enzymes blocking.

4.3 Indication of any immediate medical attention and special treatment needed

- no data available

SECTION 5: Firefighting measures

Flash point Not applicable

Autoignition temperature Not applicable

Flammability / Explosive limit No data available

5.1 Extinguishing media**Suitable extinguishing media**

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

- Water may be ineffective.

5.2 Special hazards arising from the substance or mixture**Specific hazards during fire fighting**

- The product is not flammable.
- Not combustible.
- Hazardous decomposition products formed under fire conditions.
- Gives off hydrogen by reaction with metals.

Hazardous combustion products:

- Hydrogen

5.3 Advice for firefighters**Special protective equipment for fire-fighters**

- Wear self-contained breathing apparatus and protective suit.
- Wear chemical resistant oversuit
- Special protective actions for fire-fighters
- In case of fire, use water spray.
- Keep product and empty container away from heat and sources of ignition.
- Cool containers/tanks with water spray.
- Keep from any possible contact with water.
- Approach from upwind.

HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

Further information

- Suppress (knock down) gases/vapors/mists with a water spray jet.

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures****Advice for non-emergency personnel**

- Immediately evacuate personnel to safe areas.
- Keep people away from and upwind of spill/leak.

Advice for emergency responders

- Wear self-contained breathing apparatus and protective suit.
- Suppress (knock down) gases/vapors/mists with a water spray jet.
- Avoid spraying the leak source.
- Ventilate the area.
- Prevent further leakage or spillage if safe to do so.
- Keep away from incompatible products
- Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing.

6.2 Environmental precautions

- Should not be released into the environment.
- If the product contaminates rivers and lakes or drains inform respective authorities.
- Prevent product from entering sewage system.

6.3 Methods and materials for containment and cleaning up

- Prevent product from entering sewage system.
- Dilute with water.
- Contact with water may produce heat release and presents risks of splashing.
- Keep in properly labeled containers.
- Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

- Refer to protective measures listed in sections 7 and 8.

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

- Use only in well-ventilated areas.
- Used in closed system
- Use only clean and dry utensils.
- Keep away from water.
- Preferably transfer by pump or gravity.
- Avoid inhalation, ingestion and contact with skin and eyes.
- Keep away from incompatible products

HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

Hygiene measures

- Use only in an area equipped with a safety shower.
- Take off contaminated clothing and shoes immediately.
- Wash contaminated clothing before re-use.
- May not get in touch with:
- Leather
- Handle in accordance with good industrial hygiene and safety practice.
- Consult the industrial hygienist or the safety manager for the selection of personal protective equipment suitable for the working conditions.

7.2 Conditions for safe storage, including any incompatibilities**Technical measures/Storage conditions**

- Keep container tightly closed.
- Keep in a cool, well-ventilated place.
- Keep away from heat.
- Prevent spreading over a wide area (e.g., by containment or oil barriers).
- Information about special precautions needed for bulk handling is available on request.
- Keep away from:
- Incompatible products

Packaging material**Suitable material**

- Coated steels.
- Plastic drum
- Polyethylene

Unsuitable material

- glass

7.3 Specific end use(s)

- Contact your supplier for additional information

SECTION 8: Exposure controls/personal protection

Introductory Remarks: These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

8.1 Control parameters**Components with workplace occupational exposure limits**

Components	Value type	Value	Basis
Hydrofluoric acid	TWA	3 ppm 2.5 mg/m ³	National Institute for Occupational Safety and Health
Hydrofluoric acid	C	6 ppm 5 mg/m ³	National Institute for Occupational Safety and Health
		15 minute ceiling value	
Hydrofluoric acid	TWA	3 ppm	Occupational Safety and Health Administration - Table Z-2

P00000031491

Version : 1.05 / US (Z8)

www.solvay.com



HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

Z37.28-1969			
Hydrofluoric acid	TWA	0.5 ppm 2 ppm	American Conference of Governmental Industrial Hygienists Danger of cutaneous absorption Expressed as :Fluorine
Danger of cutaneous absorption Expressed as :Fluorine			
Hydrofluoric acid	C	2 ppm	American Conference of Governmental Industrial Hygienists Danger of cutaneous absorption Expressed as :Fluorine
Danger of cutaneous absorption Expressed as :Fluorine			
Hydrofluoric acid			Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants See Table Z-2Expressed as :Fluorine
Hydrofluoric acid	PEL	0.4 ppm 0.33 mg/m ³	SkinExpressed as :Fluorine
Hydrofluoric acid	STEL	1 ppm 0.83 mg/m ³	SkinExpressed as :Fluorine
SkinExpressed as :Fluorine			

NIOSH IDLH (Immediately Dangerous to Life or Health Concentrations)

Components	CAS-No.	Concentration
Hydrofluoric acid	7664-39-3	30 ppm

Biological Exposure Indices

Components	Value type	Value	Basis
Hydrofluoric acid	BEI	2 mg/l Fluoride Urine Prior to shift (16 hours after exposure ceases)	American Conference of Governmental Industrial Hygienists
Hydrofluoric acid	BEI	3 mg/l Fluoride Urine End of shift (As soon as possible after exposure ceases)	American Conference of Governmental Industrial Hygienists

8.2 Exposure controlsControl measures**Engineering measures**

- Provide appropriate exhaust ventilation at machinery.
- Apply technical measures to comply with the occupational exposure limits.

Individual protection measures

P00000031491

Version : 1.05 / US (Z8)

www.solvay.com



HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

Respiratory protection

- In the case of dust or aerosol formation use respirator with an approved filter.
- Use only respiratory protection that conforms to international/ national standards.
- Use NIOSH approved respiratory protection.
- Self-contained breathing apparatus in confined spaces/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.
- Use only respiratory protection that conforms to international/ national standards.
- Use NIOSH approved respiratory protection.
- Respirator with a full face mask.
- Self-contained breathing apparatus in confined spaces/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.
- Use respirator when performing operations involving potential exposure to vapor of the product.

Hand protection

- Impervious gloves
- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

Suitable material

- Fluoroelastomer

Eye protection

- Chemical resistant goggles must be worn.
- If splashes are likely to occur, wear:
- Face-shield

Skin and body protection

- Impervious clothing
- Apron/boots of butyl rubber if risk of splashing.
- Do not wear leather shoes.

Hygiene measures

- Use only in an area equipped with a safety shower.
- Take off contaminated clothing and shoes immediately.
- Wash contaminated clothing before re-use.
- May not get in touch with:
- Leather
- Handle in accordance with good industrial hygiene and safety practice.
- Consult the industrial hygienist or the safety manager for the selection of personal protective equipment suitable for the working conditions.

SECTION 9: Physical and chemical properties

Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product information phone number in Section 1 for its exact specifications.

9.1 Information on basic physical and chemical properties

<u>Appearance</u>	<u>Physical state:</u> liquid
	<u>Color:</u> colorless

<u>Odor</u>	pungent
-------------	---------

<u>Odor Threshold</u>	No data available
-----------------------	-------------------

HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

<u>Molecular weight</u>	20 g/mol
<u>pH</u>	< 1.0
<u>Melting point/freezing point</u>	Freezing point: -35 °F (-37 °C)
<u>Initial boiling point and boiling range</u>	Boiling point/boiling range: 223 °F (106 °C)
<u>Flash point</u>	Not applicable
<u>Evaporation rate (Butylacetate = 1)</u>	No data available
<u>Flammability (solid, gas)</u>	Not applicable
<u>Flammability (liquids)</u>	The product is not flammable.
<u>Flammability / Explosive limit</u>	<u>Explosiveness:</u> With certain materials (see section 10).
<u>Autoignition temperature</u>	Not applicable
<u>Vapor pressure</u>	No data available
<u>Vapor density</u>	No data available
<u>Density</u>	<u>Bulk density:</u> Not applicable
<u>Relative density</u>	1.16 (77 °F (25 °C))
<u>Solubility</u>	<u>Water solubility:</u> completely miscible, Reacts violently with water.
<u>Partition coefficient: n-octanol/water</u>	Not applicable
<u>Decomposition temperature</u>	No data available
<u>Viscosity</u>	No data available
<u>Explosive properties</u>	No data available
<u>Oxidizing properties</u>	Not applicable

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

P00000031491
 Version : 1.05 / US (Z8)
www.solvay.com



HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

- Reacts violently with water.
- Risk of explosion.

10.2 Chemical stability

- Stable under recommended storage conditions.
- Risk of violent reaction.

10.3 Possibility of hazardous reactions

- Corrosive in contact with metals, Gives off hydrogen by reaction with metals.

10.4 Conditions to avoid

- Exposure to moisture.

10.5 Incompatible materials

- Water
- glass
- Metals
- Strong bases
- Alkali metals

10.6 Hazardous decomposition products

- Hydrogen

SECTION 11: Toxicological information**11.1 Information on toxicological effects****Acute toxicity****Acute oral toxicity**

Hydrofluoric acid

study scientifically unjustified

Acute inhalation toxicity

Hydrofluoric acid

LC50 - 1 h (gas) : 2,240 - 2,340 ppm - Rat , male
dry air
Humid air**Acute dermal toxicity**

Hydrofluoric acid

NOEC : 2 %(m) - Rabbit
Test substance: solution
Exposure time
1 minNOEC : 0.01 %(m) - Rabbit
Test substance: solution
Exposure time
30 min**Acute toxicity (other routes of administration)**

No data available

Skin corrosion/irritation

Hydrofluoric acid

Corrosive

P00000031491

Version : 1.05 / US (Z8)

www.solvay.com

HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

Serious eye damage/eye irritation

Hydrofluoric acid Risk of serious damage to eyes.

Respiratory or skin sensitization

Hydrofluoric acid By analogy
Does not cause skin sensitization.
Test substance: Sodium fluoride

Mutagenicity**Genotoxicity in vitro**

Hydrofluoric acid By analogy
Test substance: Sodium fluoride
In vitro tests did not show mutagenic effects

Genotoxicity in vivo

Hydrofluoric acid By analogy
Test substance: Sodium fluoride
In vivo tests did not show mutagenic effects

Carcinogenicity

Hydrofluoric acid By analogy
Rat
Oral
NOAEL: 175ppm
Test substance: Sodium fluoride
drinking water
Mouse
Oral
NOAEL: 175ppm
Test substance: Sodium fluoride
drinking water
No carcinogenic effects have been observed

This product does not contain any ingredient designated as probable or suspected human carcinogens by:

NTP
IARC
OSHA
NTP
IARC
OSHA

Toxicity for reproduction and development**Toxicity to reproduction / fertility**

Hydrofluoric acid By analogy

P00000031491

Version : 1.05 / US (Z8)

www.solvay.com



HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

Two-generation study - Rat, male and female, Oral
Fertility NOAEL Parent: 10 mg/kg

Fertility NOAEL F1: 10 mg/kg
Test substance, Sodium fluoride, drinking water, The product is not considered to affect fertility.

Developmental Toxicity/Teratogenicity

Hydrofluoric acid

By analogy

Rat

Rabbit

, Oral
Teratogenicity NOAEL:14mg/kg
Test substance, Sodium fluoride, drinking water, The product is not considered to be toxic for development.

STOT**STOT-single exposure**

Hydrofluoric acid

The substance or mixture is not classified as specific target organ toxicant, single exposure according to GHS criteria.

STOT-repeated exposure

Hydrofluoric acid

The substance or mixture is not classified as specific target organ toxicant, repeated exposure according to GHS criteria.

Inhalation Prolonged exposure - Rat
Test substance: gas
Target Organs: Cardio-vascular system, Nervous system
observed effect

Experience with human exposure

No data available

Aspiration toxicity

No data available

Further information

corrosive effects
Liver and kidney injuries may occur.
Chronic exposure may entail dental or skeletal fluorosis
The carcinogenic effect is not demonstrated in human
risk of effect to:
toxic effects for reproduction

HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

SECTION 12: Ecological information**12.1 Toxicity****Aquatic Compartment****Acute toxicity to fish**

Hydrofluoric acid

By analogy

LC50 - 96 h : 51 mg/l - Fishes, Salmo gairdneri
static testTest substance: Sodium fluoride
Fresh water**Acute toxicity to daphnia and other aquatic invertebrates**

Hydrofluoric acid

By analogy

EC50 - 48 h : 26 mg/l - Daphnia magna (Water flea)
static testTest substance: Sodium fluoride
Fresh waterEC50 - 96 h : 10.5 mg/l
static testTest substance: Sodium fluoride
Marine species
salt water**Toxicity to aquatic plants**

Hydrofluoric acid

By analogy

EC50 - 96 h : 43 mg/l - Algae
static testTest substance: Sodium fluoride
Fresh water

By analogy

EC50 - 96 h : 81 mg/l - Algae

static test

Test substance: Sodium fluoride
Sea water

By analogy

NOEC - 7 Days : 50 mg/l - Algae

static test

Test substance: Sodium fluoride
Fresh water
Sea water**Toxicity to microorganisms**

No data available

HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

Chronic toxicity to fish

Hydrofluoric acid

By analogy

NOEC: 4 mg/l - 21 Days - *Oncorhynchus mykiss* (rainbow trout)
static testTest substance: Sodium fluoride
Fresh water**Chronic toxicity to daphnia and other aquatic invertebrates**

Hydrofluoric acid

By analogy

NOEC: 8.9 mg/l - 21 Days - *Daphnia magna* (Water flea)
static testTest substance: Sodium fluoride
Fresh water**12.2 Persistence and degradability****Abiotic degradation****Photodegradation**

Hydrofluoric acid

Air
neutralization by natural alkalinity**Physical- and photo-chemical elimination**

No data available

Biodegradation**Biodegradability**

Hydrofluoric acid

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential**Partition coefficient: n-octanol/water**

Hydrofluoric acid

Not applicable, inorganic substance

HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

Bioconcentration factor (BCF) Hydrofluoric acid	Does not bioaccumulate.
12.4 Mobility in soil	
Adsorption potential (Koc) Hydrofluoric acid	Air mobility as solid aerosols
	Water Solubility(ies) Mobility
	Soil/sediments potential adsorption pH Test substance fluoride
Known distribution to environmental compartments	No data available
12.5 Results of PBT and vPvB assessment	Not applicable, inorganic substance
12.6 Other adverse effects	
Ecotoxicity assessment	
Short-term (acute) aquatic hazard Hydrofluoric acid	Harmful to aquatic life.
Long-term (chronic) aquatic hazard Hydrofluoric acid	No adverse chronic effect observed up to and including the threshold of 1 mg / L.
Remarks	No data is available on the product itself., Ecological data therefore refers only to the effects of the decomposition products., Harmful to aquatic organisms., Nevertheless, hazard for the environment is limited due to product properties:, . low chronic toxicity., Product fate is highly dependent on environmental conditions: pH, temperature, redox potential, mineral and organic content of the medium ,...

SECTION 13: Disposal considerations**13.1 Waste treatment methods****Product Disposal**

- In accordance with local and national regulations.
- Refer to manufacturer/supplier for information on recovery/recycling.
- Absorb the product in a KOH solution.
- Can be eliminated from water by precipitation.
- Filtrate the product and send the cake to a landfill for industrial waste.
- Discharge liquid filtrate to a wastewater treatment system

Waste Code

- Environmental Protection Agency

P00000031491

Version : 1.05 / US (Z8)

www.solvay.com



HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

- Hazardous Waste – YES
- RCRA Hazardous Waste (40 CFR 302)
- D002 - Corrosive waste – (C)

Advice on cleaning and disposal of packaging

- Clean container with water.
- The empty and clean containers are to be reused in conformity with regulations.
- To avoid treatments, as far as possible, use dedicated containers.

SECTION 14: Transport information

Transportation status: IMPORTANT! Statements below provide additional data on listed transport classification.

The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

DOT

14.1 UN number	UN 1790
14.2 Proper shipping name	HYDROFLUORIC ACID
14.3 Transport hazard class	8
Subsidiary hazard class	6.1
Label(s)	8 (6.1)
14.4 Packing group	
Packing group	II
ERG No	157
14.5 Environmental hazards	NO
Marine pollutant	

14.6 Special precautions for user

This product contains one or more ingredients identified as a hazardous substance in Appendix A of 49 CFR 172.101.

Reportable quantities	: RQ substance: Hydrofluoric acid RQ limit for substance: 100 lb RQ limit for product: 201.08 lb
-----------------------	-----------------------------------------------------------------------------------------------------------

TDG

14.1 UN number	UN 1790
14.2 Proper shipping name	HYDROFLUORIC ACID
14.3 Transport hazard class	8
Subsidiary hazard class	6.1
Label(s)	8 (6.1)

14.4 Packing group

P00000031491
Version : 1.05 / US (Z8)

www.solvay.com



HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

Packing group II
 ERG No 157

14.5 Environmental hazards NO
Marine pollutant

NOM

14.1 UN number UN 1790
14.2 Proper shipping name HYDROFLUORIC ACID
14.3 Transport hazard class 8
 Subsidiary hazard class 6.1
 Label(s) 8 (6.1)
14.4 Packing group
 Packing group II
 ERG No 157
14.5 Environmental hazards NO
Marine pollutant

IMDG

14.1 UN number UN 1790
14.2 Proper shipping name HYDROFLUORIC ACID
 IMDG Code segregation group Acids (SGG1)
14.3 Transport hazard class 8
 Subsidiary hazard class 6.1
 Label(s) 8 (6.1)
14.4 Packing group
 Packing group II
14.5 Environmental hazards NO
Marine pollutant

14.6 Special precautions for user
 EmS F-A , S-B

For personal protection see section 8.

14.7 Transport in bulk vessels according to IMO instruments
 No data available

HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

IATA

14.1 UN number	UN 1790
14.2 Proper shipping name	HYDROFLUORIC ACID
14.3 Transport hazard class	8
Subsidiary hazard class:	6.1
Label(s):	8 (6.1)
14.4 Packing group	
Packing group	II
Packing instruction (cargo aircraft)	855
Max net qty / pkg	30.00 L
Packing instruction (passenger aircraft)	851
Max net qty / pkg	1.00 L
14.5 Environmental hazards	NO

14.6 Special precautions for user

For personal protection see section 8.

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transportation regulations for hazardous materials, it would be advisable to check their validity with your sales office.

SECTION 15: Regulatory information**15.1 Notification status**

Inventory Information	Status
United States TSCA Inventory	- All substances listed as active on the TSCA inventory
Canadian Domestic Substances List (DSL)	- Listed on Inventory
Australia Inventory of Chemical Substances (AICS)	- Listed on Inventory
Japan. CSCL - Inventory of Existing and New Chemical Substances	- Listed on Inventory
Korea. Korean Existing Chemicals Inventory (KECI)	- Listed on Inventory
China. Inventory of Existing Chemical Substances in China (IECSC)	- Listed on Inventory
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	- Listed on Inventory
Taiwan Chemical Substance Inventory (TCSI)	- Listed on Inventory
New Zealand. Inventory of Chemical Substances	- All components are listed on the NZIOC inventory. The HSNO status of the product has not been assessed.

P00000031491

Version : 1.05 / US (Z8)

www.solvay.com

HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

15.2 Federal Regulations

US. EPA EPCRA SARA Title III**SARA HAZARD DESIGNATION SECTIONS 311/312 (40 CFR 370)**

Acute toxicity (any route of exposure)	Yes
Skin corrosion or irritation	Yes
Serious eye damage or eye irritation	Yes

The categories not mentioned are not relevant for the product.

Section 313 Toxic Chemicals (40 CFR 372.65)

The following components are subject to reporting levels established by SARA Title III, Section 313:

Components	CAS-No.	Concentration
Hydrofluoric acid	7664-39-3	30- 50%

Components	CAS-No.	Threshold planning quantity	Remarks
Hydrofluoric acid	7664-39-3	100 lb	

Section 302 Emergency Planning Extremely Hazardous Substance Reportable Quantity (40 CFR 355)

Components	CAS-No.	Reportable quantity
Hydrofluoric acid	7664-39-3	100 lb

Section 304 Emergency Release Notification Reportable Quantity (40 CFR 355)

Components	CAS-No.	Reportable quantity
Hydrofluoric acid	7664-39-3	100 lb

US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

Components	CAS-No.	Reportable quantity
Hydrofluoric acid	7664-39-3	100 lb

15.3 State Regulations

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

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

SECTION 16: Other informationNFPA (National Fire Protection Association) - Classification

Health	4 severe
Flammability	0 minimal
Instability or Reactivity	1 slight
Special Notices	None

P00000031491

Version : 1.05 / US (Z8)

www.solvay.com



HYDROFLUORIC ACID 49%

Revision Date 07/22/2019

HMIS (Hazardous Materials Identification System (Paint & Coating)) - Classification

Health	4 severe
Flammability	0 minimal
Reactivity	1 slight
PPE	Determined by User; dependent on local conditions

Further information

- HF-Antidote Gel from IPS Healthcare is recommended as treatment for injuries from hydrofluoric acid.
- Environmental Protection Agency (EPA) requirements for a Risk Management Plan must be followed anytime at least 1000 lbs. of Hydrogen fluoride/Hydrofluoric acid (conc 50% or greater) are used or stored. Refer to 40 CFR 68.150 for specific details.
- Occupational Safety and Health Administration (OSHA) requirements for process safety management must be followed anytime at least 1000 lbs. of Hydrogen Fluoride are used or stored. Refer to 29 CFR 1910.119 for specific details.
- Product evaluated under the US GHS format.

Date Prepared: 07/22/2019Key or legend to abbreviations and acronyms used in the safety data sheet

- C	Ceiling limit
- PEL	Permissible exposure limit
- STEL	Short term exposure limit
- TWA	8-hour, time-weighted average
- ACGIH	American Conference of Governmental Industrial Hygienists
- OSHA	Occupational Safety and Health Administration
- NTP	National Toxicology Program
- IARC	International Agency for Research on Cancer
- NIOSH	National Institute for Occupational Safety and Health

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. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose, and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in any other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.