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

1.1 Product identifier

- Trade name: HYDROFLUORIC ACID 55-60 % (AQUEOUS SOLUTION)
- 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

- Etching agent
- Electronic industry
- Photovoltaic industry
- Chemical industry
- Glass industry
- Metallurgy.
- Fuel additive
- Chemical intermediate

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: CHEMTREC 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.
2.2 Label elements

HCS 2012 (29 CFR 1910.1200)

Pictogram

Signal Word
- Danger

Hazard Statements
- H300 + H310 + H330  Fatal if swallowed, in contact with skin or if inhaled.
- H314  Causes severe skin burns and eye damage.

Precautionary Statements
Prevention
- 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. Immediately call a POISON CENTER/doctor.
- P305 + P351 + P338 + P310  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.
- P362  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.
3.2 Mixture
- Formula: HF

Hazardous Ingredients and Impurities

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Identification number CAS-No.</th>
<th>Concentration [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrofluoric acid</td>
<td>7664-39-3</td>
<td>&gt;= 60 - &lt; 70</td>
</tr>
</tbody>
</table>

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

In case of inhalation
- In case of accident by inhalation: remove casualty to fresh air and keep at rest.
- Oxygen or artificial respiration if needed.
- Victim to lie down in the recovery position, cover and keep him warm.
- Call a physician immediately.
- Take victim immediately to hospital.

In case of skin contact
- Call a physician immediately.
- Take victim immediately to hospital.
- Take off contaminated clothing and shoes immediately.
- Wash off with plenty of water.
- First treatment with calcium gluconate paste.
- Rinse with lukewarm running water.
- Please make sure that hospital staff is aware of the unique characteristics of injuries caused by HF exposures and the fact that the systemic toxic effects of the exposure will require prompt serum monitoring of fluorides, calcium, magnesium and sodium, and calcium replacement by infusion.

In case of eye contact
- Immediate medical attention is required.
- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- Take victim immediately to hospital.
- In the case of difficulty of opening the lids, administer an analgesic eye wash (oxybuprocaine).

In case of ingestion
- If victim is conscious:
- Rinse mouth with water.
- Give to drink a 1% aqueous calcium gluconate solution.
- Do NOT induce vomiting.
- Artificial respiration and/or oxygen may be necessary.
- Call a physician immediately.
- Take victim immediately to hospital.

4.2 Most important symptoms and effects, both acute and delayed

In case of inhalation
- Breathing difficulties
- Sore throat
- Nose bleeding
Effects
- Corrosive to respiratory system.
- Inhalation of vapors is irritating to the respiratory system, may cause throat pain and cough.
- Aspiration may cause pulmonary edema and pneumonitis.
- Risk of hypocalcemia with nervous problems (tetany) and cardiac arrhythmia

Repeated or prolonged exposure
- Risk of chronic bronchitis

In case of skin contact
Symptoms
- Redness
- Swelling of tissue
- Burn

Effects
- Causes severe burns.
- Risk of shock.
- Risk of hypocalcemia following the extent of the lesions.

In case of eye contact
Symptoms
- Lachrymation
- Redness
- Swelling of tissue
- Burn

Effects
- Corrosive
- Causes severe burns.
- May cause permanent eye injury.
- May cause blindness.

In case of ingestion
Symptoms
- Nausea
- Bloody vomiting
- Abdominal pain
- Diarrhea
- Cough
- Severe shortness of breath

Effects
- If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.
- Risk of throat (o)edema and suffocation.
- Risk of chemical pneumonitis from product inhalation.
- Risk of hypocalcemia with nervous problems (tetany) and cardiac arrhythmia
- Risk of convulsions, loss of consciousness, deep coma and cardiopulmonary arrest.

4.3 Indication of any immediate medical attention and special treatment needed
Notes to physician
- If skin irritation occurs:
- Immediately apply calcium gluconate gel 2.5% and massage into the affected area using rubber gloves; continue to massage while repeatedly applying gel until 15 minutes after pain is relieved.
- HF-Antidote Gel from IPS Healthcare is recommended as treatment for injuries from hydrofluoric acid.

SECTION 5: Firefighting measures

Flash point  
Not applicable

Autoignition temperature  
no data available

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.

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

SECTION 6: Accidental release measures
- 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.

**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**
SAFETY DATA SHEET

HYDROFLUORIC ACID 55-60 % (AQUEOUS SOLUTION)

Revision Date  12/21/2017

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
- Steel coated. (HF <70%)

7.3 Specific end use(s)
- Contact your supplier for additional information
- 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

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Value type</th>
<th>Value</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrofluoric acid</td>
<td>TWA</td>
<td>3 ppm</td>
<td>2.5 mg/m³ National Institute for Occupational Safety and Health</td>
</tr>
<tr>
<td>Hydrofluoric acid</td>
<td>C</td>
<td>6 ppm</td>
<td>5 mg/m³ National Institute for Occupational Safety and Health</td>
</tr>
<tr>
<td>Hydrofluoric acid</td>
<td>TWA</td>
<td>3 ppm</td>
<td>Occupational Safety and Health Administration - Table Z-2</td>
</tr>
<tr>
<td>Hydrofluoric acid</td>
<td>TWA</td>
<td>0.5 ppm</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td>Hydrofluoric acid</td>
<td>C</td>
<td>2 ppm</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td>Hydrofluoric acid</td>
<td></td>
<td></td>
<td>Occupational Safety and Health Administration - Table Z-2 Limits for Air Contaminants</td>
</tr>
</tbody>
</table>

See Table Z-2Expressed as : Fluorine
NIOSH IDLH (Immediately Dangerous to Life or Health Concentrations)

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrofluoric acid</td>
<td>7664-39-3</td>
<td>30 ppm</td>
</tr>
</tbody>
</table>

Biological Exposure Indices

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Value type</th>
<th>Value</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrofluoric acid</td>
<td>BEI</td>
<td>2 mg/l</td>
<td>American Conference of Governmental</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fluoride</td>
<td>Industrial Hygienists</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Urine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prior to shift (16 hours after exposure ceases)</td>
<td></td>
</tr>
<tr>
<td>Hydrofluoric acid</td>
<td>BEI</td>
<td>3 mg/l</td>
<td>American Conference of Governmental</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fluoride</td>
<td>Industrial Hygienists</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Urine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td></td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Control measures

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

Individual protection measures

Respiratory protection
- In the case of dust or aerosol formation use respirator with an approved filter.
- 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.
- 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.

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Physical state: liquid</td>
</tr>
<tr>
<td></td>
<td>Color: colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>pungent</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>no data available</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>20 g/mol</td>
</tr>
<tr>
<td>pH</td>
<td>&lt; 1.0</td>
</tr>
<tr>
<td>Melting point/freeze point</td>
<td>Freezing point: -148 °F (-100 °C)</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>Boiling point/boiling range: 140 °F (60 °C)</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>no data available</td>
</tr>
<tr>
<td>Flammability (liquids)</td>
<td>The product is not flammable.</td>
</tr>
<tr>
<td>Flammability / Explosive limit</td>
<td>Explosiveness:</td>
</tr>
<tr>
<td></td>
<td>With certain materials (see section 10).</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>no data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>10.50 - 352.53 mmHg (14 - 470 hPa) (68 °F (20 °C))</td>
</tr>
<tr>
<td>Vapor density</td>
<td>2.4 (68 °F (20 °C))</td>
</tr>
</tbody>
</table>

Density
Relative density 1.23
Solubility Water solubility: completely miscible, Reacts violently with water.

Partition coefficient: n-octanol/water Not applicable
Decomposition temperature no data available
Viscosity no data available

SECTION 10: Stability and reactivity

10.1 Reactivity
- Reacts violently with water.
- Risk of explosion.

10.2 Chemical stability
- Stable under recommended storage conditions.
- Stable under recommended storage conditions.

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

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 min

NOEC: 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

**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

Toxicity for reproduction and development

Toxicity to reproduction / fertility

Hydrofluoric acid

By analogy

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

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.

Hydrofluoric acid  
By analogy

- **Oral - Mouse**, male and female  
  LOAEL: 50 ppm  
  Test substance: Sodium fluoride  
  Target Organs: Skeleton

- **Inhalation 90-day - Rat**, male and female  
  NOAEC: 0.72 mg/m³  
  Test substance: Hydrogen fluoride  
  Target Organs: Respiratory Tract, Bone, Teeth, Kidney

**Experience with human exposure**  
no data available

**Aspiration toxicity**  
no data available

**Further information**  
Hydrofluoric acid  
corrosive effects  
Liver and kidney injuries may occur.

### 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 test

  Test 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 test
Test substance: Sodium fluoride
Fresh water

EC50 - 96 h : 10.5 mg/l
static test
Test substance: Sodium fluoride
Marine species
salt water

Toxicity to aquatic plants

Hydrofluoric acid

By analogy

EC50 - 96 h : 43 mg/l - Algae
static test
Test 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

Chronic toxicity to fish

Hydrofluoric acid

By analogy

NOEC: 4 mg/l - 21 Days - Oncorhynchus mykiss (rainbow trout)
static test
Test 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 test
Test substance: Sodium fluoride
Fresh water

Chronic Toxicity to aquatic plants no data available

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

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

Acute aquatic toxicity
Hydrofluoric acid Harmful to aquatic organisms.

Chronic aquatic toxicity
Hydrofluoric acid Low chronic toxicity.

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.
- In accordance with local and national regulations.
- Refer to manufacturer/supplier for information on recovery/recycling.

Waste Code
- Environmental Protection Agency
- 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
Marine pollutant
NO

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: 166.66 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
Packing group
II
ERG No
157

14.5 Environmental hazards
Marine pollutant
NO

**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
SAFETY DATA SHEET

HYDROFLUORIC ACID 55-60 % (AQUEOUS SOLUTION)

Revision Date  12/21/2017

Marine pollutant

IMDG

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 II
14.5 Environmental hazards NO
14.6 Special precautions for user F-A , S-B
For personal protection see section 8.

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 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

<table>
<thead>
<tr>
<th>Inventory Information</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States TSCA Inventory</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td>Canadian Domestic Substances List (DSL)</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td>Australia Inventory of Chemical Substances (AICS)</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td>Japan. CSCL - Inventory of Existing and New Chemical Substances</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td>Korea. Korean Existing Chemicals Inventory (KECI)</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td>China. Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td>Philippines Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td>New Zealand. Inventory of Chemical Substances</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td>Mexico INSQ (INSQ)</td>
<td>- Listed on Inventory</td>
</tr>
<tr>
<td>EU. European Registration, Evaluation, Authorisation and Restriction of Chemical (REACH)</td>
<td>- If product is purchased from Solvay in Europe it is in compliance with REACH, if not please contact the supplier.</td>
</tr>
</tbody>
</table>

15.2 Federal Regulations

US. EPA EPCRA SARA Title III

SARA HAZARD DESIGNATION SECTIONS 311/312 (40 CFR 370)

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrofluoric acid</td>
<td>7664-39-3</td>
<td>50-70%</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS-No.</th>
<th>Threshold planning quantity</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrofluoric acid</td>
<td>7664-39-3</td>
<td>100 lb</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS-No.</th>
<th>Reportable quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrofluoric acid</td>
<td>7664-39-3</td>
<td>100 lb</td>
</tr>
</tbody>
</table>
Section 304 Emergency Release Notification Reportable Quantity (40 CFR 355)

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Reportable quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrofluoric acid</td>
<td>7664-39-3</td>
<td>100 lb</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Reportable quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrofluoric acid</td>
<td>7664-39-3</td>
<td>100 lb</td>
</tr>
</tbody>
</table>

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 information**

**NFPA (National Fire Protection Association) - Classification**

<table>
<thead>
<tr>
<th>Health</th>
<th>4 severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>0 minimal</td>
</tr>
<tr>
<td>Instability or Reactivity</td>
<td>1 slight</td>
</tr>
<tr>
<td>Special Notices</td>
<td>None</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Health</th>
<th>4 severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>0 minimal</td>
</tr>
<tr>
<td>Reactivity</td>
<td>1 slight</td>
</tr>
<tr>
<td>PPE</td>
<td>Determined by User; dependent on local conditions</td>
</tr>
</tbody>
</table>

**Further information**

- 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:** 12/21/2017

**Key or legend to abbreviations and acronyms used in the safety data sheet**

- **C** Ceiling 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.