

# Safety Data Sheet

## HF/HCL 2:1:1

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### 1. PRODUCT AND COMPANY IDENTIFICATION

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**Product Name:** HF/HCL 2:1:1

**Synonyms/Generic Names:** None

**Product Number:** 2521

**Product Use:** Industrial, Manufacturing or Laboratory use

**Manufacturer:** Columbus Chemical Industries, Inc.  
N4335 Temkin Rd.  
Columbus, WI. 53925

**For More Information:** 920-623-2140 (Monday-Friday 8:00-4:30)  
[www.columbuschemical.com](http://www.columbuschemical.com)

**In Case of Emergency Call:** CHEMTREC - 800-424-9300 or 703-527-3887 (24 Hours/Day, 7 Days/Week)

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### 2. HAZARDS IDENTIFICATION

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**Hazard Not Otherwise Classified (HNOC):** None

**Signal Words:** Danger

**Pictograms:**



**GHS Classification:**

|                            |             |
|----------------------------|-------------|
| Corrosive to metal         | Category 1  |
| Acute toxicity, Oral       | Category 2  |
| Acute toxicity, Inhalation | Category 2  |
| Acute toxicity, Dermal     | Category 1  |
| Skin corrosion             | Category 1A |
| Serious eye damage         | Category 1  |

**GHS Label Elements, including precautionary statements:**

**Hazard Statements:**

|                |   |
|----------------|---|
| H290           | May be corrosive to metal.                              |
| H300+H310+H330 | Fatal if swallowed, if inhaled or in contact with skin. |
| H314           | Causes severe skin burns and eye damage.                |

**Precautionary Statements:**

|      |  |
|------|--|
| P260 | Do not breathe fume/gas/mist/vapors/spray. |
|------|--|

|                |  |
|----------------|--|
| P262           | Do not get in eyes, on skin, or on clothing.   |
| P264           | Wash hands thoroughly after handling.  |
| P270           | Do not eat, drink or smoke when using this product.  |
| P280           | Wear protective gloves/protective clothing/eye protection/face protection.   |
| P284           | In case of inadequate ventilation, wear respiratory protection.  |
| P301+P330+P331 | IF SWALLOWED: Rinse mouth. Do not induce vomiting.   |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.                              |
| P304+P340      | IF INHALED: Remove person to fresh air and keep comfortable for breathing.   |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P310           | Immediately call a POISON CENTER/doctor/physician.   |
| P361+P363      | Take off immediately all contaminated clothing. Wash contaminated clothing before reuse.   |
| P271           | Use only outdoors or in a well-ventilated area.  |
| P390           | Absorb spillage to prevent material damage.  |
| P233+P234      | Keep container tightly closed. Keep in original container.   |
| P403+P405      | Store in a well-ventilated place. Store locked up  |
| P501           | Dispose of contents/container in accordance with local regulations.  |

### Potential Health Effects

|                   |  |
|-------------------|--|
| <b>Eyes</b>       | Causes severe eye burns.   |
| <b>Inhalation</b> | Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. |
| <b>Skin</b>       | May be fatal if absorbed through skin. Causes skin burns.  |
| <b>Ingestion</b>  | May be fatal if swallowed.   |

### NFPA Ratings

|                        |               |
|------------------------|---------------|
| <b>Health</b>          | 3             |
| <b>Flammability</b>    | 0             |
| <b>Reactivity</b>      | 1             |
| <b>Specific hazard</b> | Not Available |

### HMIS Ratings

|                   |   |
|-------------------|---|
| <b>Health</b>     | 3 |
| <b>Fire</b>       | 0 |
| <b>Reactivity</b> | 1 |

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Component         | Weight % | CAS #     | EINECS# / ELINCS# | Formula          | Molecular Weight |
|-------------------|----------|-----------|-------------------|------------------|------------------|
| Hydrofluoric Acid | 17-20    | 7664-39-3 | 231-634-8         | HF               | 20.01 g/mol      |
| Hydrochloric Acid | 7-10     | 7647-01-0 | 231-595-7         | HCl              | 36.46 g/mol      |
| Water             | Balance  | 7732-18-5 | 231-791-2         | H <sub>2</sub> O | 18.00 g/mol      |

## 4. FIRST-AID MEASURES

|             |  |
|-------------|--|
| <b>Eyes</b> | Immediately rinse with plenty of water for at least 15 minutes and seek medical attention immediately. Cold water may be used. Keep the eyelids apart and away from the eyeballs during irrigation. <b>Do not use skin burn treatments on the eyes.</b> Flushing with water should not be interrupted and contact lenses should be removed if possible. If sterile 1% calcium gluconate solution is available, water washing may be limited to 5 minutes, after which the 1% calcium gluconate solution should be used to irrigate the eye using a syringe |
|-------------|--|

|                   |   |
|-------------------|---|
|                   | or a continuous irrigation device. Get medical attention immediately, preferably an eye specialist. Place ice pack on eyes until reaching emergency room.   |
| <b>Inhalation</b> | Move casualty to fresh air and keep at rest. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. An authorized person should administer oxygen to a victim who is having difficulty breathing, until the exposed is able to breathe easily by themselves. Get medical attention immediately. Calcium gluconate, 2.5% in normal saline may be given by nebulizer with oxygen.   |
| <b>Skin</b>       | Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cold water may be used. Material is absorbed through the skin. Get medical attention immediately. Limit washing to 5 minutes if treatment specific to HF exposure is available. 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. If immersion is impractical, towels could be soaked with one of the above solutions and used as compresses for the burn area. As an alternate first aid treatment, 2.5% calcium gluconate gel may be continuously massaged into the burn area until the pain is relieved. |
| <b>Ingestion</b>  | <b>Do Not Induce Vomiting!</b> Never give anything by mouth to an unconscious person. If conscious, drink large amounts of water as quickly as possible to dilute the acid. Drink several glasses of milk, or several ounces of milk of magnesia, or grind up and administer up to 30 antacid tablets with water. Get medical attention immediately.  |

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## 5. FIRE-FIGHTING MEASURES

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|  |   |
|--|---|
| <b>Suitable (and unsuitable) extinguishing media</b>                 | Product is not flammable. Use appropriate media for adjacent fire. Cool containers with water, keep away from common metals.  |
| <b>Special protective equipment and precautions for firefighters</b> | Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots. Material can react violently with water (spattering and misting) and react with metals to produce flammable hydrogen gas. |
| <b>Specific hazards arising from the chemical</b>                    | Emits toxic fumes (hydrogen fluoride, hydrogen chloride gas) under fire conditions. (See also Stability and Reactivity section).  |

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## 6. ACCIDENTAL RELEASE MEASURES

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|  |   |
|--|---|
| <b>Personal precautions, protective equipment and emergency procedures</b> | See section 8 for recommendations on the use of personal protective equipment.  |
| <b>Environmental precautions</b>   | Prevent spillage from entering drains. Any release to the environment may be subject to federal/national or local reporting requirements.   |
| <b>Methods and materials for containment and cleaning up</b>               | Neutralize spill. Absorb spill with noncombustible absorbent material, then place in a suitable container for disposal. Clean surfaces thoroughly with water to remove residual contamination. Dispose of all waste and cleanup materials in accordance with regulations. |

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## 7. HANDLING AND STORAGE

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### Precautions for safe handling

See section 8 for recommendations on the use of personal protective equipment. Use with adequate ventilation. Wash thoroughly after using. Keep container closed when not in use. Avoid formation of aerosols.

### Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area. Do not store in glass for prolonged periods of time. Keep away from incompatible materials (see section 10 for incompatibilities).

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Occupational exposure controls:

| Component         | Exposure Limits                   | Basis | Entity |
|-------------------|-----------------------------------|-------|--------|
| Hydrogen fluoride | 0.5 ppm<br>0.41 mg/m <sup>3</sup> | TLV   | ACGIH  |
|                   | 2 ppm<br>1.64 mg/m <sup>3</sup>   | CEIL  | ACGIH  |
|                   | 3 ppm                             | PEL   | OSHA   |
|                   | 3 ppm<br>2.5 mg/m <sup>3</sup>    | REL   | NIOSH  |
|                   | 6 ppm<br>5 mg/m <sup>3</sup>      | CEIL  | NIOSH  |
| Hydrogen chloride | 2 ppm<br>2.98 mg/m <sup>3</sup>   | CEIL  | ACGIH  |
|                   | 5 ppm<br>7 mg/m <sup>3</sup>      | CEIL  | OSHA   |
|                   | 5 ppm<br>7 mg/m <sup>3</sup>      | CEIL  | NIOSH  |

TWA: Time Weighted Average over 8 hours of work.

TLV: Threshold Limit Value over 8 hours of work.

REL: Recommended Exposure Limit

PEL: Permissible Exposure Limit

STEL: Short Term Exposure Limit usually 15 minutes.

IDLH: Immediately Dangerous to Life or Health

WEEL: Workplace Environmental Exposure Levels

CEIL: Ceiling

### Personal Protection

|                   |  |
|-------------------|--|
| <b>Eyes</b>       | Wear chemical safety glasses or goggles, and face shield.  |
| <b>Inhalation</b> | Provide local exhaust, preferably mechanical. If exposure levels are excessive, use an approved respirator.  |
| <b>Skin</b>       | Wear nitrile or rubber gloves, and full body (synthetic) covering. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. |
| <b>Other</b>      | Not Available  |

### Other Recommendations

Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling. Have supplies and equipment for neutralization and running water available. HF antidote gel for skin burns or other solutions discussed in Section 4, First Aid.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

|   |                     |
|---|---------------------|
| Appearance (physical state, color, etc.)    | Liquid              |
| Odor  | Characteristic odor |
| Odor threshold                              | Not Available       |
| pH  | Not Available       |
| Melting point/freezing point                | Not Available       |
| Initial boiling point and boiling range     | Not Available       |
| Flash point                                 | Not Flammable       |
| Evaporation rate                            | Not Available       |
| Flammability (solid, gas)                   | Not Flammable       |
| Upper/lower flammability or explosive limit | Not Explosive       |
| Vapor pressure                              | Not Available       |

|  |               |
|--|---------------|
| Vapor density                          | Not Available |
| Relative density                       | Not Available |
| Solubility (ies)                       | Not Available |
| Partition coefficient: n-octanol/water | Not Available |
| Auto-ignition temperature              | Not Available |
| Decomposition temperature              | Not Available |

## 10. STABILITY AND REACTIVITY

|   |  |
|---|--|
| <b>Chemical Stability</b>                 | Stable   |
| <b>Possibility of Hazardous Reactions</b> | Will not occur.  |
| <b>Conditions to Avoid</b>                | Uncontrolled addition of water.  |
| <b>Incompatible Materials</b>             | Moisture, bases, organic material, metals, glass, ceramics, aluminum, stainless steel, carbonates, cyanides, sulfides. Reacts violently with acetic anhydride, ammonium hydroxide, arsenic trioxide, calcium oxide, potassium permanganate, sodium, sodium hydroxide, sulfuric acid. |
| <b>Hazardous Decomposition Products</b>   | Hydrogen fluoride, Hydrogen chloride.  |

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity

#### Hydrofluoric acid

|                    |                                  |
|--------------------|----------------------------------|
| <b>Skin</b>        | Not Available                    |
| <b>Eyes</b>        | Not Available                    |
| <b>Respiratory</b> | LC50- rat- 1 hour: 2240-2340 ppm |
| <b>Ingestion</b>   | LD100- guinea pig- 80 mg/kg      |

#### Hydrochloric acid

|                    |                           |
|--------------------|---------------------------|
| <b>Skin</b>        | Not Available             |
| <b>Eyes</b>        | Not Available             |
| <b>Respiratory</b> | Not Available             |
| <b>Ingestion</b>   | LD50 – Rabbit – 900 mg/kg |

### Carcinogenicity

|              |  |
|--------------|--|
| <b>IARC</b>  | 3: Not classifiable as to its carcinogenicity to humans (Hydrogen chloride).   |
| <b>ACGIH</b> | A4: Not classifiable as a human carcinogen (Hydrogen chloride).  |
| <b>NTP</b>   | No components of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.     |
| <b>OSHA</b>  | No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA. |

### Signs & Symptoms of Exposure

|                   |   |
|-------------------|---|
| <b>Eyes</b>       | Burns, pain, watering eyes.   |
| <b>Inhalation</b> | Burning, choking, coughing, wheezing, laryngitis, shortness of breath, headache or nausea.  |
| <b>Skin</b>       | Burning, irritation   |
| <b>Ingestion</b>  | Severe and rapid corrosive burns of the mouth, gullet and gastrointestinal tract, burning, choking, nausea, vomiting and severe pain. |

|                         |  |
|-------------------------|--|
| <b>Chronic Toxicity</b> | May cause Fluorosis or hypocalcaemia and organ damage. |
| <b>Teratogenicity</b>   | Not available  |
| <b>Mutagenicity</b>     | May cause genetic effects based on animal data.        |
| <b>Embryotoxicity</b>   | May cause fetal toxicity based on animal data.         |

|                                       |   |
|---------------------------------------|---|
| <b>Target Organ(s)</b>                | Kidneys, liver, mucous membranes, upper respiratory tract, skin, eyes, circulatory system, teeth. |
| <b>Reproductive Toxicity</b>          | Not Available   |
| <b>Respiratory/Skin Sensitization</b> | Not Available   |

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### *Hydrofluoric acid*

|                             |   |
|-----------------------------|---|
| <b>Aquatic Vertebrate</b>   | Aquatic fish; EC50 (48 hours): 270 mg/l |
| <b>Aquatic Invertebrate</b> | Not Available                           |
| <b>Terrestrial</b>          | Not Available                           |

#### *Hydrochloric acid*

|                             |   |
|-----------------------------|---|
| <b>Aquatic Vertebrate</b>   | LC50 – <i>Gambusia affinis</i> – 282 mg/L – 96h |
| <b>Aquatic Invertebrate</b> | Not Available                                   |
| <b>Terrestrial</b>          | Not Available                                   |

|                                       |               |
|---------------------------------------|---------------|
| <b>Persistence and Degradability</b>  | Not Available |
| <b>Bioaccumulative Potential</b>      | Not Available |
| <b>Mobility in Soil</b>               | Not Available |
| <b>PBT and vPvB Assessment</b>        | Not Available |
| <b>Other Adverse Effects</b>          | Not Available |
| <b>Reproductive Toxicity</b>          | Not Available |
| <b>Respiratory/Skin Sensitization</b> | Not Available |

## 13. DISPOSAL CONSIDERATIONS

|                                  |   |
|----------------------------------|---|
| <b>Waste Product or Residues</b> | Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product or residue. |
| <b>Product Containers</b>        | Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product container.  |

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product may significantly change the characteristics of the material and alter the waste classification and proper disposal methods.

## 14. TRANSPORTATION INFORMATION

|                  |   |
|------------------|---|
| US DOT           | UN2922, Corrosive liquids, toxic, n.o.s. (Hydrofluoric acid, Hydrochloric acid), 8 (6.1), pg II |
| TDG              | UN2922, CORROSIVE LIQUIDS, TOXIC, N.O.S. (HYDROFLUORIC ACID, HYDROCHLORIC ACID), 8 (6.1), PG II |
| IMDG             | UN2922, CORROSIVE LIQUIDS, TOXIC, N.O.S. (HYDROFLUORIC ACID, HYDROCHLORIC ACID), 8 (6.1), PG II |
| Marine Pollutant | No  |
| IATA/ICAO        | UN2922, Corrosive liquids, toxic, n.o.s. (Hydrofluoric acid, Hydrochloric acid), 8 (6.1), pg II |

## 15. REGULATORY INFORMATION

|   |  |
|---|--|
| TSCA Inventory Status   | All ingredients are listed on the TSCA Active inventory.   |
| DSL / NDSL  | All ingredients are listed on the DSL inventory.   |
| California Proposition 65                                       | Not Listed   |
| Rhode Island: Hazardous Substance List                          | Listed: Hydrochloric Acid, Hydrofluoric Acid   |
| Massachusetts: Toxic or Hazardous Substance List, Right to Know | Listed: Hydrochloric Acid, Hydrofluoric Acid   |
| Pennsylvania: Hazardous Substance List                          | Listed: Hydrochloric Acid, Hydrofluoric Acid   |
| New Jersey: Right to Know Hazardous Substance List              | Listed: Hydrochloric Acid, Hydrofluoric Acid   |
| SARA 302  | Listed: Hydrofluoric Acid  |
| SARA 304  | Listed: Hydrofluoric Acid  |
| SARA 311  | Reactive Hazard, Acute Health Hazard   |
| SARA 312  | Reactive Hazard, Acute Health Hazard   |
| SARA 313  | Listed: Hydrofluoric Acid  |
| WHMIS Canada  | Class D1A: Poisonous and infectious material – Immediate and serious effects – Very toxic.<br>Class D2A, Poisonous and infectious material – Other effects – Very toxic.<br>Class E: Corrosive material. |

## 16. OTHER INFORMATION

| Revision   | Date       |
|------------|------------|
| Original   | 11/10/2020 |
| Revision 1 | 02/21/2022 |
|            |            |

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