

**MAE (High HF)**

**1. PRODUCT AND COMPANY IDENTIFICATION**

**Product Name:** MAE (High HF)

**Synonyms/Generic Names:** Not Applicable

**Product Number:** 320000

**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)

**2. HAZARDS IDENTIFICATION**

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

**Signal Word:** Danger

**Pictograms:**



**GHS Classification:**

Corrosive to metals	Category 1
Skin corrosion/irritation	Category 1A
Serious eye damage/irritation	Category 1
Acute toxicity, Inhalation	Category 1
Hazardous to the Aquatic environment, acute hazard	Category 3

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

**Hazard Statements:**

H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H330	Fatal if inhaled.
H402	Harmful to aquatic life.

**Precautionary Statements:**

P260	Do not breathe mist/vapors/spray.
P264	Wash hands thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
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): Remove/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.
P320	Specific treatment is urgent (see first aid instruction on SDS)
P363	Wash contaminated clothing before reuse.
P273	Avoid release to the environment.
P234	Keep only in original container.
P390	Absorb spillage to prevent material damage.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P404+P405	Store in a closed container. Store locked up.
P501	Dispose of contents/container in accordance with local regulations.

### Potential Health Effects

<b>Eyes</b>	Causes severe eye burn.
<b>Inhalation</b>	Fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
<b>Skin</b>	Causes skin burns.
<b>Ingestion</b>	Harmful 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
Nitric Acid	40.40 – 41.40	7697-37-2	231-714-2	HNO <sub>3</sub>	63.01 g/mol
Acetic Acid	17.50 – 18.50	64-19-7	200-580-7	C <sub>2</sub> H <sub>4</sub> O <sub>2</sub>	60.05 g/mol
Hydrofluoric Acid	12.80 – 13.80	7664-39-3	231-634-8	HF	20.01 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>	In case of eye contact, 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. Do not use oily drops or ointment or HF skin burn treatments on the eyes. 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. Do not use mouth to mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other

	proper respiratory medical device. Delayed pulmonary edema may occur. Immediate medical attention is required.
<b>Skin</b>	In case of contact, 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. While waiting for medical attention, it has been shown that flushing the affected area with water for one minute and then massaging HF Antidote Gel into the wound until there is a cessation of pain is a most effective first aid treatment. HF Antidote Gel contains Calcium Gluconate which combines with HF for insoluble Calcium Fluoride, thus preventing the extraction of calcium from the body tissue and bones. Another alternative first aid treatment, after thorough washing of the burned area, is to immerse the burned area in a solution of 0.2% iced aqueous Hyamine 1622 or 0.13% iced aqueous Zephiran Chloride. If immersion is impractical, towels could be soaked with one of the above solutions and used as compresses for the burn area. Hyamine 1622 is a trade name for Tetracaine Benzethonium Chloride. Zephiran is a trade name for Benzalkonium Chloride.
<b>Ingestion</b>	<b>Do Not Induce Vomiting!</b> Never give anything by mouth to an unconscious person. If conscious, wash out mouth with water. Get medical attention immediately.
<b>General Advice</b>	Ensure that medical personnel is aware of the material(s) involved. Show the safety data sheet to the doctor. Get medical advice/attention if you feel unwell.

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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 gas, nitrogen oxides, carbon oxides) 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>	Do not handle until all safety precautions have been read and understood. Do not get in eyes, on skin, or on clothing. Do not breathe vapor, mist or spray. See section 8 for recommendations on the use of personal protective equipment. Remove the employees that are not involved from the spill area and call the emergency team.
<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 with calcium chloride or calcium carbonate. 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

Do not handle until all safety precautions have been read and understood. Do not get in eyes, on skin, or on clothing. Do not breathe vapor, mist or spray. 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.

#### Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated area. Store only in a tightly closed, original container. Absorb spillage to prevent material damage. Store locked up. Keep away from incompatible materials (see section 10 for incompatibilities).

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Occupational exposure controls:

Component	Exposure Limits	Basis	Entity
Nitric Acid (CAS #7697-37-2)	2 ppm (5.2 mg/m <sup>3</sup> )	TWA	ACGIH® TLV®
	4 ppm (10 mg/m <sup>3</sup> )	STEL	ACGIH® TLV®
	2 ppm (5 mg/m <sup>3</sup> )	TWA	OSHA PELs
	2 ppm (5 mg/m <sup>3</sup> )	TWA	NIOSH RELs
Acetic Acid (CAS #7664-39-3)	4 ppm (10 mg/m <sup>3</sup> )	STEL	NIOSH RELs
	10 ppm (25 mg/m <sup>3</sup> )	TWA	OSHA PELs
	10 ppm (25 mg/m <sup>3</sup> )	TWA	ACGIH® TLV®
	15 ppm (37 mg/m <sup>3</sup> )	STEL	ACGIH® TLV®
Hydrofluoric Acid (CAS #7664-39-3)	10 ppm (25 mg/m <sup>3</sup> )	TWA	NIOSH RELs
	15 ppm (37 mg/m <sup>3</sup> )	STEL	NIOSH RELs
	0.5 ppm (0.41 mg/m <sup>3</sup> )	TWA	ACGIH® TLV®
	2 ppm (1.64 mg/m <sup>3</sup> )	CEIL	ACGIH® TLV®
Other	3 ppm	TWA	OSHA PELs
	3 ppm (2.5 mg/m <sup>3</sup> )	TWA	NIOSH RELs
	6 ppm (5 mg/m <sup>3</sup> ) 15-min	CEIL	NIOSH RELs

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 during x 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 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>	Handle in accordance with good industrial hygiene and safety practices. Remove and wash contaminated clothing before re-use.

### Other Recommendations

Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling. Regular cleaning of equipment, work area and clothing is recommended.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.)	Clear, colorless liquid.
Odor	Not Available

Odor threshold	Not Available
pH	<1
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
Specific gravity	1.00
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>	Excessive heat. Exposure to air or moisture over prolonged periods. 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 gas, nitrogen oxides, carbon oxides.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity

MAE (High HF) (ATEmix)

<b>Skin</b>	Not Available
<b>Eyes</b>	Not Available
<b>Respiratory (ATEmix – inhalation)</b>	0.13 mg/l
<b>Ingestion (ATEmix – oral)</b>	17,892 mg/l

Hydrofluoric acid (CAS #7664-39-3)

<b>Skin</b>	Not Available
<b>Eyes</b>	Not Available
<b>Respiratory</b>	LC50 – rat – 0.79 mg/l 1h
<b>Ingestion</b>	Not Available

Nitric acid (CAS #7697-37-2)

<b>Skin</b>	Not Available
<b>Eyes</b>	Not Available
<b>Respiratory</b>	LC50 – rat – 0.13 mg/l
<b>Ingestion</b>	Not Available

Acetic acid (CAS #7664-39-3)

<b>Skin</b>	LD50 – rabbit – 1060 mg/kg
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<b>Eyes</b>	Not Available
<b>Respiratory</b>	Not Available LC50 – rat – 11.4 4h
<b>Ingestion</b>	LD50 – rat – 3310 mg/kg

**Carcinogenicity**

<b>IARC</b>	No components of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
<b>ACGIH</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 ACGIH.
<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>Skin</b>	Burns, pain, watering eyes.
<b>Eyes</b>	Burning, choking, coughing, wheezing, laryngitis, shortness of breath, headache or nausea.
<b>Respiratory</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.
<b>Teratogenicity</b>	Fetotoxicity (except death)
<b>Mutagenicity</b>	May cause genetic effects based on animal data.
<b>Embryotoxicity</b>	May cause fetal toxicity based on component data.
<b>Target Organs</b>	Respiratory system, Teeth, Lungs, Liver, Kidneys
<b>Reproductive Toxicity</b>	Not Available
<b>Respiratory/Skin Sensitization</b>	Not Available

**12. ECOLOGICAL INFORMATION****Ecotoxicity***Hydrofluoric acid (CAS #7664-39-3)*

<b>Aquatic Vertebrate</b>	EC50 – aquatic fish - 270 mg/l - 48h
<b>Aquatic Invertebrate</b>	Not Available
<b>Terrestrial</b>	Not Available

*Nitric acid (CAS #7697-37-2)*

<b>Aquatic Vertebrate</b>	LC50 – Gambusia affinis (mosquitofish) - 72 mg/l - 96h
<b>Aquatic Invertebrate</b>	Not Available
<b>Terrestrial</b>	Not Available

*Acetic acid (CAS #7664-39-3)*

<b>Aquatic Vertebrate</b>	LC50 – Pimephales promelas – 79 mg/l - 96h
<b>Aquatic Invertebrate</b>	Not Available EC50 – Daphnia magna – 65 mg/l - 48h
<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
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### 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., (nitric acid and hydrofluoric acid), 8, (6.1), pg II
TDG	UN2922, CORROSIVE LIQUIDS, TOXIC, N.O.S., (NITRIC ACID AND HYDROFLUORIC ACID), 8, (6.1), PG II
IMDG	UN2922, CORROSIVE LIQUIDS, TOXIC, N.O.S., (NITRIC ACID AND HYDROFLUORIC ACID), 8, (6.1), PG II
Marine Pollutant	No
IATA/ICAO	UN2922, Corrosive liquids, toxic, n.o.s., (nitric acid and hydrofluoric 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: Nitric Acid, Hydrofluoric Acid, Acetic Acid
Massachusetts: Toxic or Hazardous Substance List, Right to Know	Listed: Nitric Acid, Hydrofluoric Acid, Acetic Acid
Pennsylvania: Hazardous Substance List	Listed: Nitric Acid, Hydrofluoric Acid, Acetic Acid
New Jersey: Right to Know Hazardous Substance List	Listed: Nitric Acid, Hydrofluoric Acid, Acetic Acid
SARA 302	Listed: Nitric Acid, Hydrofluoric Acid
SARA 304	Listed: Nitric Acid, Hydrofluoric Acid
SARA 311	Physical Hazard, Acute Health Hazard
SARA 312	Physical Hazard, Acute Health Hazard
SARA 313	Listed: Nitric Acid, Hydrofluoric Acid
WHMIS Canada	Class E: Corrosive liquid Class D-1B: Material causing immediate and serious toxic effects (Toxic).

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**16. OTHER INFORMATION**

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<b>Revision</b>	<b>Date</b>
Original	02/09/2023

Disclaimer: The information provided in this Safety Data Sheet ("SDS") is correct to the best of our knowledge, information and belief at the date of publication. The information in this SDS relates only to the specific Product identified under Section 1, and does not relate to its use in combination with other materials or products, or its use as to any particular process. Those handling, storing or using the Product should satisfy themselves that they have current information regarding the particular way the Product is handled, stored or used and that the same is done in accordance with federal, state and local law. WE DO NOT MAKE ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING (WITHOUT LIMITATION) WARRANTIES WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN OR WITH RESPECT TO FITNESS FOR ANY PARTICULAR USE. WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, INJURY, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THIS PRODUCT.