Safety Data Sheet

Document Group:	09-4566-7	**Version Number:**	7.01
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SECTION 1: Identification

1.1. Product identifier
Hydrochloric Acid 30%

Product Identification Numbers
97-5000-0142-1, 97-5000-0143-9
7000059116

1.2. Recommended use and restrictions on use

Recommended use
Acid

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Advanced Materials Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	1-888-3M HELPS (1-888-364-3577)

1.4. Emergency telephone number
1-800-364-3577 or (651) 737-6501 (24 hours)

SECTION 2: Hazard identification

2.1. Hazard classification
Corrosive to metal: Category 1.
Acute Toxicity (oral): Category 4.
Acute Toxicity (dermal): Category 4.
Serious Eye Damage/Irritation: Category 1.
Skin Corrosion/Irritation: Category 1B.
Specific Target Organ Toxicity (single exposure): Category 3.

2.2. Label elements
Signal word
Danger

Symbols
Corrosion | Exclamation mark |

Pictograms

Hazard Statements
May be corrosive to metals.

Harmful if swallowed.
Harmful in contact with skin.
Causes severe skin burns and eye damage.
May cause respiratory irritation.

Precautionary Statements

Prevention:
Keep only in original container.
Do not breathe dust/fume/gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
Wear protective gloves, protective clothing, and eye/face protection.
Do not eat, drink or smoke when using this product.
Wash thoroughly after handling.

Response:
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
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 or doctor/physician.
Wash contaminated clothing before reuse.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
Specific treatment (see Notes to Physician on this label).
Absorb spillage to prevent material damage.

Storage:
Store in a corrosive resistant container with a resistant inner liner.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal:
Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

Notes to Physician:
This product contains or can produce hydrofluoric acid (HF). HF is highly corrosive and its exposure can lead to severe local damage, hypocalcemia, hypomagnesemia and the development of cardiac arrhythmias, which are the primary cause of death in HF exposures. To significantly reduce or prevent HF dermal absorption, immediate irrigation of the affected area with copious amounts of either water or saline followed by the application of a calcium gluconate-containing gel is recommended. Intravenous (IV) access, serum electrolyte concentrations, an electrocardiogram, and cardiac monitoring should be obtained in patients exposed to HF. Patients with inhalation injuries are treated with oxygen and nebulized calcium gluconate (4 mL of 2.5-5%). Succinylcholine is best avoided if rapid sequence intubation must be performed in the setting of HF exposure due to the possibility of hyperkalemia. If systemic toxicity is suspected (due to QTc prolongation, cardiac arrhythmia, or obvious systemic illness), calcium is administered intravenously as part of the medical management.

2.3. Hazards not otherwise classified
May cause chemical gastrointestinal burns. May cause chemical respiratory tract burns.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Water	7732-18-5	65 - 72
Hydrogen Chloride	7647-01-0	28 - 35 Trade Secret *
Hydrogen Fluoride	7664-39-3	0.15 - 0.25 Trade Secret *

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

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. Get immediate medical attention.

Skin Contact:
Immediately flush with large amounts of water for at least 15 minutes. Remove contaminated clothing. Get immediate medical attention. Wash clothing before reuse.

Eye Contact:
Immediately flush with large amounts of water for at least 15 minutes. Remove contact lenses if easy to do. Continue rinsing. Immediately get medical attention.

If Swallowed:
Rinse mouth. Do not induce vomiting. Get immediate medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Corrosive to respiratory tract (severe nose and throat pain, chest tightness and pain, wheezing, and breathlessness). Skin burns (localized redness, swelling, itching, intense pain, blistering, and tissue destruction). Serious damage to the eyes (corneal cloudiness, severe pain, tearing, ulcerations, and significantly impaired or loss of vision).

4.3. Indication of any immediate medical attention and special treatment required
This product contains or can produce hydrofluoric acid (HF). HF is highly corrosive and its exposure can lead to severe local damage, hypocalcemia, hypomagnesemia and the development of cardiac arrhythmias, which are the primary cause of death in HF exposures. To significantly reduce or prevent HF dermal absorption, immediate irrigation of the affected area with copious amounts of either water or saline followed by the application of a calcium gluconate-containing gel is recommended. Intravenous (IV) access, serum electrolyte concentrations, an electrocardiogram, and cardiac monitoring should be obtained in patients exposed to HF. Patients with inhalation injuries are treated with oxygen and nebulized calcium gluconate (4 mL of 2.5-5%). Succinylcholine is best avoided if rapid sequence intubation must be performed in the setting of HF exposure due to the possibility of hyperkalemia. If systemic toxicity is suspected (due to QTc prolongation, cardiac arrhythmia, or obvious systemic illness), calcium is administered intravenously as part of the medical management.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
DO NOT USE WATER Use a fire fighting agent suitable for the surrounding fire.

5.2. Special hazards arising from the substance or mixture
Exposure to extreme heat can give rise to thermal decomposition.

Hazardous Decomposition or By-Products

Substance	Condition
Hydrogen Chloride	During Combustion
Hydrogen Fluoride	During Combustion
Toxic Vapor, Gas, Particulate	During Combustion

5.3. Special protective actions for fire-fighters
When fire fighting conditions are severe and total thermal decomposition of the product is possible, wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions
Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

6.3. Methods and material for containment and cleaning up
Contain spill. For large spills, if necessary, get assistance from professional spill clean up team. For small spills, carefully cover the spill with soda ash (sodium carbonate) or sodium bicarbonate. Work from around the perimeter inward. Avoid splashing. Add enough water to ease mixing and stir. Continue stirring and adding water and neutralizing agent until the reaction stops. Let cool before collecting. Or use a commercially available 'Acid spill' clean-up kit. Follow the kit directions exactly, as specified. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Absorb spillage to prevent material damage. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a metal container approved for use in transportation by appropriate authorities. The container must be lined with polyethylene plastic or contain a plastic drum liner made of polyethylene. Clean up residue with water. Cover, but do not seal for 48 hours. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
For industrial/occupational use only. Not for consumer sale or use. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment. Wash contaminated clothing before reuse. Avoid contact with oxidizing agents (eg. chlorine, chromic acid etc.) Keep away from reactive metals (eg. Aluminum, zinc etc.) to avoid the formation of hydrogen gas that could create an explosion hazard.

7.2. Conditions for safe storage including any incompatibilities
Store in a well-ventilated place. Keep container tightly closed. Store away from heat. Store in a corrosive resistant container with a resistant inner liner. Store away from acids. Store away from strong bases. Store away from oxidizing agents. Store away from amines.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits
If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available

for the component.

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
Hydrogen Chloride	7647-01-0	ACGIH	CEIL:2 ppm	A4: Not class. as human carcin
Hydrogen Chloride	7647-01-0	OSHA	CEIL:7 mg/m3(5 ppm)	
Hydrogen Fluoride	7664-39-3	ACGIH	TWA(as F):0.5 ppm;CEIL(as F):2 ppm	Danger of cutaneous absorption
Hydrogen Fluoride	7664-39-3	OSHA	TWA:3 ppm	

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
OSHA : United States Department of Labor - Occupational Safety and Health Administration
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
Provide appropriate local exhaust when product is heated. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Full Face Shield
Indirect Vented Goggles

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.
Gloves made from the following material(s) are recommended: Butyl Rubber
Fluoroelastomer
Neoprene

If this product is used in a manner that presents a higher potential for exposure (eg. spraying, high splash potential etc.), then use of protective coveralls may be necessary. Select and use body protection to prevent contact based on the results of an exposure assessment. The following protective clothing material(s) are recommended: Boot covers - Disposable, Neoprene
Apron – Butyl rubber
Coveralls - Disposable, laminate
Apron - Neoprene
Apron - polymer laminate

Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece air-purifying respirator suitable for acid gases
Half facepiece or full facepiece air-purifying respirator suitable for hydrogen fluoride

Half facepiece or full facepiece supplied-air respirator

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state	Liquid
Color	Colorless, Yellow
Specific Physical Form:	Liquid
Odor	Pungent Odor
Odor threshold	*No Data Available*
pH	1
Melting point	*Not Applicable*
Boiling Point	110 ºC
Flash Point	No flash point
Evaporation rate	2 [*Ref Std:*BUOAC=1]
Flammability (solid, gas)	Not Applicable
Flammable Limits(LEL)	*Not Applicable*
Flammable Limits(UEL)	*Not Applicable*
Vapor Pressure	25300 Pa [@ 68 ºF]
Vapor Density	1.3 [*Ref Std:*AIR=1]
Density	1.15 g/ml
Specific Gravity	1.15 [*Ref Std:*WATER=1]
Solubility in Water	Complete
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*No Data Available*
Decomposition temperature	*No Data Available*
Viscosity	1.7 centipoise
Volatile Organic Compounds	*Not Applicable*
Percent volatile	100 %
VOC Less H2O & Exempt Solvents	*Not Applicable*

SECTION 10: Stability and reactivity

10.1. Reactivity
This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
Heat
Sparks and/or flames

10.5. Incompatible materials
Strong acids
Strong bases
Strong oxidizing agents

Amines
Reactive metals

10.6. Hazardous decomposition products

Substance	Condition
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

Extreme heat arising from situations such as misuse or equipment failure can generate hydrogen fluoride as a decomposition product.

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
Respiratory Tract Corrosion: Signs/symptoms may include nasal discharge, severe nose and throat pain, chest tightness and pain, coughing up blood, wheezing, and breathlessness, possibly progressing to respiratory failure.

Skin Contact:
Harmful in contact with skin. Corrosive (Skin Burns): Signs/symptoms may include localized redness, swelling, itching, intense pain, blistering, ulceration, and tissue destruction.

Eye Contact:
Corrosive (Eye Burns): Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Ingestion:
Harmful if swallowed. Gastrointestinal Corrosion: Signs/symptoms may include severe mouth, throat and abdominal pain; nausea; vomiting; and diarrhea; blood in the feces and/or vomitus may also be seen.

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Dermal		No data available; calculated ATE1,000 - 2,000 mg/kg
Overall product	Inhalation-Vapor(4 hr)		No data available; calculated ATE >50 mg/l
Overall product	Ingestion		No data available; calculated ATE300 - 2,000 mg/kg
Hydrogen Chloride	Dermal	Rabbit	LD50 > 5,010 mg/kg
Hydrogen Chloride	Inhalation-Dust/Mist	Rat	LC50 1 mg/l

	(4 hours)		
Hydrogen Chloride	Ingestion	Rat	LD50 238 mg/kg
Hydrogen Fluoride	Dermal		LD50 estimated to be 0 - 50 mg/kg
Hydrogen Fluoride	Inhalation-Vapor		LC50 estimated to be 0.5 - 2 mg/l
Hydrogen Fluoride	Ingestion		LD50 estimated to be 5 - 50 mg/kg
Hydrogen Fluoride	Inhalation-Gas (4 hours)	Rat	LC50 805 ppm

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Hydrogen Chloride	Human	Corrosive
Hydrogen Fluoride	Human	Corrosive

Serious Eye Damage/Irritation

Name	Species	Value
Hydrogen Chloride	Rabbit	Corrosive
Hydrogen Fluoride	similar health hazards	Corrosive

Skin Sensitization

Name	Species	Value
Hydrogen Chloride	Human and animal	Not classified

Respiratory Sensitization

For the component/components, either no data are currently available or the data are not sufficient for classification.

Germ Cell Mutagenicity

Name	Route	Value
Hydrogen Chloride	In Vitro	Some positive data exist, but the data are not sufficient for classification
Hydrogen Fluoride	In vivo	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Hydrogen Chloride	Not Specified	Human and animal	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity

Reproductive and/or Developmental Effects

For the component/components, either no data are currently available or the data are not sufficient for classification.

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Hydrogen Chloride	Inhalation	respiratory irritation	May cause respiratory irritation		NOAEL Not available	

Hydrogen Fluoride	Dermal	heart	Causes damage to organs	Human	NOAEL Not available	poisoning and/or abuse
Hydrogen Fluoride	Dermal	respiratory system	Not classified	Human	NOAEL Not available	poisoning and/or abuse
Hydrogen Fluoride	Inhalation	heart	Causes damage to organs	Rabbit	NOAEL Not available	
Hydrogen Fluoride	Inhalation	respiratory system	Causes damage to organs	Human	NOAEL Not available	poisoning and/or abuse
Hydrogen Fluoride	Inhalation	respiratory irritation	May cause respiratory irritation		NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Hydrogen Fluoride	Inhalation	kidney and/or bladder	Causes damage to organs through prolonged or repeated exposure	Rat	NOAEL 8.2 ppm	5 weeks
Hydrogen Fluoride	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Multiple animal species	LOAEL 31 ppm	5 weeks
Hydrogen Fluoride	Inhalation	bone, teeth, nails, and/or hair	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	occupational exposure
Hydrogen Fluoride	Inhalation	liver	Not classified	Multiple animal species	NOAEL 18 ppm	50 days
Hydrogen Fluoride	Inhalation	blood	Not classified	Multiple animal species	NOAEL 18 ppm	5 weeks
Hydrogen Fluoride	Ingestion	bone, teeth, nails, and/or hair	Causes damage to organs through prolonged or repeated exposure	Professional judgement	NOAEL Not available	

Aspiration Hazard
For the component/components, either no data are currently available or the data are not sufficient for classification.

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

Ecotoxicological information

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

Chemical fate information

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

SECTION 13: Disposal considerations

13.1. Disposal methods
Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Combustion products will include halogen acid (HCl/HF/HBr). Facility must be capable of handling halogenated materials. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the

available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): D002 (Corrosive)

SECTION 14: Transport Information

For Transport Information, please visit http://3M.com/Transportinfo or call 1-800-364-3577 or 651-737-6501.

SECTION 15: Regulatory information

15.1. US Federal Regulations

Contact 3M for more information.

EPCRA 311/312 Hazard Classifications:

Physical Hazards
Corrosive to metal

Health Hazards
Acute toxicity
Hazard Not Otherwise Classified (HNOC)
Serious eye damage or eye irritation
Skin Corrosion or Irritation
Specific target organ toxicity (single or repeated exposure)

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

Ingredient	C.A.S. No	% by Wt
Hydrogen Chloride	7647-01-0	Trade Secret 28 - 35

15.2. State Regulations

Contact 3M for more information.

15.3. Chemical Inventories

The components of this product are in compliance with the chemical notification requirements of TSCA. All required components of this product are listed on the active portion of the TSCA Inventory.

Contact 3M for more information.

15.4. International Regulations

Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: Other information

NFPA Hazard Classification

Health: 3 **Flammability:** 1 **Instability:** 0 **Special Hazards:** Reacts with Water
Acid/Base: Acid

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address

the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

HMIS Hazard Classification

Health: 3 **Flammability:** 1 **Physical Hazard:** 0 **Personal Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS® IV) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® IV ratings are to be used with a fully implemented HMIS® IV program. HMIS® is a registered mark of the American Coatings Association (ACA).

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