Hydrofluoric Acid 70% (Aqueous Solution)

SECTION 1. IDENTIFICATION

Product Identifier	Hydrofluoric Acid 70% (Aqueous Solution)
Other Means of Identification	Hydrogen Fluoride, Hydrofluoride, HF Acid
Product Code(s)	HY4230
Product Family	Inorganic Acid
Recommended Use	Industrial.
Restrictions on Use	None known.
Supplier Identifier	Alphachem Limited, 2485 Milltower Court, Mississauga, Ontario, L5N 5Z6, (905) 821-2995
Emergency Phone No.	CANUTEC CANADA, 613-996-6666, 24 Hours
SDS No.	0133

SECTION 2. HAZARD IDENTIFICATION

Classified according to Canada's Hazardous Products Regulations (WHMIS 2015) and the US Hazard Communication Standard (HCS 2012).

Classification

Acute toxicity (Oral) - Category 1; Skin corrosion - Category 1A

Label Elements

Signal Word:
Danger

Hazard Statement(s):
In contact with water releases flammable gases which may ignite spontaneously.
Pressurized container: may burst if heated.
Fatal if swallowed or if inhaled.
Toxic if swallowed or if inhaled.
In contact with water, releases gases which are toxic if inhaled.

Precautionary Statement(s):
Keep away from heat, sparks, open flames, and hot surfaces. – No smoking.
Keep or store away from clothing and other combustible materials.
Keep only in original packaging.
Keep container tightly closed.
Do not allow contact with water.

Other Hazards

May be a health hazard in confined spaces.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture:

Chemical Name	CAS No.	%	Other Identifiers
Hydrofluoric acid	7664-39-3	70	Hydrogen Fluoride, Hydrofluoride
Water	7732-18-5	30	Dihydrogen Oxide

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Take precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). Remove source of exposure or move to fresh air. Keep at rest in a position comfortable for breathing. If breathing is difficult, trained personnel should administer emergency oxygen if advised to do so by Poison Centre or doctor. DO NOT move about unnecessarily. Symptoms of pulmonary edema may be delayed. Call a Poison Centre or doctor.

Skin Contact

Immediately wash gently and thoroughly with lukewarm, gently flowing water and mild soap for 15-20 minutes. Thoroughly clean clothing, shoes and leather goods before reuse or dispose of safely.

Eye Contact

Avoid direct contact. Wear chemical protective gloves if necessary. Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. Remove contact lenses, if present and easy to do. Take care not to rinse contaminated water into the unaffected eye or onto the face.

Ingestion

Immediately call a Poison Centre or doctor. Specific treatment is required.

First-aid Comments

Some of the first-aid procedures recommended here require advanced first-aid training.

Most Important Symptoms and Effects, Acute and Delayed

If inhaled: can cause severe irritation of the nose and throat. Can cause severe lung injury. Can harm the kidneys.

Immediate Medical Attention and Special Treatment

Special Instructions

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Not combustible. Use extinguishing agent suitable for surrounding fire.

Unsuitable Extinguishing Media

None known.

Specific Hazards Arising from the Product

Does not burn. Closed containers may rupture violently when heated releasing contents.
In a fire, the following hazardous materials may be generated: flammable hydrogen.

Special Protective Equipment and Precautions for Fire-fighters

Evacuate area. Fight fire from a safe distance or a protected location. Approach fire from upwind to avoid hazardous vapours or gases. Do NOT apply water directly to spill. For a massive fire, immediately evacuate the area and use unmanned hose holder or monitor nozzles. Before entry, especially into confined areas, use an appropriate monitor to check for: toxic gases or vapours, sufficient oxygen.
Chemical protective clothing (e.g. chemical splash suit) and positive pressure SCBA may be necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Use the personal protective equipment recommended in Section 8 of this safety data sheet. Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Evacuate downwind locations. Increase ventilation to area or move leaking container to a well-ventilated and secure area. Do not touch damaged containers or spilled product unless wearing appropriate protective equipment. Remove or isolate incompatible materials as well as other hazardous materials. Before entry, especially into confined areas, check atmosphere with an appropriate monitor.

Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

Contain and soak up spill with absorbent that does not react with spilled product. Place used absorbent into suitable, covered, labelled containers for disposal. Flush spill area. Dike and recover contaminated water for appropriate disposal. Contact emergency services and manufacturer/supplier for advice.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Wear personal protective equipment to avoid direct contact with this chemical. Do not get in eyes, on skin or on clothing. Avoid breathing in this product. Only use where there is adequate ventilation. In event of a spill or leak, immediately put on escape-type respirator and exit the area. Avoid release to the environment. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Properly vent drums to prevent pressure buildup. Do not handle swollen drums. Contact supervisor for advice. Keep containers tightly closed when not in use or empty.

Conditions for Safe Storage

Store in an area that is: cool, dry, well-ventilated, out of direct sunlight and away from heat and ignition sources, separate from incompatible materials (see Section 10: Stability and Reactivity). Keep amount in storage to a minimum. Engineering controls are usually required in the storage area to protect against the product's hazard(s). Review Section 8 (Exposure Controls/Personal Protection) for information. Protect from conditions listed in Conditions to Avoid in Section 10 (Stability and Reactivity). Store in the original, labelled, shipping container. Regularly inspect for physical changes or signs of crystallization, damage or leaks. Comply with all applicable health and safety regulations, fire and building codes.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

	ACGIH TLV®		OSHA PEL		AIHA WEEL	
Chemical Name	**TWA**	**STEL**	**TWA**	**Ceiling**	**8-hr TWA**	**TWA**
Hydrofluoric acid	0.5 ppm		3 ppm			
Water	Not established		Not established			

Appropriate Engineering Controls

Use local exhaust ventilation and enclosure, if necessary, to control amount in the air. Do not allow product to accumulate in the air in work or storage areas, or in confined spaces. Use a corrosion-resistant exhaust ventilation system separate from other ventilation systems. Exhaust directly to the outside, taking any necessary precautions for environmental protection.

Individual Protection Measures

Eye/Face Protection

Wear chemical safety goggles and face shield when contact is possible.

Skin Protection

Wear chemical protective clothing e.g. gloves, aprons, boots.
Suitable materials are: Barrier® (PE/PA/PE), Trellchem® HPS, Tychem® Responder, Tychem® TK.
The following materials should NOT be used: butyl rubber, natural rubber, nitrile rubber, polyethylene, polyvinyl

alcohol, polyvinyl chloride, Silver Shield/4H® (PE/EVAL/PE), Tychem® SL (Saranex™).

Respiratory Protection

Wear a full facepiece NIOSH approved air-purifying respirator with an acid gas cartridge, wear a NIOSH approved air-purifying respirator with an appropriate cartridge.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Clear colourless liquid.
Odour	Pungent
Odour Threshold	0.04 - 0.13 ppm
pH	Not available
Melting Point/Freezing Point	-19 ºC (melting); -19 ºC (freezing)
Initial Boiling Point/Range	66.0 ºC
Flash Point	Not applicable
Evaporation Rate	< 1 (n-butyl acetate = 1)
Flammability (solid, gas)	Not available
Upper/Lower Flammability or Explosive Limit	Not applicable (upper); Not applicable (lower)
Vapour Pressure	Not available
Vapour Density (air = 1)	1.76 - 2.23
Relative Density (water = 1)	1.26
Solubility	Soluble in water; Not available (in other liquids)
Partition Coefficient, n-Octanol/Water (Log Kow)	Not available
Auto-ignition Temperature	Not applicable
Decomposition Temperature	Not available
Viscosity	Not available (kinematic); Not available (dynamic)

Other Information

Physical State	Liquid

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions of use.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

Reacts violently in the presence of water.

Conditions to Avoid

High temperatures. Water, moisture or humidity.

Incompatible Materials

Water, metals (e.g. aluminum), strong acids (e.g. hydrochloric acid), strong bases (e.g. sodium hydroxide), glycols (e.g. ethylene glycol), inorganic acids (e.g. hydrofluoric acid).

Hazardous Decomposition Products

Toxic, corrosive chemicals.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation; skin contact; eye contact; ingestion.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Hydrofluoric acid	655 ppm (male rat) (4-hour exposure)	< 40 mg/kg (mouse) (2-hour exposure)	
Water	Not available	> 89840 mg/kg (rat)	Not available

Skin Corrosion/Irritation

Corrosive based on information for closely related materials. Contact can cause pain, redness, burns, and blistering. Permanent scarring can result.

Serious Eye Damage/Irritation

Causes serious eye damage based on skin corrosion information.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

Causes severe nose and throat irritation. At high concentrations causes severe lung injury, harmful effects on the kidneys.

Skin Absorption

No information was located.

Ingestion

Not a relevant route of exposure (gas).

Aspiration Hazard

No information was located.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

Weak bones (fluorosis). Early symptoms may include stiff or painful joints, discoloured and pitted teeth. The heart, nerves, digestive and other body systems may also be affected. The condition may reverse slowly and partially.

Respiratory and/or Skin Sensitization

No information was located.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
Hydrofluoric acid	Not evaluated	Not designated	Not Listed	
Water	Not Listed	Not Listed	Not Listed	Not Listed

No information was located.

Reproductive Toxicity

Development of Offspring

Not known to harm the unborn child.

Sexual Function and Fertility

No information was located. Conclusions cannot be drawn from the limited studies available.

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

Conclusions cannot be drawn from the limited studies available.

Interactive Effects

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

This section is not required by WHMIS. This section is not required by OSHA HCS 2012.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose of contents and container in accordance with local, regional, national and international regulations.

SECTION 14. TRANSPORT INFORMATION

Regulation	UN No.	Proper Shipping Name	Transport Hazard Class(es)	Packing Group
Canadian TDG	UN1052	Hydrogen Fluoride, Anhydrous	8	I
US DOT	UN1052	Hydrogen Fluoride, Anhydrous	8	I

Special Precautions Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

Hydrofluoric acid:
Listed on the DSL.
Water:
Listed on the DSL.

USA

Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are listed on the TSCA Inventory.

SECTION 16. OTHER INFORMATION

NFPA Rating	**Health - 4 Flammability - 0 Instability - 1**
SDS Prepared By	Alphachem Limited
Phone No.	(905)-821-2995
Date of Preparation	September 17, 2015
Date of Last Revision	March 30, 2016
References	CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS). Columbus Chemical Industries database.
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