



Safety Data Sheet FLUOROBORIC ACID 48 – 50%

SECTION 1 : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION		
Product Name	Fluoroboric Acid 48 – 50%	
Synonyms	Fluoboric acid solution; Fluoroboric acid; hydrogen tetra-fluoroborate; tetrafluoroboric acid; borofluoric acid	
CAS No.	16872-11-0	
Product Codes	825 001	
Product Use	Laboratory chemicals, Manufacture of substances	
Contact Information	OFFICE : Madras Fluorine Private Ltd No.71, 4 th Main Road Gandhi Nagar, Adyar Chennai 600 020, India E-mail : exim@mfpfluorine.com	FACTORY Madras Fluorine Private Ltd Express Highway Manali Chennai – 600 068, India
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SECTION 2 : HAZARDS IDENTIFICATION	
Physical hazards This mixture does not meet the classification criteria according to OSHA HazCom 2012.	
Health hazards	
Acute toxicity, oral	Category 3
Skin corrosion/irritation	Category 1A
Serious eye damage/eye irritation	Category 1
Environmental hazards This mixture does not meet the classification criteria according to OSHA HazCom 2012.	
OSHA defined hazards This mixture does not meet the classification criteria according to OSHA HazCom 2012.	
Label elements	
	
Signal word	Danger

Hazard statement	Toxic if swallowed. Causes severe skin burns and eye damage.
Precautionary statement	
Prevention	Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Immediately call a poison center/doctor. Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. 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.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	No OSHA defined hazard classes.
Other hazards which do not result in classification:	Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract. Prolonged exposure may cause skeletal fluorosis (weakened bone structure). May be corrosive to metals.
Supplemental information	None.

SECTION 3 : COMPOSITION / INFORMATION ON INGREDIENTS			
Ingredient	CAS No	Percent	Hazardous
Fluoboric Acid	16872-11-0	48 - 50%	Yes
Water	7732-18-5	50 - 52%	No

SECTION 4 : FIRST AID MEASURES	
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	If you feel unwell, seek medical advice (show the label where possible). Ensure that Medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

SECTION 5 : FIRE FIGHTING MEASURES	
Suitable extinguishing media	Dry chemical, CO2, water spray or regular foam.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Contact with most metals will generate flammable hydrogen gas.
Special protective equipment and precautions for firefighters	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear
Fire fighting equipment/instructions	Ventilate the contaminated area. Evacuate area and fight fire from a safe distance. Cool containers exposed to heat with water spray and remove container, if no risk is involved. Use water spray to cool unopened containers. Prevent fire extinguishing water from contaminating surface water or the ground water system.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Not combustible, however the product can react with metals to form flammable and explosive hydrogen gas.
Hazardous combustion products	Hydrogen fluoride. Boron trifluoride.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS

Methods and materials for containment and cleaning up

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

SECTION 7 : HANDLING AND STORAGE

Precautions for safe handling

Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Do not taste or swallow. When using, do not eat, drink or smoke. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

SECTION 8 : EXPOSURE CONTROLS, PERSONAL PROTECTION

Occupational exposure limits

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Fluoroboric Acid (CAS 16872-11-0)	TWA	2.5 mg/m ³

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles) and a face shield. Eye wash facilities and emergency shower must be available when handling this product.

Skin protection

Hand protection Wear appropriate chemical-resistant gloves. Advice should be sought from glove suppliers.

Other Wear appropriate chemical-resistant clothing.

Respiratory protection Use a NIOSH/MSHA approved respirator if there is a risk of exposure at levels exceeding the exposure limits.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear, colorless liquid.
Odor	Odorless.
Solubility	Soluble in water. Miscible.
Density	1.84
Ph	No information found.
% Volatiles by volume @ 21C (70F)	No information found.
Boiling Point	130C (266F)
Melting Point	No information found.
Vapor Density (Air=1)	3.0
Vapor Pressure (mm Hg)	5-10 @ 20C (68F)
Evaporation Rate (BuAc=1)	1

SECTION 10 : STABILITY AND REACTIVITY

Reactivity

The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability

Material is stable under normal conditions.

Possibility of hazardous reactions

No dangerous reaction known under conditions of normal use.

Conditions to avoid

May ignite combustibles. Toxic gases may accumulate in tanks and hopper cars. Avoid temperatures exceeding the decomposition temperature. Contact with incompatible materials.

Incompatible materials Water-reactive materials, cyanides, strong bases, sulfides, carbonates, many metals. (These can cause exothermic reactions and/or evolution of toxic gases.) Dehydration of aqueous fluoboric acid by addition of acetic anhydride is also exothermic, requiring caution.

Hazardous decomposition products

At the boiling point it emits toxic mist. At some point, the residual liquid decomposes on further heating, forming boron trifluoride and hydrogen fluoride gases.

SECTION 11 : TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system.
Skin contact	Corrosive effects.
Eye contact	Causes serious eye damage.
Ingestion	Toxic if swallowed. Causes digestive tract burns.

Most important symptoms/effects, acute and delayed

Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation.

Information on toxicological effects

Acute toxicity

May cause severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system. Toxic if swallowed.

Components	Species	Test Results
Fluoroboric Acid (CAS 16872-11-0)		
Acute		
<i>Dermal</i>		
LD50	Guinea pig	2.5 ml/kg
<i>Inhalation</i>		
LC50	Rat	No data in literature
<i>Oral</i>		
LD50	Rat	100 - 200 mg/kg



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Components	Species	Test Results
Water (CAS 7732-18-5)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	Not available.
<i>Inhalation</i>		
LC50	Rat	Not available.
<i>Oral</i>		
LD50	Rat	> 89840 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation
Serious eye damage/eye
Irritation

Corrosive effects.
 Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization
Skin sensitizer
Germ cell mutagenicity

This product is not expected to cause respiratory sensitization.
 This product is not expected to cause skin sensitization.
 No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity

This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity

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This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure

Specific Target Organ Toxicity (STOT), Single Exposure Category 3: May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

Not classified as a specific target organ toxicity -repeated exposure.

Aspiration toxicity

Not an aspiration hazard.

Chronic effects

Prolonged inhalation may be harmful. Prolonged exposure may cause skeletal fluorosis (weakened bone structure). Symptoms of Fluorosis include fragile bones, stiffness of the joints, osteosclerosis, loss of appetite, nausea, vomiting, dyspnea, salivation, abdominal pain, fever, parenthsis, nystagmus, optic neuritis, polyuria, stomatitis, albuminuria, nettle rash, skin, tooth and kidney damage and cardiac arrythmias. Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia. Prolonged exposure to fluoride dust, vapors or mists results in perforation of the nasal septum. Chronic effects include excessive calcification of the bones, ligaments and tendons.

SECTION 12 : ECOLOGICAL INFORMATION

Ecotoxicity

Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.

Persistence and degradability

No data is available on the degradability of this product.

Bioaccumulative potential

No data available.

Mobility in soil

No data available.

Other adverse effects

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13 : DISPOSAL CONSIDERATIONS

Disposal instructions

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations

Dispose in accordance with all applicable regulations.

Hazardous waste code

D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]

Waste from residues / unused products

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging

Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

SECTION 14 : TRANSPORT INFORMATION

DOT

UN number UN1775
UN proper shipping name Fluoroboric acid
Transport hazard class(es)
Class 8
Subsidiary risk -
Label(s) 8
Packing group II



Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Special provisions A6, A7, B2, B15, IB2, N3, N34, T7, TP2
Packaging exceptions 154
Packaging non bulk 202
Packaging bulk 242

IATA

UN number UN1775
UN proper shipping name Fluoroboric acid
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group II
Environmental hazards No.
ERG Code 8L



Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Other information
Passenger and cargo aircraft Allowed.
Cargo aircraft only Allowed.

Refer to IATA for any restrictions.

IMDG

UN number UN1775
UN proper shipping name FLUOROBORIC ACID
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group II
Marine pollutant No.



Environmental hazards
EmS F-A, S-B
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.



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SECTION 15 : REGULATORY INFORMATION

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	Not regulated.
CERCLA Hazardous Substance List (40 CFR 302.4)	Not listed.
SARA 304 Emergency release notification	Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes
	Delayed Hazard - No
	Fire Hazard - No
	Pressure Hazard - No
	Reactivity Hazard - No

SARA 302 Extremely hazardous substance	Not listed.
SARA 311/312 Hazardous chemical	Yes
SARA 313 (TRI reporting)	Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	Not regulated.
Safe Drinking Water Act (SDWA)	Not regulated.

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)
Not listed.

US. Massachusetts RTK - Substance List	Not regulated.
US. New Jersey Worker and Community Right-to-Know Act	Fluoroboric Acid (CAS 16872-11-0)
US. Pennsylvania Worker and Community Right-to-Know Law	Not listed.
US. Rhode Island RTK	Not regulated.

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories		
Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s)



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SECTION 16 : OTHER INFORMATION

Label Hazard Warning:

DANGER! MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. CORROSIVE. CAUSES SEVERE IRRITATION AND BURNS TO EVERY AREA OF CONTACT.

Label Precautions:

Do not breathe vapor or mist.
Do not get in eyes, on skin, or on clothing.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.

Label First Aid:

In all cases get medical attention immediately. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Creation Date : 18.9.2000

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