

Material Safety Data Sheet

Lead Fluoborate

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

COMPANY DETAILS:

Triveni Chemicals
135 Pancharatna Char Rasta
G I D C Vapi.396195 Gujarat India
Tel. 91 260 2400022 / 3258683 Fax. 240045

Product Name: LEAD FLUOBORATE
Synonyms: Lead (II) Tetrafluoroborate

Manufacturer's Product Code(s):
Use:Electroplating

UN Number: 3289

Proper Shipping Name: TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. (LEAD FLUOROBORATE 47%, FLUOROBORIC ACID 4%)

Dangerous Goods Class: 6.1

Subsidiary risk: 8

Packing Group: II

Hazchem Code: 2X

Poison Schedule: S6

NOTE: The product potentially contains residual amounts of free HF.

2. COMPOSITION / INFORMATION ON INGREDIENTS

SUBSTANCE NAME	Proportion	CAS Number
Lead Fluoroborate	47.4%	13814-96-5
Fluoroboric Acid (HBF ₄)	3.3 - 4.4%	16872-11-0
Boric Acid	1.2%	10043-35-3
Hydrofluoric Acid (released from HBF ₄ in solution)	>0.5%	7664-39-3
Water	Balance	7732-18-5

3. HAZARD IDENTIFICATION

ACUTE HEALTH EFFECTS

Swallowed: Toxic if swallowed.

Will cause burns to the mouth, mucous membranes, throat, oesophagus and stomach. May cause headache, nausea and vomiting. If sufficient quantities are ingested (swallowed) death may occur.

Eye: Will cause burns to the eyes with effects including: Pain, tearing, conjunctivitis and if duration of exposure is long enough, blindness will occur.

Skin: Will cause burns to the skin, with effects including; Redness, blistering, localised pain and dermatitis. Harmful by skin contact.

Inhaled:

Toxic if inhaled. Will cause severe irritation to the nose, throat and respiratory system with effects including: Dizziness, headache, incoordination, chest pains, coughing, respiratory paralysis and or failure.

Chronic: Prolonged or repeated exposure may lead to irreversible damage to health.

Prolonged or repeated exposure may lead to permanent irreversible injury.

Prolonged exposure to fluoride dusts, vapours or mists results in perforation of the nasal septum. Chronic effects include excessive calcium precipitation by the fluoride ion in the bones, ligaments and tendons. Prolonged or repeated skin contact will lead to necrosis (death) of the skin.

Lead containing compounds are classified as a CATEGORY 1 TOXIC TO REPRODUCTION (WORKSAFE).

Established human reproductive hazards are those substances known to be reproductive hazard. There is sufficient evidence to establish a casual association between human exposure to these substances and the development of birth defects.

Lead containing compounds are classified as a CATEGORY 3 TOXIC TO REPRODUCTION (WORKSAFE).

Substances suspected of impairing fertility. Are those substances which have possible developmental toxicity effects on humans but in respect of which the available information is not adequate for making a satisfactory assessment. There is some evidence from appropriate animal or epidemiological studies, but this is insufficient to place the substance in Category 2.

Boric acid has been classified as a CATEGORY 3 TOXIC TO REPRODUCTION (WORKSAFE).

Substances suspected of impairing fertility and or possibly causing birth defects. Are those substances which have possible developmental toxicity effects on humans but in respect of which the available information is not adequate for making a satisfactory assessment. There is some evidence from appropriate animal or epidemiological studies, but this is insufficient to place the substance in Category 2.

4. FIRST AID MEASURES

Swallowed: If swallowed, DO NOT induce vomiting. Seek urgent medical assistance.

Eye: If material is splashed into eyes, flush with plenty of water for at least 15 minutes, ensuring eye lids are held open. Immediately transport to hospital or doctor.

Skin: If material is splashed onto the skin, remove any contaminated clothing and wash skin thoroughly with water and soap if available.

Urgently transport to hospital or doctor.

Inhaled: Remove victim to fresh air. Apply resuscitation if victim is not breathing - DO NOT USE DIRECT MOUTH - TO - MOUTH METHOD if victim ingested or inhaled substance; use alternative respiratory method or proper respiratory device - Administer oxygen if breathing is difficult.

First Aid Facilities:

Eye wash fountain, safety shower and normal wash room facilities.

Advice to Doctor:

Treat symptomatically.

Symptoms of fluoride overexposure may include salivation, nausea, vomiting, abdominal pain, fever, laboured breathing. Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia. Prolonged exposure to fluoride dusts, vapours or mists results in perforation of the nasal septum. Chronic effects include excessive calcium precipitation by the fluoride ion in the bones, ligaments and tendons.

Symptoms of lead overexposure

5. FIRE-FIGHTING MEASURES

Fire/Explosion Hazard. EXTINGUISHING MEDIA: Use dry chemical, carbon dioxide, foam or water spray.

SPECIAL FIRE FIGHTING PROCEDURES: Self-contained breathing apparatus (SCBA) required for fire-fighting personnel.

Flammability. Material does not burn. Containers may explode when heated. Runoff may pollute waterways. Fire will produce irritating, toxic and / or corrosive gases.

6. ACCIDENTAL RELEASE MEASURES

EMERGENCY ACTION: Keep unnecessary people away; Isolate hazard area and deny entry. Stay upwind; Keep out of low areas. Isolate for 100 m in all directions if tank, rail car or tanker truck is involved in fire.

SPILL OR LEAK PROCEDURE: No flares, smoking or flames in hazard area. Stop leak if you can do it without risk. Stop leak if you can do it without risk.

SMALL SPILLS: Neutralize with lime, soda ash or crushed limestone. Take up with sand, dirt or vermiculite. Place into labelled drum(s) for later disposal.

LARGE SPILLS: Notify Emergency Services (Police or Fire Brigade). Tell them location, nature and any information that would be helpful. Contain spill. Safely stop flow of spill. Bund area. Trained personnel should wear Personal Protective equipment as highlighted in this MSDS. Consult an expert regarding disposal of this product.

7. HANDLING AND STORAGE

Store in a cool place and out of direct sunlight. Store away from sources of heat or flames, strong alkalis, acids and oxidizing agents. Store in original packages as approved

by manufacturer. Check all fittings, valves, reticulation (piping) and any ancillary equipment for leaks. A supplied air respirator or a Self-Contained Breathing Apparatus (SCBA) for emergencies should be available and checked regularly. For further information please refer to the Engineering Controls of this MSDS.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Standards

LEAD FLUOROBORATE: [TWA] 0.15 mg/m³ (Inorganic compounds as Pb)
FLUOROBORIC ACID: [TWA] 2.5 mg/m³ (as Fluoride
BORIC ACID : [TWA] 5 mg/m³

Engineering Controls:

Toxic and corrosive liquid. Single significant exposure may cause death. Maintain adequate ventilation at all times. At high temperatures the solution releases a hazardous mist. Prevent accumulation of vapours or mists in hollows or sumps.

Mechanical ventilation (dilution and local exhaust), and control of process conditions. Corrosion resistant materials may be needed where dust, mists and fumes may be formed. It may be necessary to consider process or personnel enclosure (fully enclosed systems).

If engineering controls and work practices are not effective in preventing or controlling exposure, then suitable personal protective equipment, which is known to perform satisfactorily, should be used.

Personal Protection Equipment

CLOTHING: PVC, Nitrile, Neoprene, Natural rubber or any other type of apron or splash suit as recommended by the manufacturer.

GLOVES: PVC, Nitrile, Neoprene, Natural rubber or any other type of glove as recommended by the manufacturer.

EYES: Chemical goggles or faceshield to protect eyes.

RESPIRATORY PROTECTION: Avoid breathing of vapours or mists. Select and use respirators in accordance with AS/NZS 1715/1716. When vapours or mists exceed the exposure standards then the use of an atmosphere-supplied, positive pressure demand self-contained or airline breathing apparatus supplied air respirator complying with the requirements of AS/NZS 1715 is recommended. Filter capacity and respirator type depends on exposure levels.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, colourless solution with essentially no odour.

Boiling Point / Melting Point: Not Available

Vapour Pressure:	Not Available	
Specific Gravity:	1.8 approx	
Flash Point:	Not Applicable	
Flammability Limits:	Not Applicable	
pH:	2 approx.	
Molecular Formula:	Pb(BF ₄) ₂	(Lead Fluoroborate ingredient)
Molecular Weight:	380.8	(Lead Fluoroborate ingredient)
Solubility in Water:	Complete, the product is an Aqueous Solution.	

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions of use. In dilute solution, some hydrolysis to hydrofluoric acid may occur.

HAZARDOUS DECOMPOSITION PRODUCTS: Emits acrid smoke and fumes when heated to decomposition. At high temperatures the solution releases a toxic mist of the ingredients. Emits acrid smoke and fumes when heated to decomposition and may release lead oxides, borates, lead (II) fluoride, boron trifluoride (speculative), fluoride compounds, and may form hydrogen fluoride in contact with strong acids.

HAZARDOUS POLYMERIZATION:

Will not occur.

INCOMPATIBILITIES:

Strong alkalis, acids, nitrates and oxidizing agents. Stannous Fluoborate is acidic and will react with acid incompatible materials, eg bases, sulfides, cyanides. It may react vigorously with strong oxidizing agents. Corrosive to aluminium.

CONDITIONS TO AVOID: Heat, flames, and incompatibles.

11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity (rat): 20-50 mg/kg (Packing Group II toxicity range & Hazardous Substances Toxic Range)

Chronic Effects: Target organs - blood, nerves, kidney, liver, lungs, eyes, skin, bones.

Adverse effects of lead on human reproduction, embryonic and fetal development and postnatal (e.g. mental) development have been reported. Excessive exposure can affect

blood, nervous and digestive systems. The synthesis of haemoglobin is inhibited and results in anemia. If left untreated, neuromuscular dysfunction, possibly paralysis and encephalopathy can result. Additional symptoms of over exposure to lead include: joint and muscle pain, weakness of the extensor muscles (frequently the hand and wrist), headache, dizziness, abdominal pain, diarrhea, constipation, nausea, vomiting, blue line on the gums.

12. ECOLOGICAL INFORMATION

This substance is toxic to aquatic organisms. This substance may cause long term adverse effects in the environment

13. DISPOSAL CONSIDERATIONS

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste by an approved waste agency. Processing, use or contamination of this product may change the waste management options. The waste should be neutralised with lime in order to immobilise the fluoride as Calcium Fluoride.

Dispose of container and unused contents in accordance with federal, state and local requirements.

Advise toxic, corrosive nature. Must be chemically treated to an inert material prior to disposal in landfill.

14. TRANSPORT INFORMATION

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Emergency information(Transport):Dangerous Goods - Initial Emergency Response Guide (SAA/SNZ HB76:1997)

For TOXIC AND/OR CORROSIVE SUBSTANCES - Guide No: 37

15. REGULATORY INFORMATION:Workplace Hazardous Substance
HAZARD CATEGORY: TOXIC, CORROSIVE

RISK PHRASES

R61 May cause harm to the unborn child.

R62 Possible risk of impaired fertility.

R33 Danger of cumulative effects

R23/25 Toxic by inhalation and if swallowed.

R34 Causes burns.

SAFETY PHRASES

S1/2 Keep locked up and out of reach of children.

S53 Avoid exposure - obtain special instructions before use.

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S28 After contact with skin wash immediately with plenty of water and apply calcium gluconate gel to the affected area.

S27 Take off immediately all contaminated clothing.

S45 In case of accident or if you feel unwell, seek medical advice immediately and show this container or label.

Poison Schedule: S6

Scheduled due to >0.5% HF