

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/06/2010

Reviewed on 05/05/2010

## 1 Identification of substance:

### Product details:

**Product name:** Lead(II) tetrafluoroborate, 50% w/w Aqueous Solution

**Stock number:** 41956

### Manufacturer/Supplier:

Alfa Aesar, A Johnson Matthey Company  
Johnson Matthey Catalog Company, Inc.  
30 Bond Street  
Ward Hill, MA 01835-8099  
Emergency Phone: (978) 521-6300  
CHEMTREC: (800) 424-9300  
Web Site: [www.alfa.com](http://www.alfa.com)

**Information Department:** Health, Safety and Environmental Department

### Emergency information:

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

## 2 Composition/Data on components:

### Chemical characterization:

#### Description: (CAS#)

Lead(II) tetrafluoroborate (CAS# 13814-96-5): 50%

Water (CAS# 7732-18-5): 50%

#### Identification number(s):

**Index number:** 082-001-00-6

## 3 Hazards identification

### Hazard description:



T Toxic

N Dangerous for the environment

### Information pertaining to particular dangers for man and environment

R 61 May cause harm to the unborn child

R 62 Possible risk of impaired fertility

R 20/22 Also harmful by inhalation and if swallowed.

R 33 Danger of cumulative effects.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

### Classification system

#### HMIS ratings (scale 0-4)

#### (Hazardous Materials Identification System)

HEALTH	2
FIRE	0
REACTIVITY	0

Health (acute effects) = 2

Flammability = 0

Reactivity = 0

### GHS label elements



**Danger**

3.7/1A - May damage fertility or the unborn child.

3.9/2 - May cause damage to organs through prolonged or repeated exposure.



**Warning**

4.1/1 - Very toxic to aquatic life.

4.1/1 - Very toxic to aquatic life with long lasting effects.



**Warning**

3.1/4 - Harmful if swallowed.

3.1/4 - Harmful if inhaled.

### Prevention:

Avoid release to the environment.

Obtain special instructions before use.

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**Response:**

IF exposed or concerned: Get medical advice/attention.

**Disposal:**

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

### 4 First aid measures

**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice.

**After skin contact**

Immediately wash with water and soap and rinse thoroughly. Seek immediate medical advice.

Rub in calcium gluconate solution or calcium gluconate gel immediately.

**After eye contact**

In case of fire, the following can be released.

Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing** Seek immediate medical advice.

### 5 Fire fighting measures

**Suitable extinguishing agents**

Product is not flammable. Use fire fighting measures that suit the surrounding fire.

**Special hazards caused by the material, its products of combustion or resulting gases:**

In case of fire, the following can be released:

Hydrogen fluoride (HF)

Lead oxide fume

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

### 6 Accidental release measures

**Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

**Measures for cleaning/collecting:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

**Additional information:**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

### 7 Handling and storage

**Handling****Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Open and handle container with care.

**Information about protection against explosions and fires:** The product is not flammable**Storage****Requirements to be met by storerooms and receptacles:** No special requirements.**Information about storage in one common storage facility:**

Aqueous solutions are incompatible with alkali and alkaline earth metals and many reactive organic and inorganic chemicals.

**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

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## 8 Exposure controls and personal protection

### Additional information about design of technical systems:

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

### Components with limit values that require monitoring at the workplace:

Lead, elemental, and inorganic compounds (as Pb)	mg(Pb)/m3
ACGIH TLV	0.05; Confirmed animal carcinogen
Austria MAK	0.1
Belgium TWA	0.15
Denmark TWA	0.1
Germany MAK	0.1
Japan OEL	0.1
Korea TLV	0.05; Confirmed animal carcinogen
Netherlands TWA	0.15
Norway TWA	0.05
Poland TWA	0.05
Sweden TWA	0.05 (resp. dust)
	0.1 (total dust)
Switzerland MAK-W	0.1
United Kingdom TWA	0.1
USA PEL	0.05

### Fluorides (as F)

	mg/m3
ACGIH TLV	2.5
Austria MAK	2.5
Belgium TWA	2.5
Finland TWA	2.5
France TWA	2.5
Germany MAK	2.5
Hungary TWA	1; 2-STEL
Netherlands MAC-K	3.5
Norway TWA	0.6
Poland TWA	1; 3-STEL
Sweden NGV	2
Switzerland MAK-W	1.5; 3-KZG-W
United Kingdom TWA	2.5
Russia TWA	2
Denmark TWA	2.5
USA PEL	2.5

**Additional information:** No data

### Personal protective equipment

#### General protective and hygienic measures

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

#### Breathing equipment:

Use suitable respirator when high concentrations are present.

Refer to 29CFR1910.1025 for regulations on respiratory protection required during exposure to lead and lead compounds.

**Protection of hands:** Impervious gloves

**Eye protection:** Safety glasses

**Body protection:** Protective work clothing.

## 9 Physical and chemical properties:

### General Information

<b>Form:</b>	Liquid
<b>Color:</b>	Colorless
<b>Odor:</b>	Odorless

### Change in condition

<b>Melting point/Melting range:</b>	Not determined
<b>Boiling point/Boiling range:</b>	Not determined
<b>Sublimation temperature / start:</b>	Not determined

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<b>Flash point:</b>	Not determined
<b>Ignition temperature:</b>	Not determined
<b>Decomposition temperature:</b>	Not determined
<b>Danger of explosion:</b>	Product does not present an explosion hazard.
<b>Explosion limits:</b>	
<b>Lower:</b>	Not determined
<b>Upper:</b>	Not determined
<b>Vapor pressure:</b>	Not determined
<b>Density at 20°C (68°F):</b>	1.62 g/cm <sup>3</sup>
<b>Solubility in / Miscibility with Water:</b>	Fully miscible

### 10 Stability and reactivity

**Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

**Materials to be avoided:**

Bases

Aqueous solutions are incompatible with alkali and alkaline earth metals and many reactive organic and inorganic chemicals.

**Dangerous reactions**

Reacts with alkali metals.

Reacts with alkaline earth metals.

**Dangerous products of decomposition:**

Hydrogen fluoride (HF)

Lead oxide fume

### 11 Toxicological information

**Acute toxicity:**
**Primary irritant effect:**

**on the skin:** Corrosive effect on skin and mucous membranes.

**on the eye:** Strong corrosive effect.

**Sensitization:** No sensitizing effects known.

**Subacute to chronic toxicity:**

Lead and lead compounds may cause abdominal pain, diarrhea, loss of appetite, metallic taste, nausea, vomiting, lassitude, insomnia, muscle weakness, joint and muscle pain, irritability, headache and dizziness. Red blood cells may be damaged resulting in anemia. Gastritis and injury to the kidneys, liver, male gonads, and central nervous system may also occur.

Fluorides may cause salivation, nausea, vomiting, diarrhea and abdominal pain, followed by weakness, tremors, shallow respiration, convulsions and coma. May cause brain and kidney damage. Chronic fluoride poisoning can cause severe bone changes, loss of weight, anorexia, anemia and dental defects.

**Subacute to chronic toxicity:**

Boron affects the central nervous system. Boron poisoning causes depression of the circulation, persistent vomiting and diarrhea, followed by profound shock and coma. The temperature may become subnormal and a scarletina form rash may cover the entire body. Corrosive materials are acutely destructive to the respiratory tract, eyes, skin and digestive tract. Eye contact may result in permanent damage and complete vision loss.

Inhalation may result in respiratory effects such as inflammation, edema, and chemical pneumonitis. May cause coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. Ingestion may cause damage to the mouth, throat and esophagus. May cause skin burns or irritation depending on the severity of the exposure.

**Additional toxicological information:**

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

May cause harm to the unborn child.

Possible risk of impaired fertility.

EPA-B2: Probable human carcinogen, sufficient evidence from animal studies; inadequate evidence or no data from epidemiologic studies.

IARC-2B: Possibly carcinogenic to humans: limited evidence in humans in the absence of sufficient evidence in experimental animals.

NTP-2: Reasonably anticipated to be a carcinogen: limited evidence from studies in humans or sufficient evidence from studies in experimental animals.

ACGIH A3: Animal carcinogen: Agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) not considered relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence suggests that

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the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for components in this product.

## 12 Ecological information:

### Ecotoxicological effects:

**Remark:** Very toxic for aquatic organisms

### Additional ecological information:

### General notes:

Do not allow product to reach ground water, water course or sewage system, even in small quantities.

Danger to drinking water if even extremely small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

Do not allow material to be released to the environment without proper governmental permits.

Very toxic for aquatic organisms

## 13 Disposal considerations

### Product:

**Recommendation** Consult state, local or national regulations to ensure proper disposal.

### Uncleaned packagings:

**Recommendation:** Disposal must be made according to official regulations.

**Recommended cleansing agent:** Water, if necessary with cleansing agents.

## 14 Transport information

### DOT regulations:



### Hazard class:

8

### Identification number:

UN2922

### Packing group:

III

**Proper shipping name (technical name):** CORROSIVE LIQUID, TOXIC, N.O.S. (Lead(II) tetrafluoroborate solution)

### Label

8+6.1

### Remarks:

Special marking with the symbol (fish and tree).

### Land transport ADR/RID (cross-border)



### ADR/RID class:

8 (CT1) Corrosive substances

### Danger code (Kemler):

86

### UN-Number:

2922

### Packaging group:

III

### Special marking:

Symbol (fish and tree)

### Description of goods:

2922 CORROSIVE LIQUID, TOXIC, N.O.S. (Lead(II) tetrafluoroborate solution)

### Maritime transport IMDG:



### IMDG Class:

8

### UN Number:

2922

### Label

8+6.1

### Packaging group:

III

### EMS Number:

F-A, S-B

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<b>Marine pollutant:</b>	Yes (P)
<b>Proper shipping name:</b>	Symbol (fish and tree) CORROSIVE LIQUID, TOXIC, N.O.S. (Lead(II) tetrafluoroborate solution)

**Air transport ICAO-TI and IATA-DGR:**

<b>UN/ID Number:</b>	2922
<b>Label</b>	8+6.1
<b>Packaging group:</b>	III
<b>Proper shipping name:</b>	CORROSIVE LIQUID, TOXIC, N.O.S. (Lead(II) tetrafluoroborate solution)

**UN "Model Regulation":** UN2922, CORROSIVE LIQUID, TOXIC, N.O.S., 8 (6.1), III**Environmental hazards:** Environmentally hazardous substance, liquid; Marine Pollutant

## 15 Regulations

**Product related hazard informations:****Hazard symbols:**

T Toxic  
N Dangerous for the environment

**Risk phrases:**

61 May cause harm to the unborn child  
62 Possible risk of impaired fertility  
20/22 Also harmful by inhalation and if swallowed.  
33 Danger of cumulative effects.  
50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

**Safety phrases:**

53 Avoid exposure - obtain special instructions before use.  
45 In case of accident or if you feel unwell, seek medical advice immediately.  
60 This material and its container must be disposed of as hazardous waste.  
61 Avoid release to the environment. Refer to special instructions/Safety data sheets

**Special labeling of certain preparations:**

This product contains a chemical known to the state of California to cause cancer or reproductive toxicity.

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

This product contains a chemical known to the state of California to cause cancer or reproductive toxicity.

All components of this product are listed on the Canadian Domestic Substances List (DSL).

**Information about limitation of use:**

For use only by technically qualified individuals.  
This product contains lead and is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

**Other regulations, limitations and prohibitive regulations**

Refer to 29CFR1910.1025 for regulations concerning lead and lead compounds.

## 16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing MSDS:** Health, Safety and Environmental Department.**Contact:** Zachariah Holt**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
IMDG: International Maritime Code for Dangerous Goods

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DOT: US Department of Transportation  
IATA: International Air Transport Association  
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)  
ICAO: International Civil Aviation Organization  
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)  
P: Marine Pollutant  
GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
HMIS: Hazardous Materials Identification System (USA)

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