

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/11/2009

Reviewed on 05/11/2009

## 1 Identification of substance:

### Product details:

**Product name:** Phosphorus (V) fluoride

**Stock number:** 33543

### 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#)

Phosphorus (V) fluoride (CAS# 7647-19-0): 100%

**Identification number(s):**

**EINECS Number:** 231-602-3

## 3 Hazards identification

### Hazard description:



T Toxic

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

R 23 Toxic by inhalation.

R 34 Causes burns.

### Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH	3
FIRE	0
REACTIVITY	2

Health (acute effects) = 3

Flammability = 0

Reactivity = 2

### GHS label elements



**Danger**

3.1/2 - Fatal if inhaled.



**Danger**

3.2/1B - Causes severe skin burns and eye damage.



**Warning**

2.5/L - Contains gas under pressure; may explode if heated.

### Prevention:

Do not breathe dust/fume/gas/mist/vapours/spray.

Wash thoroughly after handling.

Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection/face protection.

Wear respiratory protection.

### Response:

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

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IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.  
 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.  
 Specific treatment is urgent (see label).  
 Specific treatment (see label).  
 Wash contaminated clothing before reuse.

**Storage:**

Store in a well-ventilated place. Keep container tightly closed.  
 Store locked up.  
 Protect from sunlight. Store in a well-ventilated place.

**Disposal:**

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

### 4 First aid measures

**General information**

Immediately remove any clothing soiled by the product.  
 Remove breathing apparatus only after contaminated clothing has been completely removed.  
 In case of irregular breathing or respiratory arrest provide artificial respiration.

**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**

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:

Phosphorus oxides

Hydrogen fluoride (HF)

**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:**

Inform authorities in case of gas release.  
 Do not allow material to be released to the environment without proper governmental permits.

**Measures for cleaning/collecting:**

Use neutralizing agent.  
 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:**

Handle under dry protective gas.  
 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

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**Storage****Requirements to be met by storerooms and receptacles:**

Unsuitable material for container: ceramic, glass

Suitable material for receptacles and pipes: Stainless steel.

Use receptacles with fluoroplastic lining.

**Information about storage in one common storage facility:** Store away from water/moisture.**Further information about storage conditions:**

Store under dry inert gas.

This product is moisture sensitive.

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

Protect from humidity and water.

**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:**

Fluorides (as F)

	mg/m <sup>3</sup>
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.

Avoid contact with the eyes and skin.

**Breathing equipment:** Use suitable respirator when high concentrations are present.**Protection of hands:**

Impervious gloves

Check protective gloves prior to each use for their proper condition.

**Material of gloves**

The selection of suitable gloves not only depends on the material, but also on quality.

Quality will vary from manufacturer to manufacturer.

**Eye protection:**

Safety glasses

Tightly sealed goggles

Full face protection

**Body protection:** Protective work clothing.**9 Physical and chemical properties:****General Information**

<b>Form:</b>	Gaseous
<b>Odor:</b>	Not determined

**Change in condition**

<b>Melting point/Melting range:</b>	-93.8°C (-137°F)
<b>Boiling point/Boiling range:</b>	-84.6°C (-120°F)

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Sublimation temperature / start:	Not determined
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined
Upper:	Not determined
Vapor pressure:	Not determined
Density at 20°C (68°F):	5.805 g/cm <sup>3</sup>
Solubility in / Miscibility with Water:	Hydrolyzes

### 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:** Water/moisture

**Dangerous reactions** Contact with water evolves corrosive fumes.

**Dangerous products of decomposition:**

Phosphorus oxides (e.g. P<sub>2</sub>O<sub>5</sub>)

Hydrogen fluoride

### 11 Toxicological information

**Acute toxicity:**

**Primary irritant effect:**

**on the skin:**

Corrosive effect on skin and mucous membranes.

Irritant to skin and mucous membranes.

**on the eye:**

Strong corrosive effect.

Irritating effect.

**Sensitization:** No sensitizing effects known.

**Subacute to chronic toxicity:**

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.

Inorganic phosphorus compounds may cause irritation and hemorrhages in the stomach as well as liver and kidney damage. Bone structure may be attacked, especially the jaw and teeth.

**Subacute to chronic toxicity:**

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:**

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

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

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

### 12 Ecological information:

**General notes:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

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

### 13 Disposal considerations

**Product:**

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

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

### 14 Transport information

**DOT regulations:**


**Hazard class:** 2.3  
**Identification number:** UN2198  
**Proper shipping name (technical name):** PHOSPHOROUS PENTAFLUORIDE  
**Label:** 2.3+8

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


**ADR/RID class:** 2 2TC Gases  
**UN-Number:** 2198  
**Description of goods:** 2198 PHOSPHOROUS PENTAFLUORIDE

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


**ICAO/IATA Class:** 2.3  
**UN/ID Number:** 2198  
**Label:** 2.3+8  
**Proper shipping name:** PHOSPHOROUS PENTAFLUORIDE

**UN "Model Regulation":** UN2198, PHOSPHOROUS PENTAFLUORIDE, 2.3 (8)

### 15 Regulations

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

T Toxic

**Risk phrases:**

23 Toxic by inhalation.

34 Causes burns.

**Safety phrases:**

3 Keep in a cool place.

4 Keep away from living quarters.

9 Keep container in a well-ventilated place.

20 When using do not eat or drink.

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

36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

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.

**National regulations**

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

**Information about limitation of use:** For use only by technically qualified individuals.

### 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

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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)

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)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

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