



Right to Know Hazardous Substance Fact Sheet

Common Name: **ALUMINUM PHOSPHATE**

Synonyms: Aluminum Monophosphate

Chemical Name: Phosphoric Acid, Aluminum Salt (1:1)

Date: June 1998

Revision: July 2007

CAS Number: 7784-30-7

RTK Substance Number: 0062

DOT Number: UN 1760

Description and Use

Aluminum Phosphate is an odorless, white crystalline solid which is often used in liquid or gel form. It is used in ceramics, dental cements, cosmetics, paints, paper and pharmaceuticals.

Reason for Citation

- ▶ **Aluminum Phosphate** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, DOT and NIOSH.
- ▶ This chemical is on the Special Health Hazard Substance List.

EMERGENCY RESPONDERS >>>> SEE PAGE 6

Hazard Summary

Hazard Rating	NJDHSS	NFPA
HEALTH	2	-
FLAMMABILITY	0	-
REACTIVITY	0	-
CORROSIVE POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE DOES NOT BURN		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- ▶ **Aluminum Phosphate** can affect you when inhaled.
- ▶ Contact can irritate and burn the skin and eyes.
- ▶ Inhaling **Aluminum Phosphate** can irritate the nose, throat and lungs.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact

- ▶ Immediately flush with large amounts of cool water. Continue for at least 15 minutes, occasionally lifting upper and lower lids. Remove contact lenses, if worn, while rinsing. Immediate medical attention is necessary.

Skin Contact

- ▶ Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Inhalation

- ▶ Remove the person from exposure.
- ▶ Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- ▶ Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NJDEP Hotline: 1-877-927-6337

National Response Center: 1-800-424-8802

Workplace Exposure Limits

The following exposure limits are for *inorganic Aluminum compounds* (measured as *Aluminum*):

OSHA: The legal airborne permissible exposure limit (PEL) is **15 mg/m³** (as *total dust*), and **5 mg/m³** (as *respirable dust*) averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit (REL) is **10 mg/m³** (as *total dust*), and **5 mg/m³** (as *respirable dust*) averaged over a 10-hour workshift.

ACGIH: The threshold limit value (TLV) is **1 mg/m³** (as the *respirable fraction* for *insoluble Aluminum compounds*) averaged over an 8-hour workshift.

Determining Your Exposure

- ▶ Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- ▶ For each individual hazardous ingredient, read the New Jersey Department of Health and Senior Services Hazardous Substance Fact Sheet, available on the RTK Program website (www.nj.gov/health/eoh/rtkweb) or in your facility's RTK Central File or Hazard Communication Standard file.
- ▶ You have a right to this information under the New Jersey Worker and Community Right to Know Act, the Public Employees Occupational Safety and Health (PEOSH) Act if you are a public worker in New Jersey, and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- ▶ The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) requires private employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Aluminum Phosphate**:

- ▶ Contact can irritate and burn the skin and eyes.
- ▶ Inhaling **Aluminum Phosphate** can irritate the nose, throat and lungs causing coughing and wheezing.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Aluminum Phosphate** and can last for months or years:

Cancer Hazard

- ▶ According to the information presently available to the New Jersey Department of Health and Senior Services, **Aluminum Phosphate** has not been tested for its ability to cause cancer in animals.

Reproductive Hazard

- ▶ According to the information presently available to the New Jersey Department of Health and Senior Services, **Aluminum Phosphate** has not been tested for its ability to affect reproduction.

Other Effects

- ▶ **Aluminum Phosphate** can irritate the lungs. Repeated exposure may cause bronchitis to develop with cough, phlegm, and/or shortness of breath.

Medical

Medical Testing

If symptoms develop or overexposure is suspected, the following are recommended:

- ▶ Lung function tests

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

- ▶ Because smoking can cause heart disease, as well as lung cancer, emphysema, and other respiratory problems, it may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- ▶ Label process containers.
- ▶ Provide employees with hazard information and training.
- ▶ Monitor airborne chemical concentrations.
- ▶ Use engineering controls if concentrations exceed recommended exposure levels.
- ▶ Provide eye wash fountains and emergency showers.
- ▶ Wash or shower if skin comes in contact with a hazardous material.
- ▶ Always wash at the end of the workshift.
- ▶ Change into clean clothing if clothing becomes contaminated.
- ▶ Do not take contaminated clothing home.
- ▶ Get special training to wash contaminated clothing.
- ▶ Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- ▶ Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

In addition, the following may be useful or required:

- ▶ Use a vacuum or a wet method to reduce dust during clean-up. DO NOT DRY SWEEP.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- ▶ Avoid skin contact with **Aluminum Phosphate**. Wear personal protective equipment made from material which can not be permeated and/or degraded by this substance. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
- ▶ Safety equipment manufacturers recommend DuPont *Tychem® Responder®* as a protective material for *inorganic acid salts* (solutions).
- ▶ All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- ▶ Wear eye protection with side shields or goggles.
- ▶ Wear indirect-vent, impact and splash resistant goggles when working with liquids.
- ▶ If additional protection is needed for the entire face, use in combination with a face shield. Never use face shields without another type of eye protection.

Respiratory Protection

Improper use of respirators is dangerous. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- ▶ Where the potential exists for exposure over **1 mg/m³** (as *Aluminum*), use a NIOSH approved air-purifying, particulate filter respirator with an N95 filter. More protection is provided by a full facepiece respirator than by a half-mask respirator, and even greater protection is provided by a powered-air purifying respirator.
- ▶ Leave the area immediately if (1) while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Aluminum Phosphate**, (2) while wearing particulate filters abnormal resistance to breathing is experienced, or (3) eye irritation occurs while wearing a full facepiece respirator. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.

- ▶ Consider all potential sources of exposure in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- ▶ Where the potential exists for exposure over **10 mg/m³** (as *Aluminum*), use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- ▶ Extinguish fire using an agent suitable for type of surrounding fire. **Aluminum Phosphate** itself does not burn.
- ▶ POISONOUS GASES ARE PRODUCED IN FIRE, including *Aluminum Oxides* and *Phosphorus Oxides*.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Aluminum Phosphate** in solid or liquid form is spilled or leaked, take the following steps:

- ▶ Evacuate personnel and secure and control entrance to the area.
- ▶ Eliminate all ignition sources.
- ▶ Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.
- ▶ Collect powdered material in the most convenient and safe manner and deposit in sealed containers.
- ▶ Ventilate and wash area after clean-up is complete.
- ▶ It may be necessary to contain and dispose of **Aluminum Phosphate** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Aluminum Phosphate** you should be trained on its proper handling and storage.

- ▶ **Aluminum Phosphate** reacts violently with STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE) and STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC).
- ▶ Store in tightly closed containers in a cool, well-ventilated area.

Occupational Health Information Resources

The New Jersey Department of Health and Senior Services, Occupational Health Service, offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

For more information, please contact:

New Jersey Department of Health & Senior Services
Right to Know Program
PO Box 368
Trenton, NJ 08625-0368
Phone: 609-984-2202
Fax: 609-984-7407
E-mail: rtk@doh.state.nj.us
Web address: <http://www.nj.gov/health/eoh/rtkweb>

***The Right to Know Hazardous Substance Fact Sheets
are not intended to be copied and sold
for commercial purposes.***

GLOSSARY

ACGIH is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database maintained by federal EPA. The database contains information on human health effects that may result from exposure to various chemicals in the environment.

LEL or **Lower Explosive Limit** is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEOSHA is the New Jersey Public Employees Occupational Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

PIH is a DOT designation for chemicals which are Poison Inhalation Hazards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or **Upper Explosive Limit** is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.



Common Name: **ALUMINUM PHOSPHATE**

Synonyms: Aluminum Monophosphate

CAS No: 7784-30-7

Molecular Formula: $AlPO_4$

RTK Substance No: 0062

Description: Solid, corrosive chemical which may be in a liquid or gel form

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
<p>2 - Health</p> <p>0 - Fire</p> <p>0 - Reactivity</p> <p>DOT ID #: UN 1760</p> <p>ERG Guide #: 154</p> <p>Hazard Class: 8 (Corrosive)</p>	<p>Extinguish fire using an agent suitable for type of surrounding fire. Aluminum Phosphate itself does not burn.</p> <p>POISONOUS GASES ARE PROCUED IN FIRE, including <i>Aluminum Oxides</i> and <i>Phosphorus Oxides</i>.</p>	<p>Aluminum Phosphate reacts violently with STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE) and STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC).</p>

SPILL/LEAKS

Isolation Distance: 25 to 50 meters
(80 to 150 feet)

Collect powdered material in the most convenient and safe manner and deposit in sealed containers.

Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.

PHYSICAL PROPERTIES

Odor Threshold: Odorless

Flash Point: Not Combustible

LEL: N/A

UEL: N/A

Specific Gravity: 2.56 (water = 1)

Vapor Pressure: 0 mm Hg at 68°F (20°C)

Water Solubility: Insoluble

Melting Point: >2,732°F (1,500°C)

EXPOSURE LIMITS

OSHA: 15 mg/m³ 8-hr TWA (Total Dust)
5 mg/m³ 8-hr TWA (Respirable Dust)

NIOSH: 10 mg/m³ 10-hr TWA (Total Dust)
5 mg/m³ 10-hr TWA (Respirable Dust)

ACGIH: 1 mg/m³ 8-hr TWA (Respirable Fraction)

PROTECTIVE EQUIPMENT

Gloves: No Information

Coverall: DuPont Tychem® Responder® for inorganic acid salts in solution, DuPont Tychem® for hazardous dusts

Boot: No Information

Respirator: >1 mg/m³ N95
>10 mg/m³ Supplied Air

HEALTH EFFECTS

Eyes: Irritation and burns

Skin: Irritation and burns

Acute: Nose and throat irritation with coughing and wheezing

Chronic: Bronchitis, coughing, wheezing and/or shortness of breath

FIRST AID AND DECONTAMINATION

Remove the person from exposure.

Flush eyes with large amounts of water for at least 15 minutes. Remove contact lenses if worn.

Immediate medical attention is necessary.

Remove contaminated clothing and wash contaminated skin with soap and water.

Begin artificial respiration if breathing has stopped and CPR if necessary. Transfer to a medical facility.