

# Material Safety Data Sheet

Jining Shengcheng Chemical Experimental Company, Limited

February, 2005

**Product Name:** ALUMINUM PHOSPHIDE 57% TB

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## **1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION**

**Commercial product name:** ALUMINUM PHOSPHIDE 57% TB

**Company/Undertaking:** Jining Shengcheng Chemical Experimental Company, Limited

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## **2. COMPOSITION/INFORMATION ON INGREDIENTS**

<b>No. Ingredients</b>	<b>% W/W</b>
Aluminium Phosphide (a.i.)	57% min.
Ammonium Carbamate (fire retardant)	27.5% max.
Paraffin wax (adhesive)	3.8% max.
Aluminium Stearate	3.2% max.
Aluminium Oxide (by-product in a.i. production)	8.3% max.
Others (impurities)	0.2% max.
Total:	100%

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## **3. HAZARD IDENTIFICATION OF PREPARATION**

Tox. Class: EPA: class I; EC risk: F (R15/29); T+(R28); (R32)

Signal word: Contact with water liberates extremely flammable gases. Very toxic if swallowed. Contact with water liberates toxic gas. Contact with acid liberates very toxic gas.

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## **4. FIRST AID MEASURES**

### **Signs and Symptoms of Exposure:**

Aluminum phosphide tablets, pellets or bags react with moisture from the air, acids and many other liquids to release hydrogen phosphide (phosphine, PH<sub>3</sub>) gas. Mild exposure by inhalation causes malaise (indefinite feeling of sickness), ringing in the ears, fatigue, nausea and pressure in the chest which is relieved by removal to fresh air. Moderate poisoning causes weakness, vomiting, pain just above the stomach, chest pain, diarrhea and dyspnea (difficulty in breathing). Symptoms of severe poisoning may occur within a few hours to several days resulting in pulmonary edema (fluid in lungs) and may lead to dizziness, cyanosis (blue or purple skin color), unconsciousness, and death.

**Skin contact:** Wash contaminated skin thoroughly with soap and water. Brush or shake material of clothes in a well ventilated area. Allow clothes to aerate in a ventilated area prior to laundering. Do not leave contaminated clothing in occupied and/or confined areas such as automobiles, vans, motel rooms, etc.

**Eye contact:** Rinse immediately with large of water. Get medical attention.

**Inhalation:** Move the victim to fresh air. Keep warm and make sure person can breathe freely. If breathing has stopped, give artificial respiration by mouth-to-mouth or other means of resuscitation. Do not give anything by mouth to an unconscious person.

**Ingestion:** Drink or administer one or two glasses of water and induce vomiting by touching back or throat with finger. Or if available, syrup of ipecac. Do not give anything by mouth if victim is unconscious or not alert.

- Remove all contaminated clothing.
- Never give anything by mouth to an unconscious person.
- Call a doctor when symptoms aggravate.

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## ***5. FIRE-FIGHTING MEASURES***

Extinguishing media

**Suitable:** carbon dioxide, dry powder or sand.

**Not to be used:** Water.

Fire-fighters should be provided with impervious clothing and self-containing breathing apparatus.

**Special Fire Fighting Proc:** wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in positive pressure mode.

**Unusual fire and explosive hazards:** do not confine spent aluminum phosphite residues. Any hydrogen phosphide gas released may ignite.

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## ***6. ACCIDENTAL RELEASE MEASURES***

**Personal Precautions:** Avoid skin contact, take orally or breathe in toxic phosphine gas.

**Environmental precautions:** Avoid breakage of packages.

**Spill control/Clean up:** If possible, dispose of spilled ALUMINUM PHOSPHIDE by use according to label instructions. Freshly spilled material which has not been contaminated by water or foreign matter may be replaced into original containers.

Punctured flasks or containers may be temporarily repaired using aluminum tape. If the age of the spill is unknown or if the Aluminum phosphide has been contaminated with soil, debris, water, etc., gather up the spillage in small open buckets having a capacity no larger than about 1 gallon. Do not add more than about 1 to 1.5 kg (2 to 3 lbs) to a bucket. If on-site wet deactivation is not feasible, transport the uncovered buckets in open vehicles to a suitable area. Wear gloves when handling Aluminum phosphide.

Respiratory protection may be required during cleanup of spilled material. If the concentration of hydrogen phosphide is unknown, NIOSH/MSHA approved SCBA or its equivalent must be worn.

Small amounts of spillage, from about 4 to 8 kg (9 to 18 lbs) may be spread out over the ground in an open area to be deactivated by atmospheric moisture. Alternatively, spilled Aluminum phosphide may be deactivated by the wet method as described in the following.

**Wet Deactivation of Spilled ALUMINUM PHOSPHIDE:**

1). Deactivating solution is prepared by adding the approximate amount of low sudsing detergent to water in a drum or other suitable container. A 2% solution or 4 cups of detergent in 30 gallons is suggested.

The container should be filled with deactivating solution to within a few inches of the top.

2). The material is added slowly to the deactivating solution and stirred so as to thoroughly wet all of the Aluminum phosphide. This should be carried out in open air and respiratory protection may be required.

3). No more than about 45 to 50 lbs of Aluminum phosphide should be added to 15 gallons of water-detergent mixture.

4). Allow the mixture to stand, with occasional stirring, for about 36 hours. The resultant slurry will then be safe for disposal.

5). Dispose of the slurry of deactivated material, with or without preliminary decanting, at a sanitary landfill or other suitable site approved by local authorities. Where permissible, this slurry may be poured into a storm sewer or out onto the ground.

### **Precautions to be Taken in Handling and Storage:**

- 1). Store in a dry, well ventilated area, away from heat and under lock and key. Keep away from irresponsible people and children. Post as a pesticide storage area. Do not contaminate water, food or feed by storing pesticides in the same area used to store these commodities.
- 2). Do not store in buildings where humans or domestic animals reside.
- 3). Aluminum phosphide tablets are supplied in relatively gas tight resealable aluminum flasks. Do not expose the product to atmospheric moisture any longer than is necessary. Reseal tightly before returning flasks to storage; mark the flask opened and partially used.
- 4). Aluminum phosphide bags that are supplied in tins are non-resealable and must be completely used when opened.  
Aluminum phosphide bags that are supplied in metal drums do not have to be completely used as long as the bag is not removed from the foil pouch or the foil pouch is not opened. Remove the number of pouches required and reseal the metal drum.
- 5). The shelf life of Aluminum phosphide is virtually unlimited as long as the containers are kept tightly sealed.

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## **7.HANDLING AND STORAGE**

**Steps if matl released/spill:** if amounts of spill is unknown, wear self-contained breathing apparatus. Do not use water to clean up spill. Wear gloves and transfer uncontaminated spill to suitable container for reuse. Contaminated spill should be deactivated by water+detergent.

**Neutralizing agent:** 2% solution of detergent in water

**Waste disposal method:** if tablets, pellets or bags are exposed to contamination by water, acids or atmospheric moisture, immediately contact local authority for guidance. Dispose in accordance with all applicable local and state regulations.

**Precautions-handling/storing:** store in a dry, well ventilated area, away from heat, incompatibles and under lock and key. Storage should be away from human, food, feed and water.

**Other precautions:** always open containers in open air because under certain conditions they may flash. When opening, vent the containers away from face and body and open slowly. Never open containers in a flammable atmosphere. Keep out of reach of children.

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## **8.EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Respiratory protection:** if engineering controls do not maintain airborne concentrations to an acceptable level, a NIOSH-approved self contained breathing apparatus must be worn.

**Ventilation:** use general or local exhaust ventilation to keep fume or dust levels as low as possible.

**Protective gloves:** cotton, latex

**Eye protection:** safety glasses with side shield/goggles

**Other protective equipment:** eye bath, washing facilities, safety shower and impervious clothing

**Work hygienic practices:** observe good industrial hygiene practices and recommended procedures. Wash thoroughly before eating, drinking/smoking.

**Suppl. Safety & health data:** EPA registration numbers: 5857-1 (tablets), 5857-2 (pellets) and 5857-6 (bags). Aluminum phosphide is a restricted use pesticide and is for retail sale to and use only by certified applicators. Metals such as copper, brass and precious metals such as gold and silver are susceptible to corrosion by phosphine.

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## **9.PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance And Odor:** Greenish gray tablet, garlic odor.

**Boiling Point:** Not applicable.

**Melting Point:** >1000 Degree Celsius  
**Vapor Pressure (MM Hg/70 F):** very low.  
**Specific Gravity:** 2.85  
**Decomposition Temperature:** UNKNOWN  
**Evaporation Rate And Ref:** NOT RELEVANT  
**Solubility In Water:** INSOLUBLE (REACTS)  
**Viscosity:** NOT RELEVANT  
**Radioactivity:** NOT RELEVANT  
**Corrosion Rate (IPY):** UNKNOWN

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### ***10. STABILITY AND REACTIVITY***

**Conditions to Avoid:** moisture.  
**Materials to Avoid:** acids, moisture, oxidizing agents.  
**Hazardous reactions:** Contact with acids liberates highly toxic gas (phosphine).  
**Hazardous Decomposition Products:** phosphine  
**Flammable solid.** Contact with acids liberates highly toxic gas (phosphine). Incompatible with acids, moisture, oxidizing agents.

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### ***11. TOXICOLOGICAL INFORMATION***

Very toxic by inhalation or ingestion (through the release of phosphine). Ingestion or inhalation may be fatal. Typical OEL 0.4 mg/m3.

Risk phrases

Contact with water liberates extremely flammable gases. Very toxic if swallowed.

Contact with water liberates toxic gas. Contact with acid liberates very toxic gas.

**LD<sub>50</sub> Acute oral for rats:** 8.7 mg/kg

**Skin and eye:** acute percutaneous LD<sub>50</sub> is not available, no absorption through the skin.

**Inhalation:** Powerful respiratory poison. **LC50 (4h) for rats:** 11 ppm (phosphine)

**ADI:** Not necessary on basis of no residue in food.

**Chronic effects:** None.

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### ***12. ECOLOGICAL INFORMATION***

**Effect on fish & aquatics:** LC<sub>50</sub> 9.7 x 10<sup>-3</sup> ppm (96hrs, rainbow trout)

**Bird:** acute oral LD<sub>50</sub> 37.5 mg/kg (mallard ducks)

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### ***13. DISPOSAL CONSIDERATION***

**Product/Waste disposal:** Must be disposed of by special means in accordance with local regulations.

**Rec # For This Disp Entry:** 01

**Tot Disp Entries Per NSN:** 002

**Landfill Ban Item:** YES

**Disposal Supplemental Data:** PHYSICAL DATA APPLIES TO PH\*3 GAS IN CASE OF ACCIDENTAL EXPOSURE OR DISCHARGE, CONSULT HEALTH AND SAFETY FILE FOR PRECAUTIONS.

**1st EPA Haz Wst Code New:** PCI006

**1st EPA Haz Wst Name New:** ALUMINUM PHOSPHIDE

**1st EPA Haz Wst Char New:** ACUTELY TOXIC (H)

**1st EPA Acute Hazard New:** YES

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#### ***14. TRANSPORT INFORMATION***

**Packed into UN approved packages.**

**Personal protection:** Do not handle in confined spaces. Use safety glasses, gloves, good ventilation. Avoid working near acids.

**DOT PSN Code:** ALC

**DOT Proper Shipping Name:** ALUMINUM PHOSPHIDE

**DOT Class:** 4.3

DOT ID Number: UN1397

DOT Pack Group: I

DOT Label: DANGEROUS WHEN WET, POISON

DOT/DOD Exemption Number: NOT RELEVANT

IMO PSN Code: ATR

IMO Proper Shipping Name: ALUMINIUM PHOSPHIDE

IMO Regulations Page Number: 4329

IMO UN Number: 1397

**IMO UN Class:** 4.3

**IMO Subsidiary Risk Label:** TOXIC

**IATA PSN Code:** BFD

**IATA UN ID Number:** 1397

**IATA Proper Shipping Name:** ALUMINIUM PHOSPHIDE

**IATA UN Class:** 4.3

**IATA Subsidiary Risk Class:** 6.1

**IATA Label:** DANGEROUS WHEN WET & TOXIC

**AFI PSN Code:** BFD

**AFI Symbols:** 0

**AFI Prop. Shipping Name:** ALUMINIUM PHOSPHIDE

**AFI Class:** 4.3

**AFI ID Number:** UN1397

**AFI Pack Group:** I

**AFI Label:** 6.1

**AFI Special Provision:** A8, A19, N40

**AFI Basic Pac Ref:** A8.4

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#### ***15. REGULATORY INFORMATION***

Safety Phrases: Keep in a cool place. Keep container in a well-ventilated place. Keep away from acids, moisture, oxidizing agents. Never add water to this product. Wear suitable protective clothing. Wear suitable gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible.) Keep out of reach of children. Keep away from food, drink and animal feed stuff.

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#### ***16. OTHER INFORMATION***

We believe that the statement, technical information and recommendation contained herein are reliable, but they are given without warranty or guarantee of any kind, expressed or implied, and we assume no responsibility for any loss, damage or expense, direct or consequential arising out their use.