

MATERIAL SAFETY DATA SHEET: ALUMINIUM PHOSPHIDE “SANPHOS”

1. PRODUCT INFORMATION

Product name : SANPHOS TABLETS / PALLETS
Recommended use : A fumigant for disinfections of stored grains
Manufacturer : Sandhya Organic Chemicals Private Limited
Address : Admn. & Sales Office
312, Nand Prem, 142, Nehru Road, Vile Parle (E)
Mumbai- 400057
INDIA
Tel no. 91-22-26104202/26151500/6136732
Fax no. 91-22-26104201
Regd. Office
Plot no. 808/A/2, III Phase, G I D C,
Vapi – 396195, Gujarat, INDIA
Tel no. 91-260-430875/426235
Fax no. 91-260-430875
www.sandhya-group.com
socpl@vsnl.com

2. HAZARDS IDENTIFICATION

HAZARDOUS SUBSTANCE – DANGEROUS GOOD

Very Toxic if swallowed or inhaled. Flammable

Aluminum Phosphide, AIP - reacts with water to produce phosphine, PH₃. SANPHOS is formulated with 56% Min aluminum phosphide and also contains ammonium carbamate and inert ingredients. Ammonium carbamate releases ammonia and carbon dioxide which serve as a warning agent. Pure Phosphine gas is odorless; the garlic odor is due to a contaminant. Since the odor of phosphine may not be detected under some circumstances, the absence of a garlic odor does not mean that dangerous levels of hydrogen phosphide gas are absent.

Risk Phrases: R15 Contact with water liberates flammable gases.
R29 Contact with water liberates Toxic gases
R28 Very toxic if swallowed
R32 Contact with acids liberate toxic gases

WHO Classification: Technical Aluminium Phosphide – 4.3, Formulated Aluminium Phosphide- 6.1

3. COMPOSITION /INFORMATION ON INGREDIENTS

Ingredients:	CAS No.	% w/w
Aluminium Phosphide	20859-73-8	56% Min
Ammonium Carbonate	1111-78-0	5%Max
Inert Ingredient	-	40% Max

4. First Aid Measures

If Poisoning occurs, immediately contact the physician. Show the MSDS to the physician

MATERIAL SAFETY DATA SHEET: ALUMINIUM PHOSPHIDE “SANPHOS”

Sign & Symptoms of Poisoning

Clinical Signs : Initial : Dilated pupils, Tachycardia shock, low BP.

Progressive : Chest congestion, lymphocytosis, vertigo, albuminuria jaundice, haematuria, thrombocytopenia and in most severe cases, anuria shock.

Symptoms

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.

In sufficient quantity, phosphine gas affects the liver, kidneys, lungs, nervous system and circulatory system. Inhalation can cause lung edema and hyperemia, small perivascular brain hemorrhages, and brain edema. Ingestion can cause lung and brain symptoms, but damage to viscera is more common. Phosphine poisoning may result in (1) Pulmonary edema; (2) liver elevated serum GOT, LDH and alkaline phosphatase; reduced prothrombin; hemorrhage and jaundice; and (3) Kidney hematuria and anuria. Pathology is characteristic of hypoxia. Frequent exposure over a period of days or weeks may cause poisoning. Treatment is symptomatic. For further information, contact the national poison **center**.

EMERGENCY AND FIRST AID PROCEDURES

If the gas or dust from aluminum phosphide is inhaled:

Get exposed person 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.

If aluminum phosphide pellets, tablets or powder are swallowed:

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

If powder or granules of aluminum phosphide get on skin or clothing:

Brush or shake material off 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. Wash contaminated skin thoroughly with soap and water.

If dust from pellets or tablets gets in eyes:

Flush with plenty of water. Get medical attention.

Antidote : Ensure fresh air and induce vomiting with 0.25 % copper sulphate solution. To control convulsions use a diazepam intravenously is recommended. For adults, 5-10mg every 4-5 hours & children 0.1 mg every 4-5 hours. In case of pulmonary odema give hypertonic glucose solution intravenously.

5. FIRE FIGHTING MEASURES

Extinguishing Media : Suffocate flames with sand, CO₂ or dry extinguishing powder.

Do not use water

Hazards from combustion product : Fires involving Phosphine or metal phosphides will produce phosphoric acid

Precaution for Fire fighting : Wear full protective clothing & self contained breathing apparatus.

MATERIAL SAFETY DATA SHEET: ALUMINIUM PHOSPHIDE “SANPHOS”

6. ACCIDENTAL RELEASE MEASURES

A spill, other than incidental to application or normal handling or punctured containers can produce high level of gas, and therefore, attending personnel must wear n SCBA or its equivalent when the concentration of phosphine gas is unknown. Wear dry gloves when in contact with the powdered formulation is likely. Do not flush spillage down the drain with water. Do not use water at any time to clean the spill. Water in contact with aluminium phosphide will rapidly accelerate to give phosphine gas. For small amount of spillage spread out the material on ground to be deactivated by atmospheric moisture

If containers have been punctured or damaged causing leak, the product may be immediately used, the containers may be used temporarily repaired aluminium tape, the fumigant may be transferred from the damage containers to sound metal containers which should be sealed and properly labeled as aluminium phosphide. See the deactivation and disposal procedure in the manual. Transport the damaged containers to an area suitable for pesticide storage for inspection.

7. HANDLING & STORAGE

Handling : Keep out of reach of children. Handle only in well ventilated areas.
Storage : Containers should be stored in a dry, ventilated area, away from heat and under lock and key. Post as a pesticide storage area. Do not contaminate with water, food or feed by storing pesticides in the same areas used to store these commodities. Do not store in buildings where humans or domestic animals reside.

8. EXPOSURE CONTROLS

Inhalation Exposure Limits:

Component	OSHA PEL	ACGIH TLV		NIOSH
	TWA ppm)	TWA (ppm)	STEL (ppm)	IDLH (ppm)
Hydrogen Phosphide*	0.3	0.3	1.0	50
Ammonia	50	25	35	300

Limits are 0.3 ppm TWA during fumigation and 0.3 ppm ceiling at all other times.

Engineering Controls

No engineering controls are required for the normal use of this product. Follow label instruction.

9. PHYSICAL & CHEMICAL PROPERTIES

Appearance : Dark Grey to Yellowish Solid
Odor : Garlic or Carbide
Vapour Pressure : Aluminium Phosphide 0mm Hg
Phosphine gas 40 mm Hg @ -129.4 C
Vapour Density : Not available
Boiling Point : Aluminium Phosphide > 1000C
Phosphine Gas-87.7C
Melting point/
Freezing Point : Aluminium phosphide >1000C
Phosphine Gas -133C
Solubility : Reacts chemically with water or dilute acids to liberate
phosphine gas
Specific Gravity : Aluminium Phosphide 2.55, Phosphine 1.17
pH : Not relevant
Flash Point : Not Flammable by itself
Lower Explosive : Product itself not explosive however phosphine gas has LEL of
Limit 1.8 % v/v
Formulation : Tablets & pallets

MATERIAL SAFETY DATA SHEET: ALUMINIUM PHOSPHIDE “SANPHOS”

10. STABILITY & REACTIVITY

Chemical stability : SANPHOS is stable to most chemical reactions except hydrolysis to form phosphine and aluminium hydroxide

Hazardous Polymerization : Hazardous Polymerization will not occur. Reaction with moisture, acid will liberate toxic flammable gases.

Condition to avoid : Moist air

Incompatible : Avoid contact with water and oxidizing agents

Material

Hazardous decomposition Product : Will react with moist air, water, acids and some other liquid to form toxic and flammable gases.

11. TOXICOLOGICAL INFORMATION

Inhalation : Symptoms of inhalation of phosphine gas includes malaise, ringing in ears, fatigue, nausea & pressure in chest. Exposure can be fatal

Skin Contact : Not absorbed dermally

Eye Contact : May irritate the eyes

Ingestion : Fatal if swallowed

Acute Toxicity

Routes of Application	Animal	
Oral LD 50	Rat	11.5 mg/kg (product)
Dermal LD 50	Rat	Not available
Inhalation (LC 50)	Rat	4-hour LC50 = 0.014 mg/L (approximately 11 ppm).
Skin Irritation	Rabbit	Not absorbed dermally
Eye Irritation	Rabbit	Not available
Skin Sensitization	Pig	Not available

Chronic : No adverse effect.

12. ECOLOGICAL INFORMATION

Given the characteristics and use patterns, these pesticides are not expected to pose a significant ecological risk to non-target organisms or to water resources under most circumstances, with the exception of some endangered species. Since one of

Fish Toxicity : Not available

Bee Toxicity : Not available

Daphnia Toxicity : Not available

Toxicity to algae : Not available

Bird Toxicity : Not available

13. DISPOSAL CONSIDERATION

Wet deactivation method

1. Deactivating solution is prepared by adding the appropriate 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.

MATERIAL SAFETY DATA SHEET: ALUMINIUM PHOSPHIDE “SANPHOS”

2. The material is added slowly to the deactivating solution and stirred so as to thoroughly wet all of the product. This should be carried out in open air and respiratory protection may be required. At no time should the deactivation drum be covered.

3. No more than about 20-25kgs. of SANPHOS 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 of dust or packaged product 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.

14. TRANSPORT INFORMATION

UN Number : 3048
Proper shipping name : Aluminium Phosphide - Pesticide
Subsidiary Risk : 6.1
Pack Group : I
Hazchem code : 4WE

15. REGULATORY INFORMATION



Symbol

16. OTHER INFORMATION

This information is based on our present state of knowledge. It should not therefore be constructed as guaranteeing specific properties of this product or their suitability for a particular application.