



MATERIAL SAFETY DATA SHEET

A18142/07/AUS

QUICKPHOS FUMIGATION TABLETS

SECTION 1 – IDENTIFICATION, CONTACTS, HAZARDOUS NATURE

Bayer Australia Ltd
875 Pacific Highway
Pymble NSW 2073

Emergency Telephone Number

1800 033 111

24 hour Emergency Service Australia Wide, Toll Free

Contact Point (for non-emergency calls)

Animal Health Division

Telephone Number: (02) 9391-6000

Product Name

Quickphos Fumigation Tablets

Product Use

Fumigant for pest control use.

Other Names

Aluminium phosphide is also known as Phostoxin, which is a trade name.

Creation Date

24th June 2003

Revision Date

24th March 2006

SECTION 2 – HAZARDS IDENTIFICATION

Hazard Classification

HAZARDOUS SUBSTANCE

DANGEROUS GOODS

Risk Phrases

Very toxic if swallowed. Toxic by inhalation. Contact with water liberates toxic gas.

Safety Phrases

Keep locked up and out of the reach of children. Do not empty into drains. Wear suitable gloves. If swallowed, seek medical advice immediately and show this container or label. Keep only in the original container. Do not breathe vapour.

RISK & SAFETY PHRASES ARE NOT REQUIRED ON PACKAGES INTENDED FOR END-USERS. APPROPRIATE SAFETY DIRECTIONS AND FIRST AID STATEMENTS ARE SHOWN ON THE PRODUCT LABEL.

SECTION 3 – COMPOSITION		
Ingredients	CAS No	Proportion
Aluminium phosphide	20859-73-8	57%
Ammonium carbamate	1111-78-0	<30%
Other ingredients determined not to be hazardous	-	<20%
<p>Aluminium phosphide reacts with water to liberate PHOSPHINE (hydrogen phosphide) gas PH₃ (CAS No 7803-51-2)</p> <p>Ammonium carbamate releases ammonia (CAS No 7664-41-7) and carbon dioxide (CAS No 124-38-9) gasses.</p> <p>ALUMINIUM PHOSPHIDE Chemical formula AIP Reacts with water to produce hydrogen phosphide $AIP + 3H_2O \rightarrow Al(OH)_3 + PH_3$</p> <p>AMMONIUM CARBAMATE Chemical formula NH₂COONH₄ Releases ammonia and carbon dioxide $NH_2COONH_4 \rightarrow 2NH_3 + CO_2$</p> <p>Each 34 g of ALUMINIUM PHOSPHIDE releases 11 g PHOSPHINE.</p>		

SECTION 4 – FIRST AID MEASURES	
Label Regulated First Aid Statement	If poisoning occurs contact a doctor or Poisons Information Centre. Do not give direct mouth-to-mouth resuscitation if swallowed. To protect rescuer, use air-viva, oxy-viva or one-way mask. Resuscitate in a well ventilated area.
General	Aluminium phosphide is very dangerous and can kill if swallowed. The product release phosphine gas slowly in moist air and immediately, if wet. It also releases ammonia, which is toxic by inhalation and can burn mucous membranes. Mild exposure causes malaise, ringing in the ears, fatigue, nausea and pressure in the chest, which is relieved by removal to fresh air. Moderate poisoning will cause weakness, vomiting, pain above the stomach, chest pain, diarrhoea and difficulty breathing. In severe poisoning signs may occur within a few hours to several days resulting in pulmonary oedema and may lead to dizziness, cyanosis, unconsciousness and death.
Scheduled Poisons	Poisons Information Centres in each State capital city can provide additional assistance for scheduled poisons. Phone 131126.
Inhalation	Do not inhale dust or gas from product. If inhaled remove patient to fresh air. Keep rested and warm and seek medical assistance. If patient is not breathing resuscitate using oxy-viva or one way mask. Do not give mouth-to-mouth resuscitation.
Skin contact	Brush or shake material off clothes in a well ventilated area. Allow cloths to aerate in a ventilated area prior to laundering. Do not leave contaminated clothing in occupied and or confined areas such as cars. If material is on skin, wash off the skin with soap and water.

Eye contact	Will irritate the eyes. If material is in the eye, hold open and flush with water for at least 15 minutes.
Ingestion	If swallowed seek medical attention. Give one or two glasses of water and induce vomiting, preferably using Ipecac Syrup APF. Do not give anything by mouth if patient is unconscious. Seek medical attention.
Advice to doctor	See also Section 11. If a patient has swallowed aluminium phosphide (Quickphos) he/she may be emitting toxic phosphine gas. First aid and medical staff should take precautions against exposure to phosphine emitted by such a patient. Do not administer mouth-to-mouth resuscitation - use other forms of resuscitation.

SECTION 5 – FIRE FIGHTING MEASURES

Extinguishing Media	Suffocate flames with sand, carbon dioxide or dry extinguishing powder. Do NOT use water on metal phosphide fires.
Fire and Explosion Hazards	Flammable. Keep away from naked flames. Avoid contact with water and strong oxidising agents. Hazardous polymerisation will not occur.
Hazardous Combustion Products	Fires involving phosphine or metal phosphides will produce phosphoric acid. $2\text{PH}_3 + 4\text{O}_2 \rightarrow 3\text{H}_2\text{O} + \text{P}_2\text{O}_5 \rightarrow 2\text{H}_3\text{PO}_4$
Fire Fighting	Special firefighting procedures: Wear full protective clothing and self-contained breathing apparatus. Contain firefighting water.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Accidental Release

Use the personal protective equipment listed in Section 8.

If possible, dispose of spilled Quickphos by use according to the label. Freshly spilled material which has not been contaminated with water or foreign matter may be replaced into original containers. Punctured containers may be temporarily repaired using aluminium tape. If the age of the spill is unknown, or the material has been contaminated with soil, debris, water etc., gather up the spillage into small open buckets having a capacity no larger than 4.5 litres. Do not add more than about 1 to 1.5 kg 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 Quickphos.

Respiratory protection is required during clean-up of spilled material.

If the concentration of hydrogen phosphide is above 15ppm, or is unknown, approved positive pressure, supplied air breathing apparatus must be worn.

Small amounts of spillage, from about 4 - 8 kg may be spread out over the ground in an open area to be deactivated by atmospheric moisture. Alternatively the material may be wet deactivated as described in Section 13.

SECTION 7 – HANDLING AND STORAGE

Safe Handling

Keep container tightly closed. Handle according to label instructions.

Storage

Store in the closed, original container in a cool, dry, well-ventilated locked area out of the reach of children and unauthorised persons and away from all dwellings. Keep away from water and liquids. Water and many liquids cause immediate release of phosphine from product. The product should never be stored under conditions which would allow the gas concentrations to reach the lower level of flammability which is 1.79% by volume (12,900 parts per million). Never confine the product in a small gas-proof enclosure such as a plastic bag. Such confinement could cause the gas concentrations to reach the lower flammability level. Protect, by sealing or otherwise, sensitive electrical and electronic equipment (meters, switches, fire alarm systems, etc. containing copper/copper alloy components, photographic film or copy paper. Phosphine corrodes copper-based materials.

Store below 30°C.

This material is a Schedule 7 Dangerous Poison and must be stored, handled and used in accordance with the relevant regulations.

SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits (inhalation)	COMPONENT	OSHA PEL	ACGIH TLV	IDHL	
		(ppm)	TWA (ppm)	STEL (ppm)	(ppm)
	Hydrogen phosphide	0.3	0.3	1.0	200
	Ammonia	50	25	35	500
	Carbon dioxide	5000	5000	30,000	50,000

Ventilation	Open product container in the open air. Local ventilation is generally adequate to reduce hydrogen phosphide levels in fumigated premises to below the TLV/TWA. Exhaust fans may be used to speed the aeration of silos, warehouses, ships holds, containers, etc.
Eye Protection	None required.
Skin Protection	Do not allow product to come in contact with skin. When opening the container or using the product, wear elbow length PVC gloves. If product on skin, brush off any excess material and wash area with soap and water. Wash hands before breaks and at end of work.
Respirator	A full-face respirator with an ABEK canister must be worn at concentrations up to 15 ppm or when dispensing tablets by hand. At levels above this, and/or when hydrogen phosphide concentration is unknown, a positive pressure, supplied air respirator must be worn. In all cases ensure that the respirator provides good facial fit.
Protective Material Types	PVC
General Advice	Avoid contact with eyes or skin. Clean working clothes and protective equipment with soap and water. When space fumigating in enclosed areas (eg rooms, warehouses) wear protective clothing and respiratory protection as specified above. Wash hands after use.

SECTION 9 – PHYSICAL & CHEMICAL PROPERTIES

Physical State	The active material is contained in tablets
Colour	Aluminium phosphide has a greenish-grey colour.
Odour	The phosphine gas generated by the product has an odour described as similar to garlic, carbide, or decaying fish.
Melting Point	Aluminium phosphide: >1000°C Phosphine gas: -133°C
Boiling Point	Aluminium phosphide: >1000°C Phosphine gas: -87.7°C

Specific Gravity	Aluminium phosphide: 2.55 Phosphine: 1.17 (relative to air =1)
Vapour Pressure	Aluminium phosphide: 0 mmHg Phosphine gas: 40 mmHg @ -129.4°C Ammonium Carbonate: 100 mmHg @ 26.7°C
Viscosity	Not applicable
Solubility in Water	Aluminium phosphide: Insoluble, reacts Phosphine gas: 26 cc in 100 mL water at 17°C Ammonium Carbonate: Very soluble, reacts.
pH	6.0-7.5 (at 10% water)
Flash Point	Aluminium phosphide and the formulated product (Quickphos) are not in themselves flammable. Ammonia and carbon dioxide are liberated at the same time as phosphine to reduce the potential for self-ignition.
Ignition Temperature	Not available
Explosive Limits	The product in itself is not explosive, however see above regarding phosphine gas. Phosphine LEL 1.8% w/v, UEL not known.
Other Information	No other information.

SECTION 10 – STABILITY & REACTIVITY

Chemical Stability	Quickphos is stable to most chemical reactions, except for hydrolysis. It will react with moist air, liquid water, acids and some other liquids to produce toxic and flammable phosphine gas. Avoid contact with water and oxidising agents.
Conditions to Avoid	Keep away from naked flame – forms toxic gas. Keep away from damp and moisture. Contact with water can cause the immediate release of phosphine gas. Avoid hydrogen phosphide-air mixtures at concentrations above the lower explosive limit of 1.8% v/v as these may ignite spontaneously. Never allow the build up of hydrogen phosphide to exceed explosive concentrations.
Incompatible Materials	Water, acids.
Hazardous Decomposition	Fires involving phosphine or metal phosphides will produce phosphoric acid. $2\text{PH}_3 + 4\text{O}_2 \rightarrow 3\text{H}_2\text{O} + \text{P}_2\text{O}_5 \rightarrow 2\text{H}_3\text{PO}_4$

Hazardous Reactions	<p>The prime hazardous reaction is the reaction with water or moisture to produce toxic phosphine gas (hydrogen phosphide).</p> <p>Hydrogen phosphide gas may react with certain metals and cause corrosion, especially at higher temperatures and relative humidities. Metals such as copper, brass, and other copper alloys, and precious metals such as gold and silver are susceptible to corrosion by phosphine. Small electric motors, smoke detectors, brass sprinkler heads, batteries and battery chargers, forklifts, temperature monitoring systems, switching gears, communication devices, computers, calculators and other electrical equipment may be damaged by this gas. Phosphine will also react with certain metallic salts and therefore sensitive items such as photographic film, some inorganic pigments, etc., should not be exposed.</p>
---------------------	--

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity	<p>Aluminium phosphide is a highly acutely toxic substance. Acute oral LD₅₀ of the formulation is 11.5 mg/kg. Hydrogen phosphide (phosphine) gas LC₅₀ is about 190 ppm for a 1-hour inhalation exposure.</p>
Local Effects	<p>Aluminium phosphide and phosphine gases are not absorbed dermally. Primary routes of exposure are inhalation and ingestion.</p>
Reproductive Effects	<p>None of the ingredients of the formulation has been shown to produce reproductive or teratogenic effects.</p>
Mutagenicity	<p>None of the ingredients of the formulation has been shown to produce mutagenic effects.</p>
Carcinogenic Effects	<p>None of the ingredients in the formulation has been shown to have carcinogenic potential.</p>
Health Hazard Information	<p>Aluminium phosphide is a highly acutely toxic substance in its own right. In contact with moisture in the air (or more rapidly in contact with water) it releases hydrogen phosphide gas, ammonia and carbon dioxide. Aluminium phosphide is very toxic by ingestion causing the release of hydrogen phosphide in the body. Hydrogen phosphide released from aluminium phosphide is very toxic by inhalation. Care must be taken during first aid and treatment that hydrogen phosphide released from the poisoned individual does not injure medical personnel.</p>

SECTION 12 – ECOLOGICAL INFORMATION

Octanol/Water Partition Co-efficient	<p>Not available.</p>
Ecotoxicity	<p>Not available.</p> <p>This product is highly toxic to wildlife. Do not contaminate streams, rivers or waterways with the chemical or used containers.</p>

SECTION 13 – DISPOSAL INFORMATION

After Intended Use

After fumigation with product, remove spent tablets and ensure residual phosphide is destroyed before disposal, eg. by swamping with dilute acid or soapy water in open air until bubbling ceases. Triple rinse the containers with soapy water to ensure residual phosphide is destroyed. Destroy empty containers by breaking, crushing or puncturing them. Dispose of the containers at a local authority landfill, bury the containers at a depth of 500 mm or more at a licensed landfill. Do not burn empty containers or the product.

After spill or accident

If possible, dispose of spilled Quickphos by using according to the label. Freshly spilled material, which has not been contaminated with water or foreign matter, may be replaced into original containers. Punctured containers may be temporarily repaired using aluminium tape. If the age of the spill is unknown, or the material has been contaminated with soil, debris, water etc., gather up the spillage into small open buckets having a capacity no larger than 4.5 litres. Do not add more than about 1 to 1.5 kg 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 Quickphos.

Respiratory protection as specified in Section 8 is required during clean-up of spilled material.

If the concentration of hydrogen phosphide is unknown, positive pressure, supplied air breathing apparatus must be worn.

Small amounts of spillage, from about 4 - 8 kg may be spread out over the ground in an open area to be deactivated by atmospheric moisture. Alternatively the material may be wet deactivated as described below.

Wet deactivation: Deactivating solution is prepared by adding a low sudsing detergent to water in a drum or other suitable container. A 2% solution or 4 cups of detergent to 130 litres is suggested. The container should be filled with deactivating solution to within a few centimetres of the top. The Quickphos is added slowly to the deactivating solution and stirred so as to thoroughly wet all the Quickphos. This should be carried out in the open air and respiratory protection may be required. No more than 20-25 kg of Quickphos should be added to 70 litres of solution. Allow the mixture to stand, with occasional stirring, for about 36 hours. The resultant slurry will then be safe for disposal. Dispose of the slurry or deactivated material, with or without preliminary decanting, at a landfill or other suitable site approved by local authorities.

SECTION 14 – TRANSPORT INFORMATION

UN No	3048
UN Proper Shipping Name	ALUMINIUM PHOSPHIDE PESTICIDE
Class & Subsidiary Risk	Class 6.1 Subsidiary Risk: None
Packaging Group	I
Hazchem Code	4WE

SECTION 15 – REGULATORY INFORMATION

Poisons Schedule	Schedule 7 – Dangerous Poison
APVMA Registration	The product is registered by the APVMA.
Registration Number	46948
Labelling	All necessary directions, precautions and warnings for normal use of the product are included on the product label.

SECTION 16 – OTHER INFORMATION

Summary of Changes from Last Edition	Updating of information in respect of respirators and respiratory protection.
Acronyms	<p>ADG Code Australian Code for the Transport of Dangerous Goods by Road and Rail</p> <p>APVMA Australian Pesticides and Veterinary Medicines Authority</p> <p>CAS Chemical Abstracts Service Registry Number</p> <p>HDPE High density polyethylene</p> <p>LDPE Low density polyethylene</p> <p>NOHSC National Occupational Health & Safety Commission</p> <p>SUSDP Standard for the Uniform Scheduling of Drugs and Poisons</p> <p>UN Number United Nations number</p>

Disclaimer

This Material Safety Data Sheet has been developed according to the NOHSC National Code of Practice for the Preparation of MSDS [NOHSC:2011(2003)].

The data, information and recommendations herein ("information") are represented in good faith and believed to be correct as of the date hereof.

The purpose of this Material Safety Data Sheet is to describe product in terms of their safety requirements.

Bayer Australia Limited make no representation of merchantability, fitness for a particular purpose or application, or of any other nature with respect to the information or the product to which the information refers ("the product").

The information is supplied upon the condition that the persons receiving the same will make their own determination as to its suitability for their purposes prior to use of the product.

The physical data shown herein are typical values based on material tested. These values should not be construed as a guaranteed analysis of any specific lot or as guaranteed specification for the product or specific lots thereof.

Due care should be taken to make sure that the use or disposal of this product and / or its packaging is in compliance with relevant Federal, State and Local Government regulations.

END OF MSDS