

Section 1 - Identification of the Material and Supplier

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Chemical nature: Fumigation products containing aluminium phosphide
Trade Name: **Phostoxin Fumigation Bags, Chains and Blankets**
APVMA Code: 63588, 63587, 63586
Product Use: Agricultural insecticide for use as described on the product label.
Creation Date: **October, 2016**
This version issued: **June, 2021** and is valid for 5 years from this date.
Poisons Information Centre: Phone 13 1126 from anywhere in Australia

Section 2 - Hazards Identification

Statement of Hazardous Nature

This product is classified as: T, Toxic. C, Corrosive. Hazardous according to the criteria of SWA.
 Dangerous according to Australian Dangerous Goods (ADG) Code, IATA and IMDG/IMSBC criteria.

SUSMP Classification: S7

ADG Classification: Class 4.3: Substance which, in contact with water, emits flammable gas. Sub Risk: Class 6.1: Toxic substances.

UN Number: 1397, ALUMINIUM PHOSPHIDE



GHS Signal word: DANGER

Substances and mixtures which, in contact with water, emit flammable gases Category 1
 Acute Toxicity Oral Category 1 or 2
 Acute Toxicity Dermal Category 3
 Skin Corrosion /Irritation Category 1
 Acute Toxicity Inhalation Category 1/2
 Specific Target Organ toxicity - single exposure Category 1
 Hazardous to aquatic environment Short term/Acute Category 1

HAZARD STATEMENT:

H260: In contact with water releases flammable gases which may ignite spontaneously.
 AUH029: Contact with water liberates toxic gas.
 H300: Fatal if swallowed.
 H311: Toxic in contact with skin.
 H314: Causes severe skin burns and eye damage.
 H330: Fatal if inhaled.
 H370: Causes damage to organs.
 H400: Very toxic to aquatic life.

PREVENTION

P223: Keep away from any possible contact with water, because of violent reaction and possible flash fire.
 P232: Protect from moisture.
 P260: Do not breathe dusts.
 P262: Do not get in eyes, on skin, or on clothing.
 P264: Wash contacted areas thoroughly after handling.
 P270: Do not eat, drink or smoke when using this product.
 P271: Use only outdoors or in a well ventilated area.
 P273: Avoid release to the environment.
 P280: Wear protective gloves, protective clothing and eye or face protection.
 P284: Wear respiratory protection.

RESPONSE

P363: Wash contaminated clothing before reuse.
 P301+P310: IF SWALLOWED: Immediately call a POISON CENTRE or doctor.

SAFETY DATA SHEET

P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303+P361+P353: IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water.

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P307+P311: If exposed: Call a POISON CENTRE or doctor.

P335+ P334: Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.

P381: Eliminate all ignition sources if safe to do so.

P391: Collect spillage.

P370+P378: In case of fire, use carbon dioxide, dry chemical. Dry Agent. Water MUST NOT be allowed to come into contact with the product since a dangerous reaction is likely to take place.

STORAGE

P402: Store in a dry place.

P405: Store locked up.

P410: Protect from sunlight.

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

DISPOSAL

P501: Dispose of contents and containers as specified on the registered label.

Emergency Overview

Physical Description & Colour: White pellets or tablets. May be presented in belts or blankets.

Odour: Produces phosphine gas which has a garlic or carbide-like odour

Major Health Hazards: Aluminium phosphide is not absorbed dermally; the main routes of exposure are through ingestion and inhalation. It is highly toxic via both these routes. The reported rodent oral LD₅₀ is 11.5 mg/kg for the refined version, with that for the technical compound presumably lower. Aluminium phosphide ingested orally reacts with water and stomach acids to produce phosphine gas, which may account in a large part for observed toxicity. Very toxic by inhalation and if swallowed, toxic in contact with skin, causes burns.

Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc, g/kg	TWA (mg/m ³)	STEL (mg/m ³)
Aluminium phosphide	20859-73-8	>600	not set	not set
Which reacts to produce:				
Phosphine	7803-51-2	330	0.42	1.4
Other non hazardous ingredients	secret	to 1 kg	not set	not set

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The SWA TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak "is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

Section 4 - First Aid Measures

General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this SDS with you when you call.

Inhalation: If inhalation occurs, contact a Poisons Information Centre. Urgent hospital treatment is likely to be needed. Remove source of contamination or move victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. DO NOT allow victim to move about unnecessarily. Symptoms of pulmonary oedema can be delayed up to 48 hours after exposure.

Skin Contact: Quickly and gently brush away excess particles. Seek immediate medical attention. Remove contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Flush contaminated area with lukewarm, gently flowing water for at least 20-30 minutes, by the clock. DO NOT INTERRUPT FLUSHING. If necessary, keep emergency vehicle waiting (show paramedics this SDS and take their advice). If irritation persists, repeat flushing. Seek medical attention.

Eye Contact: Quickly and gently brush particles from eyes. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 15 minutes or until the product is removed, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical attention immediately. Take special care if exposed person is wearing contact lenses.

SAFETY DATA SHEET

Ingestion: If swallowed, do NOT induce vomiting; rinse mouth thoroughly with water and contact a Poisons Information Centre, or call a doctor at once. Give activated charcoal if instructed.

Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: The major hazard in fires is usually inhalation of heated and toxic or oxygen deficient (or both), fire gases. There is little risk of an explosion from this product if commercial quantities are involved in a fire. This product will probably cause the fire to intensify as contents ignite.

Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

Extinguishing Media: Dry Agent. Water MUST NOT be allowed to come into contact with the product since a dangerously reaction is likely to take place. Try to contain spills, minimise spillage entering drains or water courses.

Fire Fighting: If a significant quantity of this product is involved in a fire, call the fire brigade. There is a danger of a violent reaction or explosion if significant quantities of this product are involved in a fire. Recommended personal protective equipment is liquid-tight chemical protective clothing and breathing apparatus.

Hazchem Code: 4WE

Flammability Class: Substances and mixtures which, in contact with water, emit flammable gases
Category 1 (GHS); Class 4.3 (ADG).

Section 6 - Accidental Release Measures

Accidental release: In the event of a major spill, prevent spillage from entering drains or water courses. Evacuate the spill area and deny entry to unnecessary and unprotected personnel. Immediately call the Fire Brigade. Wear full protective chemically resistant clothing including eye/face protection, gauntlets and self contained breathing apparatus. See below under Personal Protection regarding Australian Standards relating to personal protective equipment. Suitable materials for protective clothing include rubber and PVC. Eye/face protective equipment should comprise, as a minimum, protective goggles. If there is a significant chance that dusts are likely to build up in cleanup area, we recommend that you use a suitable dust mask. Otherwise, not normally necessary.

Stop leak if safe to do so, and contain spill. Avoid using sawdust or other combustible material. Any electrical equipment should be non-sparking. Any equipment capable of building an electrostatic charge should be electrically grounded. Because of the toxicity of this product, special personal care should be taken in any cleanup operation. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Consider vacuuming if appropriate. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Full details regarding disposal of used containers, spillage and unused material may be found on the label. If there is any conflict between this SDS and the label, instructions on the label prevail. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

Section 7 - Handling and Storage

Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this SDS for details of personal protective measures, and make sure that those measures are followed. Wash contaminated clothing after use, notifying the laundry of the nature of the contamination. Do not eat, drink or smoke while product is in use. Eliminate ignition sources from the area where this product is used, as it emits a flammable gas which may be ignited under certain circumstances. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

Storage: This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this schedule of poison. Store in a cool, well ventilated area. Check containers periodically for leaks. Containers should be kept closed in order to minimise contamination, especially from water. Make sure that the product does not come into contact with water, or substances listed under "Incompatibilities" in Section 10. If you keep more than 500kg or L of Dangerous Goods of Packaging Group I, you may be required to license the premises or notify your Dangerous Goods authority. If you have any doubts, we suggest you contact your Dangerous Goods authority in order to clarify your obligations. Check packaging - there may be further storage instructions on the label.

Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Occupational Protective Clothing: AS/NZS 4501 set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

SWA Exposure Limits

Phosphine

TWA

0.42 mg/m³ (0.3 ppm)

STEL

1.4 mg/m³ (1 ppm)

SAFETY DATA SHEET

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

Ventilation: This product should only be used where there is local exhaust ventilation.

Eye Protection: Protective glasses or goggles must be worn when this product is being used. Failure to protect your eyes may lead to severe harm to them or to general health. Emergency eye wash facilities must also be available in an area close to where this product is being used.

Skin Protection: Because of the dangerous nature of this product, make sure that all skin areas are completely covered by impermeable gloves, overalls, hair covering, apron and face shield. See below for suitable material types.

Protective Material Types: We suggest that protective clothing be made from the following materials: rubber, PVC.

Respirator: If there is a significant chance that dusts are likely to build up in the area where this product is being used, we recommend that you use a suitable dust mask. Otherwise, not normally necessary.

Safety deluge showers should, if practical, be provided near to where this product is being handled commercially.

Section 9 - Physical and Chemical Properties:

Physical Description & colour:	White pellets or tablets. May be presented in belts or blankets.
Odour:	Produces phosphine gas which has a garlic or carbide-like odour
Boiling Point:	Not available.
Freezing/Melting Point:	No specific data. Solid at normal temperatures.
Volatiles:	No data.
Vapour Pressure:	No data.
Vapour Density:	Not applicable.
Specific Gravity:	No data.
Water Solubility:	Not applicable, product decomposes in contact with water.
pH:	No data.
Volatility:	No data.
Odour Threshold:	No data.
Evaporation Rate:	Not applicable.
Coeff Oil/water Distribution:	No data
Viscosity:	Not applicable.
Autoignition temp:	No data.
Flash point:	No data
Upper Flammability Limit:	No data.
Lower Flammability Limit:	No data.
Autoignition temperature:	No data.

Section 10 - Stability and Reactivity

Reactivity: This product reacts with water, liberating a toxic, flammable gas. Look at the label for further information.

Conditions to Avoid: This product should be kept in a cool place, preferably below 30°C. Keep containers tightly closed. Containers should be kept dry. Keep isolated from combustible materials. Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

Incompatibilities: water, acids, oxidising agents, zinc, tin, aluminium and their alloys.

Fire Decomposition: Combustion forms carbon dioxide, and if incomplete, carbon monoxide and possibly smoke. Water is also formed. May form oxides of phosphorus and other phosphorus compounds. Aluminium compounds. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

Polymerisation: Polymerisation reactions are unlikely; they are not expected to occur.

Section 11 - Toxicological Information

Toxicity: An information profile for Aluminium Phosphide is available at <http://extoxnet.orst.edu/pips/ghindex.html>

Acute Toxicity: Aluminium phosphide is not absorbed dermally; the main routes of exposure are through ingestion and inhalation. It is highly toxic via both these routes. The reported rodent oral LD₅₀ is 11.5 mg/kg for the refined version, with that for the technical compound presumably lower. Aluminium phosphide ingested orally reacts with water and stomach acids to produce phosphine gas, which may account in a large part for observed toxicity.

Phosphine generated in the gastrointestinal tract is readily absorbed in to the bloodstream, and it is readily absorbed through the lung epithelium. The rodent 4-hour inhalation LC₅₀ for phosphine gas (the product of phosphide reaction with water) is widely reported as 15 mg/m³ (15 µg/L, or approximately 10.7 ppm). Recent study indicates that the rodent 4-hour inhalation LC₅₀ may exceed 15 mg/m³. Symptoms of mild to moderate acute Aluminium phosphide toxicity include nausea, abdominal pain, tightness in chest, excitement, restlessness, agitation and chills. Symptoms

SAFETY DATA SHEET

of more severe toxicity include diarrhoea, cyanosis, difficulty breathing, pulmonary oedema, respiratory failure, tachycardia (rapid pulse) and hypotension (low blood pressure), dizziness and/or death. Convulsions have been reported in lab animals exposed to high concentrations of phosphine. Mild exposure is reversible.

Chronic Toxicity: There is no evidence available that shows cumulative or chronic toxicity symptoms.

Reproductive Effects: The available evidence for reproductive effects in animals suggest that reproductive effects are not likely in humans under normal conditions.

Teratogenic Effects: The available evidence for teratogenic effects in animals suggests that such effects are not likely in humans under normal conditions.

Mutagenic Effects: No evidence was available regarding the ability of Aluminium phosphide or phosphine to cause mutations or increase the mutation rate.

Carcinogenic Effects: No data are currently available; it is possible that some testing on the oncogenicity may be initiated in the near future.

Organ Toxicity: Acute toxicity resulting from Aluminium phosphide exposure is apparent most immediately in the heart and lungs; it may also affect the central nervous system, liver and kidneys.

Fate in Humans & Animals: Aluminium phosphide rapidly reacts with water to form highly toxic phosphine gas. It has been reported that Aluminium phosphide may be absorbed directly into the bloodstream, although this is probably a very minor route of entry. That phosphine which is not expired through the lungs may be metabolized to phosphates, hypophosphite and phosphite.

Classification of Hazardous Ingredients

Ingredient	Risk Phrases
Aluminium Phosphide	Conc>=7%: T+; R28
<ul style="list-style-type: none"> Substance or mixture which in contact with water emits flammable gas – category 1 Acute toxicity (inhalation) - category 1 Acute toxicity (ingestion) - category 2 Acute toxicity (dermal) - category 3 Hazardous to the aquatic environment (acute) – category 1 	
Phosphine	Conc>=10%: T+; R26, R34
<ul style="list-style-type: none"> Flammable gas - category 1 Gas under pressure Acute toxicity - category 2 Skin corrosion - category 1B Hazardous to the aquatic environment (acute) - category 1 	

Potential Health Effects

Inhalation:

Short Term Exposure: Available data shows that this product is very toxic, but symptoms are not available. In addition product may be mildly irritating, although unlikely to cause anything more than mild transient discomfort.

Long Term Exposure: Long term inhalation of high amounts of any nuisance dust may overload lung clearance mechanism. No data for health effects associated with long term inhalation.

Skin Contact:

Short Term Exposure: This product is corrosive to the skin. Capable of causing moderate to severe burns with ulceration. Can penetrate to deeper layers of skin, resulting in third degree burns. Corrosion will continue until product is removed or neutralised. Severity depends on concentration and duration of exposure. Burns may not be immediately painful; the onset of pain may be minutes to hours. Toxic in contact with skin.

Long Term Exposure: No data for health effects associated with long term skin exposure.

Eye Contact:

Short Term Exposure: This product is a severe eye irritant. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms such as swelling of eyelids and blurred vision may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment is likely to cause permanent damage.

Long Term Exposure: No data for health effects associated with long term eye exposure.

Ingestion:

Short Term Exposure: Significant oral exposure is considered to be unlikely. Available data shows that this product is toxic, but further symptoms are not available. However, this product may be irritating to mucous membranes but is unlikely to cause anything more than transient discomfort.

Long Term Exposure: No data for health effects associated with long term ingestion.

Carcinogen Status:

SAFETY DATA SHEET

SWA: No significant ingredient is classified as carcinogenic by SWA.

NTP: No significant ingredient is classified as carcinogenic by NTP.

IARC: No significant ingredient is classified as carcinogenic by IARC.

Section 12 - Ecological Information

This product is very toxic to aquatic organisms.

Effects on Birds: The precise oral or inhalation median lethal doses for Aluminium phosphide or phosphine in birds are not known. It is reported that exposure of turkeys and hens to 211 and 224 mg/m³ for 74 and 59 minutes respectively resulted in laboured breathing, swelling of organs, tonic-clonic convulsions and death.

Effects on Aquatic Species: The reported acute LC₅₀ is 4.1 µg/L in rainbow trout, indicating very high toxicity. No data were available regarding the specific toxicity of Aluminium phosphide or of phosphine to other fish or aquatic species (e.g. LC₅₀ or EC₅₀ values), but due to the mechanism of action it is likely that it will be very highly toxic to them as well.

Effects on Other Animals (Non target species): No data were available.

ENVIRONMENTAL FATE:

Breakdown of Chemical in Soil and Groundwater: Aluminium phosphide will break down spontaneously in the presence of water to form a gaseous product, and so it is non-persistent and non-mobile in the soil environment, and poses no risk to groundwater.

Breakdown of Chemical in Surface Water: It is highly unlikely that Aluminium phosphide or phosphine will be found in surface waters.

Breakdown of Chemical in Vegetation: No data were available.

Section 13 - Disposal Considerations

Disposal: This product may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to separate the contamination in some way. Only if neither of these options is suitable, we suggest that you contact a specialist disposal company to arrange disposal. Once the packaging is opened, generation of phosphine will begin and will continue until the product is spent. Disposal by untrained personnel may cause a dangerous incident.

Disposal instructions for spent product can be found on the product label. Residual aluminium phosphide should be destroyed prior to disposal by swamping the product with dilute acid or soapy water in open air until bubbling ceases. Packaging should be rinsed with soapy water, preferably in a well ventilated area, to destroy residual aluminium phosphide. Deactivated spent product can be disposed of in an approved disposal pit. Packaging may be disposed of similarly, or can be delivered to an appropriate waste management facility.

Section 14 - Transport Information

Dangerous according to Australian Dangerous Goods (ADG) Code, IATA and IMDG/IMSBC criteria.

UN Number: 1397, ALUMINIUM PHOSPHIDE

Hazchem Code: 4WE

Special Provisions: None allocated

Limited quantities: ADG 7 specifies a Limited Quantity value of NONE for this class of product.

Dangerous Goods Class: Class 4.3: Substances which in Contact With Water Emit Flammable Gases.

Sub Risk: Class 6.1, Toxic Substances.

Packing Group: I

Packing Instruction: P403

Class 4.3 Dangerous When Wet Substances shall not be loaded in the same vehicle or packed in the same freight container with Classes 1 (Explosives), 2.1 (Flammable Gases), 5.1 (Oxidising Agents), 5.2 (Organic Peroxides), 7 (Radioactive Substances), 8 (Corrosive Substances). They may however be loaded in the same vehicle or packed in the same freight container with Classes, 2.2 (Non-Flammable, Non-Toxic Gases), 2.3 (Toxic Gases), 3 (Flammable Liquids), 4.1 (Flammable Solids), 4.2 (Spontaneously Combustible Substances), 6 (Toxic Substances), 9 (Miscellaneous Dangerous Goods), Foodstuffs and foodstuff empties.

Section 15 - Regulatory Information

AICS: We are unable to verify the presence of all of the ingredients in this product on the public AICS database. However this is not a necessary requirement for registered Ag/Vet products. If you have any reason to be concerned about this, we suggest you call us on the number below.

The following ingredients: Aluminium phosphide, Phosphine, are mentioned in the SUSMP.

Section 16 - Other Information

This SDS contains only safety-related information. For other data see product literature.

SAFETY DATA SHEET

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail (7 th edition)
AICS	Australian Inventory of Chemical Substances
SWA	Safe Work Australia, formerly ASCC and NOHSC
CAS number	Chemical Abstracts Service Registry Number
Hazchem Code	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
IARC	International Agency for Research on Cancer
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
R-Phrase	Risk Phrase
SUSMP	Standard for the Uniform Scheduling of Medicines & Poisons
UN Number	United Nations Number

THIS SDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER MUST REVIEW THIS SDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE.

IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS. OUR RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

Please read all labels carefully before using product.

This SDS is prepared in accord with the SWA document "Preparation of Safety Data Sheets for Hazardous Chemicals - Code of Practice" (July 2020)

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SAFETY DATA SHEET