Section 1 - Identification of The Material and Supplier

FARMALINX Pty Ltd
Level 25, Suite 2506 (Tower 2)
101 Grafton Street
Bondi Junction, NSW 2022

Phone: 02 9389 2455
Fax: 02 9389 2844
www.farmalinx.com

Chemical nature:	Phosphine, present as Aluminium phosphide.
Trade Name:	**Farmalinx GRAINPRO Fumigation Blanket**
APVMA code:	69624
Product Use:	For control of insect pests of stored products in certain situations as per the Directions for Use Table.
Creation Date:	**March, 2014**
This version issued:	**July, 2020** and is valid for 5 years from this date.

Section 2 - Hazards Identification

Statement of Hazardous Nature

This product is classified as: Xi, Irritating. T, Toxic. N, Dangerous to the environment. Hazardous according to the criteria of SWA.

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

Risk Phrases: R28, R50, R15/29, R23/24. Very toxic if swallowed. Very toxic to aquatic organisms. Contact with water liberates very toxic, highly flammable gas. Toxic by inhalation and in contact with skin.
Safety Phrases: S20, S22, S23, S26, S28, S38, S43, S45, S61, S1/2, S3/9/14, S24/25, S36/37. When using, do not eat or drink. Do not breathe dust. Do not breathe dusts or liberated phosphine. In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre. After contact with skin, wash immediately with plenty of soap and water. In case of insufficient ventilation, wear suitable respiratory equipment. In case of fire use Dry Agent. Water MUST NOT be allowed to come into contact with the product since a dangerously reaction is likely to take place. In case of accident or if you feel unwell, contact a doctor or Poisons Information Centre immediately (show this SDS where possible). Avoid release to the environment. Refer to special instructions/Safety Data Sheets. Keep locked up and out of reach of children. Keep in cool ventilated place away from any possibility of exposure to moisture. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves.
SUSMP Classification: S7
ADG Classification: Class 6.1: Toxic Substances.
UN Number: 3048, ALUMINIUM PHOSPHIDE PESTICIDE

GHS Signal word: DANGER

HAZARD STATEMENT:

AUH032: Contact with acids liberates very toxic gas.
H300: Fatal if swallowed.
H311: Toxic in contact with skin.
H331: Toxic if inhaled.
H400: Very toxic to aquatic life.

PREVENTION

P102: Keep out of reach of children.
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

P361: Remove all contaminated clothing immediately.
P363: Wash contaminated clothing before reuse.
P301+P310: IF SWALLOWED: Immediately call a POISON CENTRE or doctor.
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P352: IF ON SKIN: Wash with plenty of soap and 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.
P332+P313: If skin irritation occurs: Get medical advice.
P337+P313: If eye irritation persists: Get medical advice.
P370+P378: In case of fire, use dry chemical, dry sand. Dry Agent. Water MUST NOT be allowed to come into contact with the product since a dangerous reaction is likely to take place.

STORAGE

P403: Store in a well-ventilated place.
P405: Store locked up.
P402+P404: Store in a dry place. Store in a closed container.

DISPOSAL

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

Emergency Overview

Physical Description & Colour: Greyish yellow granular powder. Presented enclosed in a blanket-like measure pack.
Odour: Strong characteristic odour, reminiscent of garlic, carbide or decaying fish.
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 LD_{50} 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.

Potential Health Effects

Inhalation:

Short Term Exposure: Available data shows that this product is 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: No data for health effects associated with long term inhalation.

Skin Contact:

Short Term Exposure: Available data shows that this product is toxic, but further symptoms are not available. In addition product is a skin irritant. Symptoms may include itchiness and reddening of contacted skin. Other symptoms may also become evident, but all should disappear once exposure has ceased.
Long Term Exposure: No data for health effects associated with long term skin exposure.

Eye Contact:

Short Term Exposure: This product is an eye irritant. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment may 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 very toxic, but further symptoms are not available. However, this product is an oral irritant. Symptoms may include burning sensation and reddening of skin in mouth and throat. Other symptoms may also become evident, but all should disappear once exposure has ceased.
Long Term Exposure: No data for health effects associated with long term ingestion.

Carcinogen Status:

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 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc,%	TWA (mg/m^3)	STEL (mg/m^3)
Phosphine, as Aluminium phosphide	20859-73-8	330g/kg	0.42	1.4
Other non hazardous ingredients	secret	to 100	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.

Each 3.4kg blanket liberates 1122g phosphine (PH_3)

1 blanket contains 100 x 34g measure packs which may not be sold separately.

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 MSDS and take their advice). If breathing has stopped, trained personnel should begin artificial respiration or, if the heart has stopped, cardiopulmonary resuscitation (CPR) immediately.

Eye Contact: Quickly and gently brush particles from eyes. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 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.

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 no risk of an explosion from this product under normal circumstances if it is involved in a fire.

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

Extinguishing Media: In case of fire, use dry chemical, dry sand. Dry Agent. Water MUST NOT be allowed to come into contact with the product since a dangerous reaction is likely to take place. Try to contain spills, minimise spillage entering drains or water courses. Avoid the use of Water MUST NOT be allowed to come into contact with the product since a dangerously reaction will take place..

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.

Flash point: No data

Upper Flammability Limit: No data.

Lower Flammability Limit: No data.

Autoignition temperature: No data.

Flammability Class: No data.

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, 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. Use a P1 mask, designed for use against mechanically generated particles e.g. silica & asbestos. Otherwise, not normally necessary.
Stop leak if safe to do so, and contain spill. 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. 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. Make sure that the product does not come into contact with 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	TWA (mg/m^3)	STEL (mg/m^3)
Phosphine	0.42	1.4

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 ventilation that is adequate to keep exposure below the TWA levels. If necessary, use a fan.
Eye Protection: Protective glasses or goggles should be worn when this product is being used. Failure to protect your eyes may cause them harm. Emergency eye wash facilities are also recommended in an area close to where this product is being used.
Skin Protection: It is essential that all skin areas are adequately 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.
Eyebaths or eyewash stations and 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:	Greyish yellow granular powder. Presented enclosed in a blanket-like measure pack.
Odour:	Strong characteristic odour, reminiscent of garlic, carbide or decaying fish.
Boiling Point:	Not applicable.
Freezing/Melting Point:	Decomposes before melting.
Volatiles:	No specific data. Expected to be low at 100°C.
Vapour Pressure:	Nil at normal ambient temperatures.
Vapour Density:	Not applicable.
Specific Gravity:	No data.
Water Solubility:	Reacts and decomposes in presence of water.
pH:	No data.
Volatility:	Nil at normal ambient temperatures.
Odour Threshold:	No data.
Evaporation Rate:	Not applicable.
Coeff Oil/water Distribution:	No data
Viscosity:	Not applicable.
Autoignition temp:	No data.

Section 10 - Stability and Reactivity

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.
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 containers and surrounding areas well ventilated.
Incompatibilities: water, any material or product containing water.
Fire Decomposition: May form oxides of phosphorus and other phosphorus compounds. Aluminium compounds.
Polymerisation: This product will not undergo polymerisation reactions.

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 LD_{50} 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 LC_{50} for phosphine gas (the product of phosphide reaction with water) is widely reported as 15 mg/m^3 (15 µg/L, or approximately 10.7 ppm). Recent study indicates that the rodent 4-hour inhalation LC_{50} may exceed 15 mg/m^3. Symptoms of mild to moderate acute Aluminium phosphide toxicity include nausea, abdominal pain, tightness in chest, excitement, restlessness, agitation and chills. Symptoms 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
Phosphine, As Aluminium Phosphide	Conc>=7%: T+; R28

Section 12 - Ecological Information

This product is very toxic to aquatic organisms. This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.
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/m^3 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 LC_{50} 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. LC_{50} or EC_{50} 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: Special help is available for the disposal of Agricultural Chemicals. The product label will give general advice regarding disposal of small quantities, and how to cleanse containers. However, for help with the collection of unwanted rural chemicals, contact ChemClear 1800 008 182 http://www.chemclear.com.au/ and for help with the disposal of empty drums, contact DrumMuster http://www.drummuster.com.au/ where you will find contact details for your area.

Wet deactivation: If available, prepare a 2% solution of low foam detergent as detergent solution will better wet the hydrophobic surface of the aluminium phosphide particles; otherwise use available water. A container should be filled with this solution to within a few centimetres of the top. The Aluminium phosphide should be added slowly to the solution and stirred so as to thoroughly wet all the Aluminium phosphide. This should be carried out in the open air and respiratory protection should be worn if necessary. No more than 1 part of Aluminium phosphide should be added to 3 parts of solution. Allow the mixture to stand, with occasional stirring, for about 48 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.

An alternative method is to place blankets into a suitable empty vessel, and add water from a suitable distance (this may be achieved with a hose). Again, allow to stand for a few days and dispose as indicated above.

Section 14 - Transport Information

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

UN Number: 3048, ALUMINIUM PHOSPHIDE PESTICIDE
Hazchem Code: 4W
Special Provisions: 153
Limited quantities: ADG 7 specifies a Limited Quantity value of NONE for this class of product.
Dangerous Goods Class: Class 6.1: Toxic Substances.
Packaging Group: I
Packaging Method: P002, IBC07

Class 6 Toxic Substances shall not be loaded in the same vehicle or packed in the same freight container with Classes 1 (Explosives), 3 (Flammable Liquids where the Flammable Liquid is nitromethane), 5.1 (Oxidising Agents where the Toxic Substances are Fire Risk Substances), 5.2 (Organic Peroxides where the Toxic Substances are Fire Risk Substances), 8 (Corrosive Substances where the Toxic Substances are cyanides and the Corrosives are acids), Foodstuffs and foodstuff empties. They may however be loaded in the same vehicle or packed in the same freight container with Classes, 2.1 (Flammable Gases), 2.2 (Non-Flammable, Non-Toxic Gases), 2.3 (Toxic Gases), 3 (Flammable liquids, except where the flammable liquid is nitromethane), 4.1 (Flammable Solids), 4.2 (Spontaneously

Combustible Substances), 4.3 (Dangerous When Wet Substances), 5.1 (Oxidising Agents except where the Toxic Substances are Fire Risk Substances), 5.2 (Organic Peroxides except where the Toxic Substances are Fire Risk Substances), 7 (Radioactive Substances), 8 (Corrosive Substances except where the Toxic Substances are cyanides and the Corrosives are acids), 9 (Miscellaneous Dangerous Goods)

Section 15 - Regulatory Information

AICS: All of the significant ingredients in this formulation are compliant with NICNAS regulations.
The following ingredient: Phosphine, is mentioned in the SUSMP.

Section 16 - Other Information

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

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail (7th 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” (December 2011)

http://www.kilford.com.au/ Phone (02)9251 4532