SAFETY DATA SHEET

Aluminium Phosphide Sachets

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

Product Name: Aluminium Phosphide Sachets
Other identifier: Aluminium phosphide (fumigant) 560 g/kg
Pesticide Classification: Fumigant
Restrictions on use:
This remedy is restricted due to acute toxicity. This remedy may only be sold to and used by a registered pest control operator, or by someone under the supervision of a registered pest control operator, and only for those uses covered by the pest control operator's scope of registration, and only as directed on this label.

Supplier
Enviro Bio-Chem (Pty) Ltd
Co. Reg. No.: 2013/194774/07
44 Kerk Street, Lichtenburg
North West, South Africa 2740

Registration Holder
RT Chemicals CC
Co. Reg. No.: CK87/21925/23
44 Kerk Street, Lichtenburg
North West, South Africa 2740

Telephone: +27 12 006 0063
Fax: 086 541 7948
Website: www.envirobiochem.co.za

24 Hr Emergency Number: Spillage: 0861 000 366

In case of Poisoning:
Griffon Poison Information Centre: +27 82 446 8946
Tygerberg Hospital: (+27 21) 931 6129
Poison Emergency Enquiries: (+27 21) 689 5227

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2. HAZARD IDENTIFICATION

UN GHS, Regulation EC 1272/2008 [EU-GHS/CLP] EU & SANS 10234:2008		
Hazard classes	**Hazard categories**	**Hazard statements**
In contact with water emit flammable gas	Category 1	H260
Acute toxicity oral	Category 2	H300
Acute toxicity dermal	Category 3	H311
Serious Eye damage	Category 1	H318
Acute toxicity inhalation	Category 1	H330
Aquatic Toxicity Acute	Category 1	H400

The most important adverse effects:
The most important adverse physiochemical effects: In contact with water releases flammable gases which may ignite spontaneously
The most important adverse human health effects: Fatal if swallowed. Fatal if inhaled. Causes serious eye damage, Toxic if in contact with skin.

Label elements:

Signal word: Danger

Hazard statements:
H260: In contact with water releases flammable gases which may ignite spontaneously.
H300: Fatal if swallowed.
H311: Toxic in contact with skin.
H318: Causes serious eye damage.
H330: Fatal if inhaled.
H400: Very toxic to aquatic life.

Precautionary statements:
P102: Keep out of reach of children.
P103: Read label before use.
P202: Do not handle until all safety precautions have been read and understood.
P223: Keep away from any possible contact with water, because of violent reaction and possible flash fire.
P260: Avoid breathing dust/fume/mist/vapours/spray.
P264: Wash hands, forearms, and face 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/eye protection/face protection.
P284: In case of inadequate ventilation] wear respiratory protection.
P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P303 + P361 + P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340: IF INHALED: Remove person to fresh air and keep 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.
P320: Specific treatment is urgent (see supplementary first aid instructions on this Safety Data Sheet).
P332+P313: If skin irritation occurs: Get medical advice/attention.
P362: Take off contaminated clothing.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P405: Store locked up.
P391: Collect spillage.
P501: Dispose of contents/container in accordance with local/regional/ national regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances/ Mixture: Mixture

Composition:

Chemical Name	CAS	Conc. (m/m%)	Classification EC 1272/2008
Aluminium Phosphide	20859-73-8	56 %	Water reaction (Category 1) H260 Acute Toxicity -Oral (Category 2) H300 Acute Toxicity -Dermal (Category 3) H311 Acute Toxicity -Inhalation (Category 1) H330 Aquatic Acute (Category 1) H400

Ammonium Carbamate	1111-78-0	<50%	Acute Toxicity Oral (Category 4) H302 Serious Eye damage (Category 1) H318

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. Occupational exposure limits, if available, are listed in Section 8.

4. FIRST AID MEASURES

Remove the victim from the area of exposure. Wash off remaining material with plenty of water. In the event of any complaints or symptoms, avoid further exposure and consult a doctor / poison control centre.

Inhalation: Remove person from contaminated area to fresh air and assist breathing as needed. Seek medical attention if irritation persists / person feels unwell If not breathing, give artificial respiration. If breathing is difficult,give oxygen. Get medical attention if you feel unwell.

Skin: Remove contaminated clothing and shoes. Gently wipe off excess chemical. Wash skin gently and thoroughly with water and non-abrasive soap. Wash clothing before reuse. Thoroughly clean shoes before reuse. Seek medical attention immediately.

Eyes: Flush eyes with clean water. Lift eyelids to facilitate irrigation. If present, remove contact lenses and continue rinsing. Seek medical attention if irritation persists.

Ingestion: Seek medical attention or call a poison control centre for treatment advice. Do not induce vomiting unless instructed to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person. If the person is alert, rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt, or waistband. If swallowed, get emergency medical help immediately.

Anticipated acute effects: Exposure may result in fatal effects if swallowed or inhaled. Toxic when in contact with skin. Causes serious eye damage and is highly toxic to aquatic life. Can react with water to release flammable gases that may ignite spontaneously, posing a significant fire and health hazard.

Aluminum phosphide fumigant products react with moisture from the air, acids, and many other liquids to release phosphine gas (hydrogen phosphide, PH3). Mild exposure by inhalation causes malaise (indefinite feeling of sickness), headache, ringing in the ears, fatigue, nausea, and pressure in the chest which is relieved by removal to fresh aid. Moderate poisoning causes weakness, vomiting, pain just above the stomach, chest pain, diarrhea and dyspnea (difficulty breathing). Symptoms of severe poisoning may occur within a few hours to several days resulting in pulmonary edema and may lead to dizziness, cyanosis, unconsciousness, and death.

Anticipated delayed effects: None known.

Most important symptoms/effects: None known.

Advice to physician: Treat symptomatically and supportively. No specific antidote known.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media: Use carbon dioxide or dry chemical for small and large fires.

Unsuitable Extinguishing Media: DO NOT use water, or foam.

Specific hazards: In contact with water, releases flammable gases which may ignite spontaneously. Keep away from any possible contact with water because of violent reaction and possible flash fire.

Special Fire Fighting Procedures: Remove spectators from surrounding area. Aluminium phosphide is not flammable by itself. However, it reacts readily with water to produce phosphine gas (Hydrogen phosphide, PH3) which may ignite spontaneously in air at concentrations above its LEL of 1.8% v/v (18,000 ppm). The UEL of phosphine gas (hydrogen phosphide, PH3) is unknown. Avoid inhaling hazardous vapours. Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear. Use an approved/certified respirator or equivalent. Contain fire control agents for later disposal according to Section 13.

Personal protective equipment: Wear NIOSH/MSHA approved self-contained breathing apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Evacuate the area immediately. May be fatal by inhalation. Avoid contact with eyes and skin. Do not breathe in spray mist or dust. Ventilate area of spill, especially in contained areas.

Protective equipment: Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear. Use an approved/certified respirator or equivalent. Avoid contact with eyes and skin. Do not breathe in fumes. Refer to Section 8 for personal protective equipment to be worn during containment and clean-up of a spill involving this product.

Emergency procedures: Alert firefighting personnel, evacuate unprotected personnel and animals.

Environmental Precautions: Prevent spilled product from entering sewers, waterways or ground water. This product is classified as very toxic to aquatic organisms with long-term adverse effects in the aquatic environment. Any spillages or uncontrolled discharges into watercourses should be reported immediately to the police and the Department of Water/Environmental Affairs.

Methods and Materials for Containment: Ensure adequate ventilation. DO NOT USE WATER AT ANY TIME DURING CLEAN UP. Prevent entry into drains, watercourses, or confined areas. Contain spilled material if possible. Collect in suitable and properly labelled containers.

Methods and Materials for Clean-up: Ensure adequate ventilation. DO NOT USE WATER AT ANY TIME DURING CLEAN UP. Damaged containers should be transferred to a dry metal container and immediately sealed and properly labelled as aluminium phosphide. Follow all label instructions for disposal of residual material and/or empty containers. Do not place spilled material back in original container. Do not re-use spilled material. Do not flush spilled material or washings into drains or waterways. See section 13 for disposal considerations.

7. HANDLING AND STORAGE

Handling:

Precautions for safe handling: Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking, and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not get in eyes or on skin or clothing. Use only outdoors or in a well-ventilated area. Keep away from any possible contact with water because of violent reaction and possible flash fire.

General occupational hygiene: Handle in accordance with good industrial hygiene and safety practice. Do not eat drink or smoke when handling this product.

Storage:

Conditions for safe storage: Keep under lock and key and out of reach of unauthorised persons, children and animals. Store in its original, labelled container, tightly closed, in an isolated, dry, cool and well- ventilated area. Avoid excess heat. Not to be stored next to foodstuffs, feed and water supplies. Avoid cross contamination with other pesticides and fertilisers. Avoid creating and breathing dust/fume/gas/mist/vapors/spray.

Incompatible substances and mixtures: Refer to product label.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits:

Components	Exposure limits	Type of exposure limit	Source
Hydrogen phosphide	0.3 ppm	Not specified	www.osha.gov
Ammonia	50 ppm	Not specified	www.osha.gov

Engineering Controls: It is essential to provide adequate ventilation. The measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure. Local Exhaust: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OELs or other specified exposure limits. Local exhaust ventilation is preferred. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire, and other applicable regulations.

Personal Protective Equipment:

Respiratory Protection: Respiratory protection is required; use an approved air-purifying respirator.

Hand Protection: The use of chemically protective gloves is recommended to prevent against skin contact. Examples of preferred glove barrier materials include Nitrile/butadiene rubber, Polyethylene, Ethyl vinyl alcohol laminate, Polyvinyl alcohol, Polyvinyl chloride.

Eye Protection: The use of chemical safety goggles is recommended to prevent against eye contact. Contact lenses are not protective eye devices.

Skin and Body Protection: Employee must wear appropriate protective clothing; boots, hat and equipment to prevent repeated or prolonged skin contact with this substance.

Emergency eyewash: Where there is any possibility that an employee's eyes may be exposed to this substance; the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.

Environmental exposure controls: Prevent product from entry into sewers and water courses.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Sachets
Colour	White
Odour	Garlic or carbide
Odour threshold	No data available
pH	6.7
Melting point / freezing point (° C)	No data available
Boiling point (° C)	Aluminium Phosphide: > 1000 °C; Phosphine Gas: 87.7 °C.
Flash point (° C)	>62°C
Evaporation rate	No data available
Flammability	Combustible Liquid
Upper /lower flammability limits	No data available
Vapour pressure	Aluminium Phosphide 0mm Hg; Phosphine Gas 40mm HG
Vapour density	No data available
Relative density (25°C)	1.116
Water solubility (g/l) at 20°C	Reacts chemically with water or dilute acids to liberate
Partition coefficient: n-octanol/water partition coefficient	No data available
Auto-ignition temperature (° C)	No data available
Decomposition temperature (° C)	No data available
Viscosity, dynamic (mPa s)	No data available
Explosive properties	Can form an explosive mixture in air
Oxidising properties	No data available
Explosive limits	Product itself is not an explosive, however phosphine gas is explosive under certain conditions

10. STABILITY AND REACTIVITY

Chemical Stability: The product is stable for two years at ambient temperature and pressure, under normal storage and handling conditions. Avoid storage under extreme temperatures and conditions. Store below 50 °Preferably below 30 °C, and not for prolonged periods in direct sunlight.

Reactivity: None known.

Possibility of Hazardous Reactions: Heating produces highly toxic fumes of phosphorus oxides. Can react vigorously upon contact with oxidizing agents.

Conditions to Avoid: Extreme heat or exposure to flames. Avoid any sources of moisture.

Incompatible Materials: Avoid water, dilute mineral acids, dilute or concentrated hydrochloric acid: can cause Aluminium phosphide to decompose in a violent reaction into extremely flammable and toxic hydrogen phosphide. Avoid water, dilute mineral acids, dilute or concentrated hydrochloric acid.

Hazardous Decomposition Products: Releases toxic fumes on exposure to moist air, water, or acids. Decomposes to produce formation of hydrogen phosphide gas, ammonia gas and carbon dioxide.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

Calculated according to GHS:

Acute Oral LD_{50} (rat): > 8 mg/kg

Acute Dermal LD_{50} (rat): > 535 mg/kg

Acute Inhalation LC_{50} (rat, 4 hr): >0.0089 mg/ℓ air.

Skin Irritation: Not classified.

Eye Damage/Irritation: Causes serious eye damage

Skin Sensitization: Not classified.

Respiratory Sensitization: Not classified.

Reproductive cell mutagenicity: Not classified.

Carcinogenicity: Not classified.

Reproductive toxicity: Not classified.

Specific target organ toxicity – single exposure: Not classified.

Specific target organ toxicity – repeated exposure: Not classified.

Aspiration hazard: Not classified.

Chronic Effects (other targets e.g. developmental): Not classified

12. ECOLOGICAL INFORMATION

The product is classified as a marine pollutant.

ECOTOXICITY DATA:

Active ingredient: Aluminium phosphide CAS No. 20859-73-8

Fish	
LC_{50} (96 hr)	9.65 µg/ℓ (rainbow trout)
Daphnia	
LC_{50} (48 hr)	No data available
Algae	
Static test EC_{50} (72h)	No data available
Birds	

Acute oral LD_{50}	No data available
Dietary LC_{50} 8 days	No data available

Bees

Toxicity to bees LD_{50} (oral)	0.24 µg/bee
Toxicity to bees LD_{50} (contact)	No data available

Worms

LC_{50} (14d)	664 mg/kg soil (*Eisenia fetida*)

Biodegradability: Aluminium phosphide breaks down rapidly in the presence of water to form a gaseous product, resulting in a non-persistent profile in the environment. In air, it has a DT_{50} of approximately 5 hours under photolytic conditions and about 28 hours in the dark. It is also rapidly degraded in soil.

Bioaccumulation: No significant potential for bioaccumulation is expected, as the compound decomposes rapidly to gaseous products that do not persist in biological systems.

Mobility: The substance is considered non-mobile in soil because it undergoes immediate hydrolysis upon contact with moisture, releasing a gaseous product that escapes to the atmosphere rather than leaching through the soil profile.

13. DISPOSAL CONSIDERATION

Pesticide Disposal: Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product cannot be reused or re-processed. Never pour untreated waste or surplus product into public sewers or where there is any danger of run-off or seepage into water systems. Do not contaminate rivers, dams or any other water sources with the product or used containers. Comply with local legislation applying to waste disposal. The product may be taken to a registered waste disposal site or incineration plant.

Package Product Wastes: Emptied containers retain vapour and product residues. Observe all labelled safeguards until container is cleaned, reconditioned or destroyed. Thereafter, rinse the container three times with a volume of water equal to a minimum of one third of that of the container. Puncture the triple rinsed container and dispose of via an approved collector or recycler (www.croplife.co.za). Do not bury, burn or donate the container to any other parties that may use it as a container for food or beverages.

14. TRANSPORT INFORMATION

UN Number	1397
Road Transport ADR/IRD:	
Class:	4.3 (6.1)
Packaging group:	I
UN proper Shipping Name:	ALUMINIUM PHOSPHIDE
Maritime Transport IMDG/IMO:	
Class:	4.3 (6.1)
Packaging group:	I
UN proper Shipping Name:	ALUMINIUM PHOSPHIDE
Marine Pollutant (Y/N):	Yes
Air Transport IATA/ICAO:	
Class:	9
Packaging group:	III
UN proper Shipping Name:	ALUMINIUM PHOSPHIDE

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation for the mixture:

Relevant information regarding authorization: Occupational Health and Safety Act 1993. Regulation for Hazardous Chemical Agents, 2021. UN Recommendations on the Transport of Dangerous Goods Model Regulations Rev. 21 (2019), Globally Harmonized System of Classification and Labelling of Chemicals (GHS) Rev 8, 2019.

Relevant information regarding restrictions: None.

EU regulation: Regulation EC1272/2008 (EU-GHS/CLP)

Other national regulations: National Road Traffic Act, 1996 (ACT NO. 93 of 1996). SANS 10228:2012- The identification and classification of dangerous goods for transport by road and rail modes. National Environmental Management Waste Act 59 of 2008.Act 36 of 1947 of the Republic of South Africa. This product is registered under it is a violation of South African law to use this product in any manner inconsistent with its approved labelling. Read and follow all label directions

Chemical Safety Assessment carried out? No

16. OTHER INFORMATION

Note: Read and understand all the information on the product label before using the product.

Other hazard statements, abbreviations and explanations:
H260: In contact with water releases flammable gases which may ignite spontaneously.
H300: Fatal if swallowed.
H311: Toxic in contact with skin.
H318: Causes serious eye damage.
H330: Fatal if inhaled.
H440: Very toxic to aquatic life.

IATA: International Air Transport Association.
IBC: International Bulk Chemical.
ICAO: International Civil Aviation Organization.
IMDG: International Maritime Dangerous Goods
IMO: International Maritime Organization.
LD50 value: The median lethal dose or the amount of a toxic agent that is sufficient to kill 50 percent of a population within a certain period of time.
OEL/RL: Occupational exposure limit-recommended limit.
TWA: Time-weighted average – The average exposure over a specified period, usually a nominal eight hours.
ST/STEL: Short-term exposure limits.

Disclaimer: The information on this sheet is not a specification; it does not guarantee specific properties. The information is intended to provide general guidance as to health and safety based upon our knowledge of the handling, storage and use of the product. It is not applicable to unusual or non-standard uses of the product, nor where instructions or recommendations are not followed.
All information is given in good faith but without guarantee in respect of accuracy, and no responsibility is accepted for errors and omissions or the consequence thereof.

END OF DOCUMENT

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For detailed information on revisions, contact the registration holder.