

# Safety Data Sheet (SDS) Aluminium Phosphide Sachets

According to UN GHS 8th Ed

Revision Date: 17/05/2022

First print date: 01/09/2019

Version: 1.1

## SECTION 1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY/UNDERTAKING

### Product identifier:

**Identification as on the label/Trade name:** Aluminium Phosphide Sachets

**Common name:** Aluminium phosphide (fumigant) 560 g/kg

### Relevant identification uses of the substance and uses advised against:

**Identified uses:** Fumigant

**Uses advised against:** Use only as directed.

### Details of the supplier of the Safety Data Sheet:

Enviro Bio-Chem (Pty) Ltd, 44 Kerk Street,  
Lichtenburg, North West, South Africa, 2740

### Details of the Registration Holder:

RT Chemicals CC, 44 Kerk Street,  
Lichtenburg, North West, South Africa, 2740

### Contact Details:

Telephone: +27 87 231 7261

Fax: 086 541 7948

Website: www.envirobiochem.co.za

### Emergency telephone numbers:

**24 Hour Emergency Number: Bateleur: +27 83 123 3911**

Griffon Poison Information Centre: +27 82 446 8946

Poisons Information Helpline: 0861 555 777

Tygerberg Hospital: +27 21 931 6129

## SECTION 2. HAZARD IDENTIFICATION

### Classification of the substances or mixture

**The mixture is classified according to SANS 10234:2019, Regulation EC 1272/2008 [EU-GHS/CLP]**

Hazard classes/Hazard categories	Hazard statement
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

*For full text of H statements see section 16*

### 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.

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## Label elements



## Hazard pictograms

**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

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## SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

**Substance/Mixture:** Mixture

**Ingredients:**

Substance name (IUPAC)	CAS Number.	Concentration % by weight	Classification EC1272/2008
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.

## SECTION 4. FIRST AID MEASURES

**Description of first aid measures:**

**In case of inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if you feel unwell.

**In case of skin contact:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Seek medical attention immediately.

**In case of eye contact:** Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

**In case of ingestion:** Immediately transfer patient to nearest hospital or medical centre, warning by telephone of the estimated arrival time so that the start of treatment is not delayed. Do NOT induce vomiting unless directed to do so by medical personnel. DO NOT give water (potential additional formation of phosphine gas) Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt, or waistband.

**Most important symptoms and effects, both acute and delayed:**

**Inhalation:** May be fatal if inhaled.

**Ingestions:** May be fatal if swallowed.

**Skin contact:** May be toxic in contact with skin.

**Eye contact:** Hazardous in case of eye contact (corrosive).

Aluminum phosphide fumigant products react with moisture from the air, acids, and many other liquids to release phosphine gas (hydrogen phosphide, PH<sub>3</sub>). 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 air. 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.

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## Indication of any immediate medical attention and special treatment needed:

Treat symptomatically and supportively as and when required.

## SECTION 5. FIRE FIGHTING MEASURES

### Extinguisher media:

**Suitable** extinguisher media: Sand, Carbon dioxide. Dry extinguishing media

**Small Fire:** Extinguish small fires with sand, carbon dioxide, dry extinguishing media

**Large Fire:** Carbon dioxide, dry extinguishing media

**Unsuitable** extinguishing media: DO NOT use water, or foam.

### Special hazards arising from the mixture:

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.

**Hazardous decomposition products in case of fire:** Refer to Section 10: Stability and Reactivity.

### Advice for fire-fighters:

Aluminum phosphide is not flammable by itself. However, it reacts readily with water to produce phosphine gas (Hydrogen phosphide, PH<sub>3</sub>) 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, PH<sub>3</sub>) 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.

## SECTION 6. ACCIDENTAL RELEASE

### Personal precautions, protective equipment, and emergency procedures:

Evacuate the area immediately. May be fatal by inhalation. Avoid contact with eyes and skin. 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 recommended personal protective equipment. Evacuate unnecessary personnel.

### Environmental precautions:

Stop leak if without risk. Do not touch spilled material. Prevent entry into drains, watercourses, or confined areas. dike if needed.

If the product contaminates public water, inform appropriate authorities immediately in accordance with local regulations.

Dispose in a safe manner in accordance with local/national regulations.

### Methods for containment and cleaning up:

**For small spills :** Ensure adequate ventilation. DO NOT USE WATER AT ANY TIME DURING CLEAN UP.

Contain spilled material if possible. Collect in suitable and properly labelled containers.

**For large spills:** Ensure adequate ventilation. DO NOT USE WATER AT ANY TIME DURING CLEAN UP. Prevent entry into drains, watercourses, or confined areas. Damaged containers should be transferred to a dry metal container and immediately sealed and properly labeled as aluminum phosphide. Follow all label instructions for disposal of residual material and/or empty containers.

### Reference to other sections:

See section 7 for information on safe handling.

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See section 8 for information on personal protection equipment.

See section 13 for information on disposal.

## SECTION 7. HANDLING AND STORAGE

### 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.

**Protective measures:** Observe directions on label and instructions for use.

**Advice on general occupational hygiene:** Do not eat drink or smoke when handling this product.

### Conditions for safe storage, including incompatibilities:

Store product in a segregated and approved area. Keep container in a cool, dry, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid creating and breathing dust/fume/gas/mist/vapors/spray

### Specific end uses:

Use as directed. Use original container.

## SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Control parameters:

Components	Permissible Exposure Limits PEL (TWA)	Threshold Limit Value TLV (TWA)
Hydrogen Phosphide	0.3 ppm	1.0 ppm
Ammonia	50 ppm	35 ppm

### Exposure control:

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. A Risk Assessment should be conducted before handling is to commence to determine specific exposure control.

**Appropriate engineering controls:** Provide exhaust ventilation or other engineering controls. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Hygiene measures:** Wash hands, forearms, and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

**Eye/face protection:** Use safety glasses. If there is a potential for exposure to particles which could cause eye discomfort wear chemical goggles.

**Hand protection:** Use chemical resistant gloves. Examples of preferred glove barrier materials include Nitrile/butadiene rubber, Polyethylene, Ethyl vinyl alcohol laminate, Polyvinyl alcohol, Polyvinyl chloride.

**Body protection:** Appropriate impervious clothing is required to prevent skin contact with the product.

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

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

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic 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	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

## SECTION 10. STABILTY AND REACTIVITY

### Reactivity:

The product is stable under normal conditions.

### Chemical stability:

Stable under normal storage conditions for 2 years. Stable when dry. Avoid moist air

### Possibility of hazardous reactions:

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

### Conditions to avoid:

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:

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

## SECTION 11. TOXICOLOGICAL INFORMATION

**Toxicokinetics, metabolism and distribution:** No data available

**Information on toxicological effects:**

**Assessment of acute toxicity:**

The product has not been tested. The data reported is for the main ingredients in the mixture.

<b>Aluminium Phosphide CAS No. 20859-73-8</b>	
<b>Acute toxicity:</b>	
Acute Oral LD50 (rat - male)	5 mg/kg
Acute Dermal LD50 (rat):	300 mg/kg
Acute Inhalation LC50 - 4 h (rat)	0.005 mg/l
Skin irritation/ corrosion	No data available
Eye damage / irritation	No data available
Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
Specific Target Organ Toxicity STOT single exposure	No data available
Specific Target Organ Toxicity STOT repeated exposure	No data available
Aspiration hazard	No data available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

<b>Ammonium carbamate CAS No. 1111-78-0</b>	
<b>Acute toxicity:</b>	
Acute Oral LD50 (rat - male)	681 mg/kg
Acute Dermal LD50 (rat):	No data available
Acute Inhalation LC50 - 4 h (rat)	No data available
Skin irritation/ corrosion	Skin irritant
Eye damage / irritation	Risk of serious eye damage
Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
Specific Target Organ Toxicity STOT single exposure	No data available
Specific Target Organ Toxicity STOT repeated exposure	No data available
Aspiration hazard	No data available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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**SECTION 12. ECOLOGICAL INFORMATION**

Aluminium Phosphide CAS No. 20859-73-8	
<b>Toxicity</b>	
Aquatic Toxicity Fish LC <sub>50</sub> (96 hr)	Rainbow trout 4.1 µg/l
Aquatic Toxicity Daphnia EC <sub>50</sub> (48 hr)	No data available
Toxicity to algae – static test ErC <sub>50</sub> (96h)	No data available
<b>Persistence and degradability</b>	
Persistence and degradability	Aluminum phosphide will breakdown spontaneously in the presence of water to form a gaseous product, and so it is non-persistent and non-mobile in the soil environment.
<b>Bioaccumulation potential</b>	No data available
<b>Mobility in soil</b>	Non mobile in soil
<b>Other adverse effects</b>	No data available

Ammonium carbamate CAS No. 1111-78-0	
<b>Toxicity</b>	
Aquatic Toxicity Fish LC <sub>50</sub> (96 hr)	37 mg/l Pimephales promelas (fathead minnow)
Aquatic Toxicity Daphnia semi static EC <sub>50</sub> (96 hr)	63 mg/l Daphnia magna (Water flea) -
Toxicity to algae – static test EC <sub>50</sub> (96h)	129.1 mg/l EC <sub>50</sub> - Desmodesmus subspicatus (green algae)
Toxicity to bacteria EC <sub>50</sub> (3h)	500 – 723 mg/l
<b>Persistence and degradability</b>	No data available
<b>Bioaccumulation potential</b>	No data available
<b>Mobility in Soil</b>	No data available
<b>Result of PBT and vPvB assessment</b>	No data available
<b>Other adverse effects</b>	Harmful to aquatic life

**SECTION 13. DISPOSAL CONSIDERATIONS**
**Waste treatment methods:**
**Product:**

Keep out of drains, sewers, ditches, and waterways. Refer to container label for disposal information. Treat as hazardous waste and dispose of in accordance with local/ regional/ national/ international regulations.

**Container:**

Refer to container label for disposal information. Triple or pressure rinse empty containers. Pour rinse water into spray tank. Dispose of as hazardous waste. Do not contaminate water when disposing of rinse water. Dispose of using an approved waste disposal service provider. Follow all local/ regional/ national/ international regulations.

**SECTION 14. TRANSPORT INFORMATION**

UN Number	1397
UN proper shipping name	ALUMINIUM PHOSPHIDE
Transport hazard class	4.3 (6.1)
Packaging group	1
Marine pollutant	Yes



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## SECTION 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:

**EU regulations:** Regulation EC 1272/2008 [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

## SECTION 16. OTHER INFORMATION

### Indication of changes:

Classification according to SANS 10234:2019, Regulation EC 1272/2008 [EU-GHS/CLP]

GHS aligned – all sections

### Relevant H statements (number and full text):

Aquatic acute toxicity (Category 1): Very toxic to aquatic life

H260 In contact with water releases flammable gases which may ignite spontaneously

### Training instructions:

Use as indicated on the label, special training may be required for application.

### Further information:

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.

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.