Material Safety Data Sheet

ALUMINIUM PHOSPHIDE 56%TC

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IENTIFICATION

Chemical product name: ALUMINIUM PHOSPHIDE 56%TC

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SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

Formulation Type: Tablet

Active Ingredients: Aluminium Phosphide

Chemical Abstracts name: aluminum phosphide

IUPAC name: aluminum phosphide

CAS NO. 20859-73-8

Molecular Formula: AlP

Molecular Weight: 58.0

Other ingredients determined not to be hazardous

INGREDIENT	CAS NO	PROPORTION
Aluminium Phosphide	*20859-73-8*	56% Min
Ammonium Carbonate	*1111-78-0*	5% Max
Inert ingredients	Not available	40% Max

SECTION 3 - HAZARDS IDENTIFICATION

Emergency overview: Dark grey to yellowish solid, with garlic or carbide odor. Aluminium phosphide isnot absorbed dermally; the main routes of exposure are through ingestion and inhalation. It is highly toxic via both these routes. 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 if swallowed, toxic if inhaled, irritating to eyes, respiratory system and skin.

This product is formulated with 56% Min aluminum phosphide and also contains ammonium carbamate and inert ingredients. Ammonium carbamate releases ammonia and carbon dioxide which serve as a warning agent. Pure Phosphine gas is odorless; the garlic odor is due to a contaminant. Since the odor of phosphine may not be detected under some circumstances, the absence of a garlic odor does not mean that dangerous levels of hydrogen phosphide gas are absent.

Routes of entry: Aluminium phosphide is not absorbed dermally; the main routes of exposure are through ingestion and inhalation.

Health hazards:

Inhalation: Significant inhalation exposure is considered to be unlikely. Available data shows that this product is toxic, but symptoms are not available. In addition product is an inhalation irritant. Symptoms may include headache, irritation of nose and throat and increased secretion of mucous in the nose and throat. Other symptoms may also become evident, and may have fatal consequences.

Skin Contact: Available data indicates that this product is not harmful. It should present no hazards in normal use. However 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.

Eye Contact: Short term exposure: Exposure via eyes is considered to be unlikely. This product may be absorbed through the eyes in toxic quantities. Symptoms are similar to those via other exposure routes. In addition 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.

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.

This product is unlikely to cause any irritation problems in the short or long term.

SECTION 4 - FIRST AID MEASURES

General: Have the product container, label or Material Safety Data Sheet with you when going for treatment. Tell the person contacted the complete product name, and the type and amount of exposure.

Describe any symptoms and follow the advice given.

Skin contact: Quickly and gently brush away excess solids. Wash gently and thoroughly with warm water (use nonabrasive soap if necessary) for 20 minutes or until product is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts) and completely decontaminate them before reuse or discard. If irritation persists, repeat flushing and seek medical attention.

Eye contact: Quickly and gently brush particles from eyes. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 20-30 minutes, by the clock, while holding the eyelid(s) open. Neutral saline solution may be used as soon as it is available. Do not interrupt flusing. If necessary, keep emergency vehicle waiting (show paramedics this MSDS and take their advice). Take care not to rinse contaminated water into the unaffected eye or onto face. If irritation persists, repeat flushing. Call a Poisons Information Centre or a doctor urgently.

Ingestion: If swallowed, rinse mouth thoroughly with water and contact a Poisons Information Centre, or call a doctor at once. Give activated charcoal if instructed.

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.

Note to physician: Treat symptomatically.

Antidote: Ensure fresh air and induce vomiting with 0.25 % copper sulphate solution. To control convulsions use a diazepam intravenously is recommended. For adults, 510 mg every 45 hours & children 0.1 mg every 45 hours. In case of pulmonary odema give hypertonic glucose solution intravenously.

SECTION 5 - FIRE FIGHTING MEASURES

Flash point: Not flammable by itself.

Flammable limits: Product itself not explosive however phosphine gas has LEL of 1.8 % v/v.

Autoignition temperature: Not determined.

Hazardous combustion products: Fires involving phosphine or metal phosphides will produce phosphoric a acid.

Extinguishing media: Suffocate flames with sand, CO2 or dry extinguishing powder.
Media to be avoided: Do not use water.

Fire-fighting instructions: Water must not be allowed to come into contact with the product since a dangerously reaction is likely to take place. Ensure that no spillage enters drains or water courses.

Protective equipment for firefighters: When fighting fires involving significant quantities of this product, wear a fully encapsulated splash suit complete with self contained breathing apparatus.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

ersonal precautions: A spill, other than incidental to application or normal handling or punctured containers can produce high level of gas, and therefore, attending personnel must wear n self contained breathing apparatus or its equivalent when the concentration of phosphine gas is unknown. Wear dry gloves when in contact with the powdered formulation is likely. Do not flush spillage down the drain with water. Do not use water at any time to clean the spill. Water in contact with aluminium phosphide will rapidly accelerate to give phosphine gas.

Method for cleaning up: For small amount of spillage spread out the material on ground to be deactivated by atmospheric mositure If containers have been punctured or damaged causing leak, the product may be immediately used, the containers may be used temporarily repaired aluminium tape, the fumigant may be transferred from the damage containers to sound metal containers which should be sealed and properly labeled as aluminium phosphide. See the deactivation and disposal procedure in the manual. Transport the damaged containers to an area suitable for pesticide storage for inspection.

SECTION 7 - HANDING AND STORAGE

Handling: Read the label before use. Keep out of reach of children. Handle only in well ventilated areas.

Storage: Containers should be stored in a dry, ventilated area, away from heat and under lock and key. Post as a pesticide storage area. Do not contaminate with water, food or feed by storing pesticides in the same areas used to store these commodities. Do not store in buildings where humans or domestic animals reside.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL, PROTECTION

Exposure limits: No exposure limits have been established for this material.

Engineering controls: No engineering controls are required for the normal use of this product. Follow label instruction.

Personal protective equipment (PPE):

Ventilation: No special ventilation requirements are normally necessary for this product. However make sure that the work environment remains clean and that dusts are minimised. If air is moist, then a respirator must be worn to guard against phosphine gas.

Respiratory protection: 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.

Skin protection: Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered.

Eye protection: Your eyes must be completely protected from this product by splash resistant goggles with face shield. All surrounding skin areas must be covered. Emergency eye wash facilities must also be available in an area close to where this product is being used.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Dark grey to yellowish solid.

Odor: Garlic or carbide.

Vapour pressure: Aluminium Phosphide 0 mm Hg, Phosphine gas 40 mm Hg @ -129.4 ºC.

Solubility: Reacts chemically with water or dilute acids to liberate phosphine gas.

Specific gravity: Aluminium Phosphide 2.55, Phosphine 1.17.

pH: Not relevant.

Flash point: Not flammable by itself.

Lower explosive limit: Product itself not explosive however phosphine gas has LEL of 1.8 % v/v.

SECTION 10 - STABILITY AND REACTIVITY

Chemical stability: This product is stable to most chemical reactions except hydrolysis to form phosphine and aluminium hydroxide.

Conditions to avoid: Moist air. This product should be kept in a cool place, preferably below 30°C. Keep containers tightly closed. Containers should be kept dry.

Hazardous decomposition: Will react with moist air, water, acids and some other liquid to form toxic and flammable gases.

Incompatible materials: Avoid contact with water and oxidizing agents.

Hazardous reactions: Hazardous polymerization will not occur. Reaction with moisture, acid will liberate toxic flammable gases.

SECTION 11 - TOXICOLOGICAL INFORMATION

Acute toxicity:

Acute oral toxicity: LD50 =8.7 mg/kg for Aluminium Phosphide.
Phosphine gas produced from aluminum phosphide has been tested for acute toxicity by the inhalation route of exposure. No significant exposure to phosphine gas are expected via the oral or dermal routes.
Results of the acute inhalation toxicity study found that the LC50 is greater than 11 ppm (approximately 0.014 mg/L), the highest dose tested.

Irritant properties:
Skin: Irritating to skin.
Eye: Irritating to eyes.

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

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

Genetic effects/Mutagenicity: No evidence was available regarding the ability of Aluminium phosphide or phosphine to cause mutations or increase the mutation rate.

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.

SECTION 12 - ECOLOGICAL INFORMATION

The following information is for the active ingredient, Aluminium Phosphide.

Ecotoxicity:

Birds Acute oral LD50: 49 mg/kg for Japanese quail.

Fish LC50 (96 h): 0.0097 mg/l for Oncorhynchus mykiss.

Daphnia EC50 (48 h): 0.27 mg/l for Daphnia magna.

Algae EC50 (72): 0.058 mg/l for Pseudokirchneriella subcapitata.

Bees LD50 (oral): 0.24 mg/bee.

Earthworm: LC50 (14 days): 663.5 mg/kg.

Persistence and degradability: 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.

Mobility in soil: Non-mobile in the soil

SECTION 13 - DISPOSAL CONSIDERATIONS

Instructions concerning the disposal of this product and its containers are given on the product label. These should be carefully followed. Do not allow water to contact this product.

SECTION 14 - TRANSPORT INFORMATION

UN Number: 1397

UN Proper shipping name: Aluminium phosphide pesticide

Subsidiary risk: 6.1

Packing group: I

SECTION 15 - REGULATORY INFORMATION

Hazard symbols:

F Highly flammable
T+ Very toxic
N Dangerous for the environment

Risk phrases:

R23 Toxic by inhalation.
R28 Very toxic if swallowed.
R32 Contact with acids liberates very toxic gas.
R15/29 Contact with water liberates toxic, highly flammable gas.
R36/37/38 Irritating to eyes, respiratory system and skin.

Safety phrases:

S14 Keep away from water or any product containing water.
S20 When using, do not eat or drink.
S22 Do not breathe dust.
S38 In case of insufficient ventilation, wear suitable respiratory equipment.
S24/25 Avoid contact with skin and eyes.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

SECTION 16 - OTHER INFORMATION

Disclaimer: Choice Chemicals Ltd.. provides the information contained herein in good faith but makes no

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