



# Material Safety Data Sheet

## PHOSFUME2® Tablets/PHOSFUME2® Pellets

### Section 1. Product and Company Identification

**Product Name:** PHOSFUME2® Tablets/PHOSFUME2® Pellets  
**Product Code:** A-F-2PH-PELLT-21X10K and A-F-2PH-TABLT-14X15K  
**Effective Date:** May 5, 2011

**Manufacturer Information:** Douglas Products and Packaging Company  
1550 East Old 210 Highway  
Liberty, Missouri 64068  
Information Phone: (816) 781-4250  
Emergency Phone: 1-800-424-9300 CHEMTREC

**AN APPROVED APPLICATOR'S MANUAL ACCOMPANIES THESE PRODUCTS; REFER TO THE APPLICATOR'S MANUAL FOR DETAILED PRECAUTIONS, RECOMMENDATIONS AND DIRECTIONS OF USE.**

### Section 2. Ingredients and Hazards Identification

Hazardous Components		Occupational Exposure Limits			
Component	CAS Number	OSHA PEL	ACGIH TLV	Weight Percent	Section 313
Aluminum phosphide	20859-73-8	NE	NE	>60	Yes
Ammonium carbonate	1111-78-0	NE	NE	>20	No
Other inert ingredients	NE	NA	NA	<20	

This product contains the following EPCRA Section 313 chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372).

Phosfume® tablets and pellets contain aluminum phosphide which reacts with water to produce phosphine gas (PH<sub>3</sub>) or hydrogen phosphide. The ammonium carbonate releases ammonia (NH<sub>3</sub>) and carbon dioxide (CO<sub>2</sub>) gases.

PHOSFUME2® Tablets Fumigant EPA REG. NO. 1015-76  
PHOSFUME2® Pellets Fumigant EPA REG. NO. 1016-74

#### Potential Acute Health Effects: DANGEROUS WHEN WET, TOXIC GAS EMITTED

*Eyes:* Wash eye out holding open the eyelids, removing contacts for 15 minutes. Seek medical attention.

*Skin:* Brush or shake material. Remove contaminated clothing and dispose sealed in a thick plastic bag that is sealed. Check regulations for disposal.

*Inhalation:* Move person to fresh air. Contact physician immediately and the poison control center. If person not breathing call 9-1-1 immediately. If the person vomits, if you start rescue breathing, you may be contaminated with the toxic material; suggest use supplied air.

*Ingestion:* Immediate medical attention is required. DO NOT INDUCE VOMITING as off gas phosphine that becomes a secondary contaminate

NOTE TO PHYSICIAN: Aluminum phosphide reacts with moisture to release hydrogen phosphide (Phosphine gas). Symptoms of severe poisoning may occur within a few hours up to several days. Phosphine poisoning may result in pulmonary edema, liver elevated serum GOT, LDH and alkaline phosphates, reduced prothrombin, hemorrhage and jaundice and kidney hematuria and anuria. Pathology is characterized by hypoxia.

### Section 3. Hazard Identification

#### EMERGENCY OVERVIEW

**ALUMINUM PHOSPHIDE(AIP)- REACTSWITH MOISTURE AND WATER TO PRODUCE PHOSPHINE GAS (PH<sub>3</sub>)**  
**DANGER, TOXIC, WHEN GAS FORMED MAY SMELL LIKE GARLIC, SINCE ODOR MIGHT NOT BE DETECTED.**

**WHEN CONTAINER IS OPENED, THE CONTENTS MAY REACT WITH MOISTURE IN THE AIR AND CAUSE A RELEASE OF PHOSPHINE GAS WHICH WILL SPONTANEOUSLY BURN IN AIR.**

**INGESTION OF TABLETS, PELLETS OR DUST WILL HARMFUL OR FATAL**

**DELAYED OR OTHER HEALTH EFFECTS:**  
**PHOSPHINE POISONING MAY TAKE UP TO SEVERAL DAYS.**

### Section 4. First Aid Measures

**BE AWARE THAT ALUMINUM PHOSPHIDE REACTS WITH MOISTURE, SO SECURE PPE BEFORE THE RESCUE.**

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**Eye Contact:** Flush eyes with water immediately while holding eyelids open. Remove contacts, if worn, after initial flushing and continue flushing for at least 15 minutes. Seek medical attention if irritation persists.

**Skin Contact:** Brush off your clothing and skin! Remove contaminated clothing and place into plastic bag and seal for disposal. Use soap and water to remove from the skin.

**Inhalation:** Move to fresh air. If not breathing, give rescue breathing. If breathing is difficult give oxygen. Seek medical attention if breathing is still difficult.

**Ingestion:** If swallowed, get medical attention immediately. DO NOT INDUCE VOMITING. Never give anything by mouth to an unconscious person.

### Section 5. Fire Fighting Measures

**Flash Point:** Aluminum phosphide nit flammable. Phosphine gas burns spontaneously in air above or near the Flammability Limits: LEL 1.8% UEL NA

**Fire Fighting Media:** Suffocate flames with sand, carbon dioxide, or dry extinguishing material.

**Special Fire Fighting Procedures:** DO NOT USE WATER! First responders need to wear full-bunker gear with SCBA, never enter a confined space unless fully protected with proper personal protective equipment (PPE).

### Section 6. Accidental Release Measures

**MAKE SURE THAT YOU HAVE READ THE APPLICATOR'S MANUAL! REMOVE ALL SOURCES OF IGNITION. PROVIDE ADEQUATE VENTILATION.**

**Clean-up Procedures:** The use pattern usually precludes disposal. PHOSPHINE gas occupational exposure limit (OEL) is 0.4 mg/m<sup>3</sup>! Wear proper PPE, see section 8.

**Refer to operator's manual to use the "wet" method of deactivation.**

**Spills and Leaks:** Dispose in accordance to local, state or federal regulations.

### Section 7. Handling and Storage

**Handling:** Extreme caution must be used if package is damaged in shipment. Follow the applicator's manual of opening the container away from your face. Wear dry cotton gloves. KEEP AWAY FROM CHILDREN. Do not get into eyes. Do not taste or swallow. Wash thoroughly after handling. Do not breathe vapor or fumes.

**Storage:** KEEP AWAY FROM CHILDREN! STORE IN ORIGINAL LABELED CONTAINER. KEEP IN COOL AND DRY AREAS. MAKE SURE THAT THE CONTAINERS DO NOT PRESSURIZE DUE TO EXTREME heat.

### Section 8. Exposure Control/Personal Protection

**INTRODUCTORY REMARKS: CONSIDER THE POTENTIAL HAZARDS OF THIS PRODUCT OUTLINED IN SECTION 3. USE PROCESS EXPOSURES SUCH AS LOCAL EXHAUST VENTILATION, REDUCED HUMIDITY, REDUCE THE ACCESS TO THE PRODUCT.**

#### Personal Protection:

Occupational exposure limits:	CAS #	OSHA PEL TWA	ACGIH TLV
Hydrogen phosphide	7803-51-2	0.3 ppm	0.3 ppm
Ammonia	7664-41-7	50 ppm	50 ppm
Carbon dioxide	124-38-9	5000 ppm	5000 ppm

**Eyes:** Wear safety goggles or safety glasses to prevent eye contact.

Suggest using single use safety goggles or clean between use!

**Body:** Long sleeve shirts, long pants, socks, rubber boots and dry cotton gloves.

Suggest using as much disposable chemical resistant suit and hat, rubber booties, dry cotton gloves!

**Hands:** Dry cotton gloves(disposable).

**Respiratory:** Wear an approved NIOSH/MESA full face mask respirator that provides protection from this product if phosphine is released.

Suggest that you use disposable approved respiratory with hydrogen phosphide cartridge or properly clean before use and store in a sealed plastic bag.

**Other:** After removal of application clothing. Brush off any dust left on your clothing. Wash your hands, do not eat drink or smoke until you have removed all source of product

### Section 9. Physical and Chemical Properties

<b>Odor</b>	Garlic, decaying fish or odorless	<b>Vapor Pressure</b>	33.5 torr @ 68 °F
<b>Color</b>	Light grey to greenish	<b>% Volatiles by Volume</b>	NA
<b>Physical State</b>	Tablet/pellet	<b>Specific Gravity (H<sub>2</sub>O=1)</b>	2.85 @ 60.1 °F
<b>pH</b>	NA	<b>Solubility</b>	Insoluble in water
<b>Freezing Point</b>	NA	<b>Boiling Point</b>	NA
<b>Vapor Density(air=1)</b>	NA		

### Section 10. Stability and Reactivity

**Chemical Stability:** Considered stable under normal ambient temperatures, except hydrolysis. Aluminum phosphide reacts with moisture to produce hydrogen phosphide gas. Ammonium carbonate produces ammonia and carbon dioxide.

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**Hazardous Decomposition:** Formation of hydrogen phosphide gas, ammonia gas and carbon dioxide.

**Hazardous Polymerization:** Will not occur

**Incompatibility~ Materials to Avoid:** Product will react with strong oxidizing agents, acids or bases.

### Section 11. Toxicological Information

**Aluminum phosphide**

**Acute Oral Toxicity:** LD<sub>50</sub>: 11.5mg/kg

**Acute Dermal Toxicity** LD<sub>50</sub>: >5000mg/kg (1 hour exposure)

**Hydrogen phosphide**

**Acute Inhalation Toxicity** LC<sub>50</sub>: 190 ppm in one hour

**Carcinogenic Effects:** None

**Existing Medical Conditions Aggravated by Exposure:** Exposure to inhalation, may increase respiratory problems and depression of central nervous system.

### Section 12. Ecological Information

**Ecotoxicity:** The product is highly toxic to aquatic organisms; this material should be kept out sewers, drainage systems and all bodies of water. The product is toxic to wildlife.

**Environmental Fate:** This product and the gases produced should be expected to be not to accumulate in the environment. Both hydrogen phosphide and carbon dioxide are heavier than air; therefore they can dissolve in water.

### Section 13. Disposal Considerations

**Waste Disposal Method:** Place spilled tablets/pellets into a sealed container and check regulations for disposal.

**Container Handling and Disposal:** Empty containers still have residue. Use the instructions in the applicator's manual to facilitate proper disposal.

### Section 14. Transport Information

**D.O.T. Classification:** Class division 4.3 - DANGEROUS WHEN WET & Class division 6.1 - Toxic

**Shipping Name:** PHOSFUME2® tablets or PHOSFUME2® pellets

**Technical Shipping Name:** Aluminum phosphide

**UNFIC:** None

**ID Number:** UN1397

**Packaging Group:** I

**Labels:** Class 4.3 & 6.1

**Placarding:** 4.3 - Aluminum Phosphide – PLACARD ANY QUANTITY

If 1000 lbs gross weight is shipped, add placard 6.1

**Proper shipping description for ground:** RQ, UN1397, Aluminum Phosphide, 4.3, 6.1, I, ERG #139, NMFC# 45615, Spill of 100# (45KG) A/P. I.E. 7.9 Cases, Dangerous When Wet, Placard Any Quantity

**If shipped by any other mode of transportation; call Douglas Products and Packaging Inc.**

### Section 15. Regulatory Information

**EPCRA 311/312 Categories:** Immediate (Acute) Health Effects: No

Delayed (Chronic) Health Effects: Yes

Fire Hazard: Yes

Sudden Release of Pressure: Yes

Reactivity: Yes

Right to know classification: Aluminum phosphide is listed in CA, IL, PA, MN, MA, MI, FL and NJ.

CWA: Ammonium carbonate 5000 lbs (4540 kg)

TSCA: Aluminum phosphide

Reportable Quantity (RQ): 100 lbs (45.4 kg)

CERCLA RQ: 100 lbs (45.4 kg)

Section 302 TPQ: 500 lbs (227 kg)

Waste code: RCRA – P Series Waste: P006

Prop. 65: Not listed

WHMIS: Class F (Dangerously reactive material: Class D1, B (Acute lethality)

International inventories: Aluminum phosphide is listed in chemical inventories in: AICS, ECL, EEC, ENCS, EU, Israel, MAC, MAK, MITI,

PICCS, SWISS, Taiwan, USA and UK

Risk Phrases: R15, R28/29, R32, & R50

Safety phrases: S3/9, S14, S30/36, & S45

Abbreviations:

AICS	Australian Inventory of Chemical Substances
CAS #	Chemical Abstract Service Number
°C	Celsius temperature scale
°F	Fahrenheit temperature scale
ECL	Korean Existing Chemicals List

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EEC	European Economic Commission
ENCs	Japanese Existing and New Chemical List
EINECS #	European Inventory of Existing Chemical Substances Number
EU	European Union
(Israel)	2001 proposed list of chemical substances to be regulated under Israel Hazardous Substances Law and Regulations List
MAC	Netherlands
MAK	Germany
MITI	Ministry of International trade and Industry
NA	Not applicable
PEL	Permissible Exposure Limit
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PPE	Personal Protective Equipment
Prop.	Proprietary
NA	Not applicable
ND	Not determined
STEL	Short Term Exposure Limit
SWISS	Giftliste 1
SWISS	Inventory of Notified New Substances
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA	Time Weighted Average
(Taiwan)	List of Toxic Chemical Substances regulated under Taiwan Toxic Chemical Substances Control Act of 1086
USA	United States of America
UK	United Kingdom

### Section 16. Other Information

#### Hazardous Material Information (HMIS)

#### National Fire Protection Association (NFPA)

Health	4	4	Health
Fire	4	4	Fire
Reactivity	2	2	Instability
Personal Protection	X		NA

Health 4 Deadly 3 Extreme Danger 2 Dangerous 1 Slight hazard 0 No hazard  
 Fire 4 < 73 °C 3 < 100 °C 2 < 200 °C 1 > 200 °C 0 Will not burn  
 Reactivity/Instability 4 – May detonate 3 Explosive 2 Unstable 1 Normally stable 0 Stable

#### Disclaimer:

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