

Safety Data Sheet

Revision Date: 8-February-2020

Version 1.2

1. IDENTIFICATION

Product identifier

Product Name PH3 Aluminum Phosphide Fumigant Pellets
PH3 Aluminum Phosphide Fumigant Tablets

Other means of identification

SDS # SDS.PH3 Pellets and Tablets.English.20200208.1.2

Registration Number(s) EPA Reg. No. 1015-74 (Pellets) 1015-76 (Tablets)
UN/ID No UN1397

Recommended use of the chemical and restrictions on use

Recommended Use AN APPROVED APPLICATORS MANUAL ACCOMPANIES THESE PRODUCTS. REFER TO THE APPLICATORS MANUAL FOR DETAILED PRECAUTIONS, RECOMMENDATIONS AND DIRECTIONS OF USE.

Details of the supplier of the safety data sheet**Supplier Address**

Douglas Products and Packaging Company, LLC
1550 East Old 210 Highway
Liberty, MO 64068
Customer Information Number: 800-223-3684

Emergency telephone number

Emergency Telephone 1-844-845-3129 or 1-352-326-7641

2. HAZARDS IDENTIFICATION

This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information.

Appearance Gray to light green solid or dust

Physical state Solid

Odor Garlic, decaying fish or odorless

Classification

| | |
|---|------------|
| Acute toxicity - Oral | Category 2 |
| Acute toxicity - Dermal | Category 3 |
| Acute toxicity - Inhalation (Dusts/Mists) | Category 1 |
| Substances or mixtures which, in contact with water, emit flammable gases | Category 1 |

Signal Word

Danger

Hazard statements

Fatal if swallowed
Toxic in contact with skin
Fatal if inhaled
In contact with water releases flammable gases which may ignite spontaneously

**Precautionary Statements - Prevention**

Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product
 Wear protective gloves/protective clothing/eye protection/face protection
 Do not breathe dust/fume/gas/mist/vapors/spray
 Use only outdoors or in a well-ventilated area
 Wear respiratory protection
 Keep away from any possible contact with water, because of violent reaction and possible flash fire
 Handle under inert gas. Protect from moisture

Precautionary Statements - Response

IF ON SKIN: Wash with plenty of water and soap
 Call a poison center or doctor/physician if you feel unwell
 Remove/Take off immediately all contaminated clothing
 Wash contaminated clothing before reuse
 Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
 Immediately call a poison center or doctor/physician
 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
 Rinse mouth
 In case of fire: Use CO₂, dry chemical, or foam for extinction

Precautionary Statements - Storage

Store locked up
 Store in a well-ventilated place. Keep container tightly closed
 Store in a dry place

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Other hazards

Very toxic to aquatic life

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical name | CAS No. | Weight-% |
|--------------------|-------------|----------|
| Aluminum phosphide | 20859-73-8 | 0-60 |
| Ammonium Carbamate | 506-87-6 | 0-20 |
| Inert ingredients | Proprietary | 0-20 |

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures**General Advice**

DANGER: TOXIC

ALUMINUM PHOSPHIDE (ALP) REACTS WITH MOISTURE AND WATER TO PRODUCE PHOSPHINE GAS (HYDROGEN PHOSPHIDE) (PH₃). When gas forms, may smell like garlic. Since odor might not be detected under certain circumstances, the absence of a garlic odor does not mean that hydrogen phosphide is absent. When container is opened, the contents may react with moisture in the air and cause a release of hydrogen phosphide which may spontaneously burn in air. Ingestion of tablets, pellets or dust will be harmful or fatal.

| | |
|---------------------|--|
| Eye Contact | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for a minimum of 15 minutes or as directed by physician. Call a poison control center or doctor for treatment advice. |
| Skin Contact | IF ON SKIN (or hair): Rinse skin immediately with plenty of water for 15-20 minutes. Remove contaminated clothing, wash thoroughly before reuse. Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages. Call a poison control center or doctor for treatment advice. |
| Inhalation | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If person is not breathing, call 911 or ambulance, begin artificial respiration immediately, preferably mouth-to-mouth, if possible. Immediately call a poison center or doctor/physician. |
| Ingestion | IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Have person sip a glass of water if able to swallow. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. |

Most important symptoms and effects, both acute and delayed

Symptoms Fatal if swallowed. Fatal if inhaled. Toxic in contact with skin.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Aluminum phosphide reacts with moisture to release phosphine gas (hydrogen phosphide) Symptoms of sever poisoning may occur within a few hours up to several days. Aluminum phosphide pellets react with moisture from the air, water, acids and many other liquids to release hydrogen phosphide. Mild exposure by inhalation causes malaise (indefinite feeling of sickness), ringing in the ears, fatigue, nausea and pressure in the chest, which is relieved by removal to fresh air. Moderate poisoning causes weakness, vomiting, and pain just above the stomach, chest pain, diarrhea and dyspnea (difficulty in breathing). Symptoms of severe poisoning may occur within a few hours to several days, resulting in pulmonary edema (fluid in lungs) and may lead to dizziness, cyanosis (blue or purple skin color), unconsciousness, and death. In sufficient quantity, hydrogen phosphide affects the liver, kidneys, lungs, nervous system and circulatory system. Inhalation can cause lung edema (fluid in lungs) and hyperemia (excess of blood in body parts), small perivascular brain hemorrhages and brain edema (fluid in brain). Ingestion can cause lung and brain symptoms but damage to the viscera (body cavity organs) is more common. hydrogen phosphide poisoning may result in (1) pulmonary edema, (2) liver elevated serum GOT, LDH, and alkaline phosphates, reduced prothrombin, hemorrhage, and jaundice (yellow skin color) and (3) kidney hematuria (blood in urine) and anuria (abnormal or lack of urination). Pathology is characteristic of hypoxia (oxygen deficiency in body tissue). Frequent exposure to concentration above permissible levels over a period of days or weeks may cause poisoning. Treatment is symptomatic Pathology is characteristic of hypoxia.

5. FIRE-FIGHTING MEASURES**Suitable Extinguishing Media**

Sand. Carbon dioxide (CO₂). Dry extinguishing media.

Unsuitable Extinguishing Media DO NOT USE WATER.

Specific Hazards Arising from the Chemical

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 combustion products Formation of hydrogen phosphide gas, ammonia gas and carbon dioxide.

Protective equipment and precautions for firefighters

EMERGENCY RESPONDERS: MAKE SURE YOU HAVE READ THE APPLICATORS MANUAL. As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions In case of spill, evacuate the area and remove all ignition sources. Use personal protection recommended in Section 8. Avoid contact with skin, eyes or clothing.

Environmental precautions

Environmental precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up DO NOT USE WATER AT ANY TIME DURING CLEAN UP. Wear gloves when handling aluminum phosphide. Damaged aluminum flasks 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.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing and eye/face protection. Wear respiratory protection. Do not breathe dust/fume/gas/mist/vapors/spray. 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. Handle under inert gas. Protect from moisture. Extreme caution must be used if package is damaged in shipment. Follow the applicators manual of opening the container away from the body.

Conditions for safe storage, including any incompatibilities

Storage Conditions CONSIDER THE POTENTIAL HAZARDS OF THIS PRODUCT OUTLINED IN SECTION 2. Use process exposures such as local exhaust ventilation, reduce humidity, and reduce access to the product. Store in original labeled container. KEEP LOCKED UP AND OUT OF REACH OF CHILDREN. Keep container tightly closed and store in a cool, dry and well-ventilated place. Protect from moisture. Keep away from incompatible materials, extreme heat or open flame.

Incompatible Materials Acids. Bases. Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

None noted.

Appropriate engineering controls

Engineering Controls Apply technical measures to comply with the occupational exposure limits. Showers. Eyewash stations. Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Wear safety goggles or safety glasses to prevent contact. Suggest using single use safety goggles or clean between use. Refer to 29 CFR 1910.133 for eye and face protection regulations.

Skin and Body Protection Long sleeve shirts, long pants, socks, footwear and dry cotton gloves.

Respiratory Protection Wear an approved NIOSH full face mask respirator that provides protection from this product if hydrogen phosphide is released. Suggest that you use disposable approved respiratory mask with hydrogen phosphide cartridge or properly clean before use and store in a sealed plastic bag. Refer to 29 CFR 1910.134 for respiratory protection requirements.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. After removal of application clothing brush off any dust left on your clothing. Wash face, hands and any exposed skin thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

| | | | |
|-----------------------|-----------------------------------|-----------------------|--|
| Physical state | Solid | Odor | Garlic, decaying fish or odorless |
| Appearance | Gray to light green solid or dust | Odor Threshold | Since odor might not be detected under certain circumstances, the absence of a garlic odor does not mean that hydrogen phosphide is absent |
| Color | Gray to light green | | |

| <u>Property</u> | <u>Values</u> | <u>Remarks • Method</u> |
|---|--|-------------------------|
| pH | Not applicable. Product cannot be dispersed or diluted with water | |
| Melting point / freezing point | Not available | |
| Boiling point / boiling range | Boiling point is not achieved as product decomposes before boiling | |
| Flash point | Not available | |
| Evaporation Rate | Not available | |
| Flammability (Solid, Gas) | Not available | |
| Flammability Limit in Air | | |
| Upper flammability or explosive limits | Not available | |
| Lower flammability or explosive limits | Not available | |
| Vapor Pressure | Not available | |
| Vapor Density | Not available | |
| Relative Density | 2.85 | |
| Water Solubility | Insoluble in water | |
| Solubility in other solvents | Not available | |
| Partition Coefficient | Not available | |
| Autoignition temperature | Not available | |
| Decomposition temperature | Not available | |
| Kinematic Viscosity | Not applicable- product is not a liquid | |
| Dynamic Viscosity | Not applicable- product is not a liquid | |
| Explosive Properties | End-use product has no impact explosion characteristics | |
| Oxidizing Properties | Not available | |

10. STABILITY AND REACTIVITY

Reactivity

Product will react with exposure to moisture or water.

Chemical stability

Considered stable under normal ambient temperatures except hydrolysis. Aluminum phosphide reacts with moisture to produce hydrogen phosphide gas. Ammonium carbamate produces ammonia and carbon dioxide.

Possibility of hazardous reactions

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

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid

Keep out of reach of children. Exposure to moisture. Water. Extreme temperatures.

Incompatible materials

Acids. Bases. Strong oxidizing agents.

Hazardous decomposition products

Formation of hydrogen phosphide gas, ammonia gas and carbon dioxide.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

| | |
|---------------------|-----------------------------|
| Eye Contact | Avoid contact with eyes. |
| Skin Contact | Toxic in contact with skin. |
| Inhalation | Fatal if inhaled. |
| Ingestion | Fatal if swallowed. |

Component Information

| Chemical name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
|----------------------------------|----------------------|-------------|--------------------------------------|
| Aluminum phosphide 20859-73-8 | = 11.5 mg/kg (Rat) | - | = 15.5 mg/m ³ (Rat) 4 h |

Symptoms related to the physical, chemical and toxicological characteristics

| | |
|-----------------|--|
| Symptoms | Please see section 4 of this SDS for symptoms. |
|-----------------|--|

Delayed and immediate effects as well as chronic effects from short and long-term exposure

| | |
|------------------------|---|
| Carcinogenicity | Based on the information provided, this product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP. |
|------------------------|---|

Numerical measures of toxicity

Not available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life.

Persistence/Degradability

Not determined.

Bioaccumulation

There is no data for this product.

Mobility

Not determined

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

Place spent tablets/pellets into a sealed container and check regulations for disposal. Disposal should be in accordance with applicable regional, national and local laws and regulations.

Partially spent or unreacted material is acutely hazardous. Improper disposal of excess pesticide is a violation of Federal law. If these wastes cannot be disposed of by use according to the Applicator's Manual instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Contaminated Packaging

Empty containers still have residue. Use the instructions in the applicators manual to facilitate proper disposal. Disposal should be in accordance with applicable regional, national and local laws and regulations.

US EPA Waste Number

| Chemical name | RCRA | RCRA - Basis for Listing | RCRA - D Series Wastes | RCRA - U Series Wastes |
|----------------------------------|------|--------------------------|------------------------|------------------------|
| Aluminum phosphide 20859-73-8 | P006 | | | |

| Chemical name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|----------------------------------|--------------------------------------|------------------------|------------------------|------------------------|
| Aluminum phosphide 20859-73-8 | | P006 | | |

14. TRANSPORT INFORMATION

Note

Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances. By Domestic Motor Vehicle, product may be eligible for regulatory relief under DOT Special Permit 11329. Please contact manufacturer for details.

DOT

UN/ID No UN1397
Proper Shipping Name Aluminum Phosphide
Hazard class 4.3
Subsidiary Hazard Class 6.1
Packing Group I
Reportable Quantity (RQ) 100lbs
Marine Pollutant Yes, if in containers larger than 882 lbs (400 kg)

IATA

UN number UN1397
Proper Shipping Name Aluminum Phosphide
Transport hazard class(es) 4.3
Subsidiary hazard class 6.1
Packing Group I
Marine Pollutant Yes

IMDG

UN number UN1397
Proper Shipping Name Aluminum Phosphide
Transport hazard class(es) 4.3
Subsidiary Hazard Class 6.1
Packing Group I
EmS-No F-G, S-N
Marine Pollutant Yes

15. REGULATORY INFORMATION

International Inventories

| Chemical name | TSCA | DSL/NDSL | EINECS/E LINCS | ENCS | IECSC | KECL | PICCS | AICS |
|--------------------|------|----------|----------------|------|-------|------|-------|------|
| Aluminum phosphide | X | X | X | | X | X | X | X |
| Ammonium carbamate | X | X | X | X | X | | X | X |

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

US Federal Regulations

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

| Chemical name | Hazardous Substances RQs | CERCLA/SARA RQ | Reportable Quantity (RQ) |
|----------------------------------|--------------------------|----------------|--|
| Aluminum phosphide 20859-73-8 | 100 lb | 100 lb | RQ 100 lb final RQ RQ 45.4 kg final RQ |
| Ammonium carbamate 506-87-6 | 5000 lb | | RQ 5000 lb final RQ RQ 2270 kg final RQ |

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical name | CAS No. | Weight-% | SARA 313 - Threshold Values % |
|---------------------------------|------------|----------|-------------------------------|
| Aluminum phosphide - 20859-73-8 | 20859-73-8 | 0-60 | 1.0 |
| Ammonium carbamate | 506-87-6 | 0-20 | 1.0 |

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

| Chemical name | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|--------------------|-----------------------------|------------------------|---------------------------|----------------------------|
| Ammonium carbamate | 5000 lb | | | X |

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

| Chemical name | New Jersey | Massachusetts | Pennsylvania |
|----------------------------------|------------|---------------|--------------|
| Aluminum phosphide 20859-73-8 | X | X | X |
| Ammonium carbamate 506-87-6 | X | X | X |

EPA Pesticide Registration Number EPA Reg. No. 1015-74 (Pellets) 1015-76 (Tablets)

EPA Statement

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label

Signal Word: DANGER

Pellets or dust of this product may be fatal if swallowed

Difference between SDS and EPA pesticide label

| | EPA | OSHA |
|---|---------------------------|----------------------------|
| Signal Word | Danger | Danger |
| Acute toxicity - Oral | May be fatal if swallowed | Fatal if swallowed |
| Acute toxicity - Dermal | N/A | Toxic in contact with skin |
| Acute toxicity - Inhalation (Dusts/Mists) | N/A | Fatal if inhaled |

16. OTHER INFORMATION

| | | | | |
|--------------------|-----------------------|---------------------|-------------------------|----------------------------|
| <u>NFPA</u> | Health Hazards | Flammability | Instability | Special Hazards |
| | 4 | 4 | 2 | W |
| <u>HMIS</u> | Health Hazards | Flammability | Physical hazards | Personal Protection |
| | 4 | 4 | 2 | X |

Issue Date:

28-Jan-2019

Revision Date:

07-March-2019

Revision Note:

Eliminated reference to MSA in Sections 5 & 8: "NIOSH/MSA" to "NIOSH"

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet