

ALUMINUM PHOSPHIDE

APH

CAUTIONARY RESPONSE INFORMATION

Common Synonyms AIP Aluminum monophosphide	Solid crystals or powder Dark gray; dark yellow May have "fishy", phosphine odor Sinks and reacts with water to produce poisonous and spontaneously flammable phosphine gas.
<p>AVOID CONTACT WITH SOLID, DUST, OR GASES FROM REACTION WITH WATER. KEEP PEOPLE AWAY. Wear positive pressure breathing apparatus and full protective clothing. Shut off ignition sources and call fire department. Stop discharge, if possible. Isolate and remove discharged material. Notify local health and pollution control agencies.</p>	
Fire	<p>FLAMMABLE AND POISONOUS GAS PRODUCED ON CONTACT WITH WATER. POISONOUS GASES ALSO PRODUCED IN FIRE. Wear positive pressure breathing apparatus and full protective clothing. DO NOT USE WATER OR FOAM. Extinguish small fires: dry chemical, soda ash or lime. large fires: withdraw from area and let burn. Move container from fire area if you can do it without risk.</p>
Exposure	<p>CALL FOR MEDICAL AID. POISONOUS VAPOR PRODUCED IN REACTION WITH WATER MAY BE FATAL IF INHALED. SEVERE PULMONARY IRRITANT AND AN ACUTE SYSTEMIC POISON; MAY CAUSE SUDDEN OR DELAYED DEATH. Effects may be delayed; Keep under observation. DUST POISONOUS; MAY BE FATAL IF INHALED Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. Effects may be delayed; keep under observation.</p> <p>SOLID POISONOUS IF SWALLOWED OR SKIN EXPOSED IF IN EYES OR ON SKIN, flush with running water for at least 15 minutes; hold eyelids open periodically if appropriate. Remove and isolate contaminated clothing and shoes. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep warm.</p>
Water Pollution	<p>Effects of low concentration on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge

2. CHEMICAL DESIGNATIONS

- 2.1 CG Compatibility Group: Not listed
- 2.2 Formula: AIP
- 2.3 IMO/UN Designation: 4.3/1397
- 2.4 DOT ID No.: 1397
- 2.5 CAS Registry No.: 20859-73-8
- 2.6 NAERG Guide No.: 139
- 2.7 Standard Industrial Trade Classification: 52492

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Wear positive pressure breathing apparatus and full protective clothing.
- 3.2 **Symptoms Following Exposure:** Highly toxic. May be fatal if inhaled (dust) or swallowed. Also poisonous via skin contact. (Readily reacts with moisture or acids to produce phosphine gas which is a severe pulmonary irritant, an acute poison and spontaneously flammable. Ingestion may result in respiratory, cardiac, hepatic and renal involvement. Exposure to phosphine gas may cause headache, fatigue, nausea, vomiting, cough, severe breathing difficulties, shortness of breath, jaundice, paresthesias, ataxia, intention tremor, diplopia and myocardial injury. Breathing difficulties may be delayed several hours after exposure to phosphine has ceased.)
- 3.3 **Treatment of Exposure:** INHALATION: Move victim to fresh air; call for emergency medical care. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Breathing difficulties may be delayed; Keep under observation. EYES OR SKIN: Immediately flush with running water for at least 15 minutes holding upper and lower eyelids open periodically if appropriate. Remove and isolate contaminated clothing and shoes at the site. Keep victim quiet and maintain normal body temperature. INGESTION: If unconscious or having convulsions, do nothing except maintain normal body temperature.
- 3.4 TLV-TWA: Not listed.
- 3.5 TLV-STEL: Not listed.
- 3.6 TLV-Ceiling: Not listed.
- 3.7 **Toxicity by Ingestion:** Grade 4; LD₅₀ = 20 mg/kg (human)
- 3.8 **Toxicity by Inhalation:** Currently not available.
- 3.9 **Chronic Toxicity:** Currently not available
- 3.10 **Vapor (Gas) Irritant Characteristics:** In the presence of moisture, it generates phosphine gas, a severe pulmonary irritant.
- 3.11 **Liquid or Solid Characteristics:** Currently not available
- 3.12 **Odor Threshold:** Not pertinent
- 3.13 **IDLH Value:** Not listed.
- 3.14 **OSHA PEL-TWA:** Not listed.
- 3.15 **OSHA PEL-STEL:** Not listed.
- 3.16 **OSHA PEL-Ceiling:** Not listed.
- 3.17 **EPA AEGl:** Not listed

4. FIRE HAZARDS

- 4.1 **Flash Point:** Not pertinent (Reacts with moisture to produce phosphine gas which is spontaneously flammable at room temperature.)
- 4.2 **Flammable Limits in Air:** Not pertinent. (Data not available for the phosphine gas produced upon exposure to moisture.)
- 4.3 **Fire Extinguishing Agents:** Small fires: Dry chemical, soda ash or lime. Large fires: Withdraw from area and let fire burn.
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Do not use water or foam.
- 4.5 **Special Hazards of Combustion Products:** May contain toxic gases and vapors such as oxides of phosphorous and phosphoric acid mist.
- 4.6 **Behavior in Fire:** Can react with water or acids to produce spontaneously flammable and acutely toxic phosphine gas.
- 4.7 **Auto Ignition Temperature:** Not pertinent. (Reacts with water or acids to produce phosphine gas which is spontaneously flammable at room temperature.)
- 4.8 **Electrical Hazards:** Currently not available
- 4.9 **Burning Rate:** Not pertinent
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** Currently not available
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** Currently not available
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** Reacts with water or steam to produce phosphine gas. Phosphine is highly toxic and spontaneously flammable; and its combustion products, such as oxides of phosphorus, are also highly toxic.
- 5.2 **Reactivity with Common Materials:** May react with the moisture in wood to produce spontaneously flammable phosphine gas. Reacts violently with oxidizing substances.
- 5.3 **Stability During Transport:** Stable (when dry)
- 5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
- 5.5 **Polymerization:** Not pertinent
- 5.6 **Inhibitor of Polymerization:** Not pertinent

6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:** Currently not available
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):** Not pertinent
- 6.4 **Food Chain Concentration Potential:** Not pertinent
- 6.5 **GESAMP Hazard Profile:**
 Bioaccumulation: 0
 Damage to living resources: 3
 Human Oral hazard: 3
 Human Contact hazard: II
 Reduction of amenities: XX

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Currently not available
- 7.2 **Storage Temperature:** Currently not available
- 7.3 **Inert Atmosphere:** Currently not available
- 7.4 **Venting:** Currently not available
- 7.5 **IMO Pollution Category:** Currently not available
- 7.6 **Ship Type:** Currently not available
- 7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Dangerous When Wet
- 8.2 **49 CFR Class:** 4.3
- 8.3 **49 CFR Package Group:** I
- 8.4 **Marine Pollutant:** No
- 8.5 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue).....	4
Flammability (Red).....	4
Instability (Yellow).....	2
Special (White).....	W
- 8.6 **EPA Reportable Quantity:** 100
- 8.7 **EPA Pollution Category:** B
- 8.8 **RCRA Waste Number:** P006
- 8.9 **EPA FWPCA List:** Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Solid
- 9.2 **Molecular Weight:** 57.96
- 9.3 **Boiling Point at 1 atm:** Not pertinent
- 9.4 **Freezing Point:** >1832°F. = >1000°C. = >1273°K.
- 9.5 **Critical Temperature:** Not pertinent
- 9.6 **Critical Pressure:** Not pertinent
- 9.7 **Specific Gravity:** 2.85 at 25°C.
- 9.8 **Liquid Surface Tension:** Not pertinent
- 9.9 **Liquid Water Interfacial Tension:** Not pertinent
- 9.10 **Vapor (Gas) Specific Gravity:** Not pertinent
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent
- 9.12 **Latent Heat of Vaporization:** Not pertinent
- 9.13 **Heat of Combustion:** Currently not available
- 9.14 **Heat of Decomposition:** Not pertinent
- 9.15 **Heat of Solution:** Not pertinent
- 9.16 **Heat of Polymerization:** Not pertinent
- 9.17 **Heat of Fusion:** Currently not available
- 9.18 **Limiting Value:** Currently not available
- 9.19 **Reid Vapor Pressure:** Not pertinent

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
	N O T P E R T I N E N T		N O T P E R T I N E N T		N O T P E R T I N E N T		N O T P E R T I N E N T

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	R E A C T S		N O T P E R T I N E N T		N O T P E R T I N E N T		N O T P E R T I N E N T