



BERNARDO CHEMICALS Inc.

P.O. BOX 1632 - TURLOCK CA 95381 - Phone (209) 634-1191 - Fax: (209) 634-1192

MATERIAL SAFETY DATA SHEET

I PRODUCT IDENTIFICATION

MANUFACTURER'S NAME: Longkou City Chemical Plant
ADDRESS: Siping, Langao Town, Longkou City
Shandong, P.R. of China

DISTRIBUTOR'S NAME: BERNARDO CHEMICALS INC.
ADDRESS: P. O. BOX 1632 - TURLOCK CA 95381
Phone (209) 634-1191 - Fax: (209) 634-1192

TRADE NAME:
GASTOXIN TABLETS
GASTOXIN PELLETS
GASTOXIN SACHETS

EPA. REG. NO.:
43743-1
43743-2
43743-3

REG./EMERGENCY TEL. NO. c/o CASA BERNARDO:
55 13 3565-1212
FAX: (55) (13) 3406-1318 OR (55) (13) 3406-1445
REGULAR TELEPHONE NO.: (209) 634-1191
FAX: (209) 634-1192

EMERGENCY NUMBER: (209) 634-1191

FAX: (209) 634-1192

CHEMTREC: 1-800-424-9300 - 24 HOURS

II HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	CAS NO.	%	TLV	HAZARD DATA
1. Aluminum Phosphide - AIP on exposure to air or water produces: Phosphine - Hydrogen Phosphine - PH ₃	20859-73-8	57	N/A	Flammable
	7803-51-2	N/A	0.3PPM	Flammable at 17,900 ppm
2. Ammonium Carbamate On exposure to air or water produces: Ammonia - NH ₃ Carbon Dioxide - CO ₂	1111-78-0	15	N/A	N/A
	7664-41-7	N/A	25 ppm	N/A
	124-38-9	N/A	5,000 ppm	N/A

III PHYSICAL DATA

	Solid	PH ₃		Solid	PH ₃
Boiling Point 760 MM MG	N/A	-87.7°C	Melting Point	N/A	-133.5°C
Specific Gravity	N/A	N/A	Vapor Pressure	N/A	33.5 @ 20°C
Vapor Density	N/A	1.184	Salub. in H ₂ O % by Wt.	Insol.	Slightly Sol.
% Volatiles By Volume	N/A	N/A	Evapor. Rate	N/A	N/A
Appearance	Grey/Green	Colorless	Wt/Vol.	2.429/cm ³	N/A
Odor	Carbide-like;	Garlic			

IV FIRE AND EXPLOSION DATA

Flash Point (Test Method):	100°C	Auto-Ignition Temperature	100°C - 150°C
Flammable Limits in Air % by Vol.:	Lower 1.79%	Upper	N/A
Extinguishing Media:	Sand, CO ₂ . Ventilation, with air, will effectively reduce PH ₃ concentrations below flammable limits.		
Special fire fighting procedures:	DO NOT USE WATER. Physically spread the burning mass. Wear MSHA/NIOSH approved positive pressure SCBA.		
Unusual fire and explosion hazard:	Toxic gases (such as Oxides of Phosphorous, Phosphoric Acid, & Hydrogen) may be released in a Phosphine fire. They are not flammable but exposure to moist air, water, and some other liquids release flammable Phosphine gas. Spontaneous ignition may result - if contacted by water, other liquids, or if confined.		

V HEALTH HAZARD INFORMATION

SEE E.P.A. LABELING

Health Hazard Data: Primary Route(s) of Entry 1. Inhalation of Gas 2. Ingestion of solid POISON

Routes of Exposure:

Inhalation: TLV/TWA 0.3 ppm

Skin Contact: No known dermal toxicity - wear cotton gloves

Skin Absorption: N/A

Eye Contact: Gas may enter membranes on exposure - DO NOT WEAR contact lens

Ingestion: Causes lungs & brain symptoms, but damage to viscera is more common.

V HEALTH HAZARD INFORMATION cont.

Effects of Over Exposure: (Symptoms) Fatigue, nausea, chest pain, uneasiness, vomiting, stomachache.

Acute Overexposure: Diarrhea, Dyspnea

Chronic Overexposure: Not known to occur.

Emergency and First Aid Procedures:

Eyes: Flush with plenty of water for at least 15 minutes. Get medical attention.

Skin: Wash contaminated skin thoroughly with soap and water.

Inhalation: Get exposed person to fresh air. If breathing has stopped, administer artificial resuscitation. Call physician immediately.

Ingestion: Call a physician or poison control center. If conscious administer water and induce vomiting.

If available, give SYRUP of IPECAC. Call a physician immediately.

NOTES TO PHYSICIAN: Acute and chronic effects: Highly Toxic. In sufficient quantity it affects the liver, kidneys, lungs, nervous system, and circulation system. Inhalation causes lung edema and hyperemia, small perivascular brain hemorrhages and edema. Ingestion causes lung and brain symptoms but also damage to viscera is more common.

Phosphine poisoning may cause (1) lungs-pulmonary edema, (2) liver-elevated serum GOT, LDH, and alkaline phosphatase, reduced prothrombin, hemorrhage and jaundice, (3) kidney-hematuria and anuria.

The pathology is characteristic of hypoxia. Frequent exposure to low concentrations above permissible levels over a period of days or weeks may cause poisoning. Severe acute poisoning may cause permanent damage.

Chronic poisoning not known to occur.

Carcinogenicity: Not Listed: IARC, OSHA, NTP.

VI REACTIVITY DATA

Conditions Contributing to Instability: Temperature above 100°C (212°F)

Incompatibility: Liquid water, acids. Corrodes gold, silver, copper, brass, other precious metals and their alloys.

Hazardous Decomposition Products: Phosphine Gas - Hydrogen Phosphide - PH₃.

Conditions Contributing to Hazardous Polymerization: N/A

VII SPILL OR LEAK PROCEDURES

Steps To Be Taken If Material Is Released Or Spilled: A spill, other than incidental to application or normal handling, may produce high levels of gas and, therefore, attending personnel must wear SCBA or its equivalent when the concentration of hydrogen phosphide gas is unknown. Other NIOSH/MSHA approved respiratory protection may be worn if the concentration is known.

Do not use water at any time to clean up a spill of **gastoxin**® water in contact with unreacted metal phosphides will greatly accelerate the production of hydrogen phosphide gas which could result in a toxic and/or fire hazard. Wear gloves of cotton or other material when handling **gastoxin**®. For more specific instructions, concerning damaged containers, refer to the **gastoxin**® product use manual.

Neutralizing Chemicals: CO₂

Waste Disposal Method: Unreacted or partially reacted tablets or pellets that must be disposed of are hazardous waste.

However, if properly exposed the residual dust remaining after fumigation will be a grayish-white, spent, nonhazardous waste which according to RCRA regulations can be disposed of at a sanitary landfill. Some local or state regulations may vary, so disposal procedures should be reviewed with appropriate authorities.

VIII SPECIAL PROTECTION INFORMATION

Ventilation Requirements: Ventilation: Forced air ventilation and/or appropriate work practices should be used where needed to reduce exposure. Passive or forced ventilation is necessary prior to reentry by unprotected workers. They may also be required in enclosed areas which are attached to a fumigated site.

Specific Personal Protective Equipment: Respiratory a NIOSH/MSHA approved, full face gas mask - Phosphine canister combination may be used at levels up to 15 ppm. Above this level or in situations where the Hydrogen Phosphide concentration is unknown, a NIOSH/MSHA approved SCBA or its equivalent must be used.

Eye: None

Gloves: Dry cotton gloves

Other Clothing and Equipment: Equipment for detection of Phosphine should be available.

IX SPECIAL PRECAUTIONS

Precautionary Statements: Conspicuous warning signs must be secured to the area. WARNING SIGNS - DANGER POISON GAS --- DO NOT ENTER. Others: (International) Warning Signs --- Flammable Solid - 4.1 --- Dangerous When Wet - 4.3

Other Handling and Storage Requirements: Stocks of any preparation that contains Aluminum Phosphide must be stored under lock and key in dry, well ventilated premises. Warning notices specifying the danger of unauthorized entry should be placed in prominent positions at all points of access to the store. Tablets, Pellets, Sachets should be handled with care. Spontaneous combustion may occur when sealed packages, such as tubes containing Aluminum Phosphide preparations are opened. Containers should not be opened in atmosphere where there is a risk of dust explosion.

Prepared by: BERNARDO CHEMICALS LTD., INC.

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