SAFETY DATA SHEET

1. Identification

Product Name **Zinc phosphide**

Cat No. : **45459**

CAS No 1314-84-7

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide, or biocidal product use.

Details of the supplier of the safety data sheet

Company Intech Organics limited plot no.27,
sector 34, Gurugram-122004
Haryana India
Phone no . +91 124 4407000

Email:
sales@intech.in

Emergency Telephone Number

For India: 0008001007141

For USA & Canada: +1703-741-5970 / 1-800-424-9300

Other countries: +7+703-527-3887

2. Composition/Information on Ingredients

Component	CAS No	Weight %
Zinc phosphide	1314-84-7	<=100

3. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Substances/mixtures which, in contact with water, emit flammable gases	Category 1
Acute oral toxicity	Category 2

Signal Word
Danger

Hazard Statements
In contact with water releases flammable gases which may ignite spontaneously
Fatal if swallowed

Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Keep away from any possible contact with water, because of violent reaction and possible flash fire
Handle under inert gas. Protect from moisture
Wear protective gloves/protective clothing/eye protection/face protection
Skin
Brush off loose particles from skin. Immerse in cool water/wrap with wet bandages
Ingestion
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store locked up
Store in a dry place. Store in a closed container
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
Contact with water liberates toxic gas
Contact with acids liberates very toxic gas

4. First-aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact	In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately.
Most important symptoms and effects	None reasonably foreseeable.
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Carbon dioxide (CO_2). Dry chemical. Dry sand.

Flash Point

Not combustible but forms flammable gas on contact with water or damp air.

Autoignition Temperature
Explosion limits

Hydrogen phosphide (phosphine), air mixture above LEL level spontaneously catches fire. Never allow to build up the phosphine concentration above LEL. Container may get pressurized due to excessive heat during fire and lead to explosion.

Specific Hazards Arising from the Chemical
Contact with water liberates toxic gas. Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
Phosphorus trihydride (phosphine). Zinc oxide. Oxides of phosphorus.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical Hazards
4	3	2	W

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.
Environmental Precautions	Do not flush into surface water or sanitary sewer system. Do not allow material to

	contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.
Methods for Containment and Clean Up	Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Do not expose spill to water.

7. Handling and storage

Handling	Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid dust formation. Use only under a chemical fume hood. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance. Do not allow contact with water.
Storage	Keep away from water or moist air.

8. Exposure controls / personal protection

Exposure Guidelines	This product does not contain any hazardous materials with occupational exposure limits established by the region-specific regulatory bodies.
Engineering Measures	Ensure adequate ventilation, especially in confined areas.
Personal Protective Equipment	
Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirators if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid Pieces
Appearance	Dark grey - Black
Odor	Characteristic
Odor Threshold	Garlic like odor at 26 ºC
pH	7.91 ± 0.03 at 21.5 ºC
Melting Point/Range	420 °C / 788 °F
Boiling Point/Range	1100 °C / 2012 °F
Flash Point	LEL (Lower Explosive Limit) – 1.79% v/v or 17900 ppm or 26.1 gm/m3
Flammability (solid, gas)	LEL: 1.8% v/v or 17900 ppm or 26.1 gm/m3
Flammability or explosive limits	
Upper	
Lower	Lower Explosive Limit) – 1.79% v/v or 17900 ppm
Specific Gravity	4.55 g/cm3
Solubility	Slightly soluble in water (20 cc in 100 ml at 17 ºC)
Autoignition Temperature	400 0C
Molecular Formula	P2 Zn3
Molecular Weight	258.10

10. Stability and reactivity

Reactive Hazard	Yes
Stability	Stable under normal conditions.
Conditions to Avoid	Exposure to moist air or water. Exposure to moisture.
Incompatible Materials	Strong oxidizing agents
Hazardous Decomposition Products	Phosphorus trihydride (phosphine), Zinc oxide, Oxides of phosphorus
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological information

Acute Toxicity

The product is toxic. It should be treated with the usual care of handling hazardous chemicals.

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Zinc phosphide	LD50 = 42.6 mg/kg (Rat)	LD50 = 1123 mg/kg (Rat)	Not listed

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

Irritation

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes.

Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call a poison control

center or doctor for treatment advice

Skin Contact: If on skin or clothing: Take off contaminated clothing. Wash skin with soap and water

Carcinogenicity:

Animals

- The U.S. EPA waived requirements for carcinogenicity studies for zinc phosphide because chronic exposure is not expected.[2]
- Rats were fed diets for 2 years that had been fumigated with phosphine at rates of 48 and 90 g/metric ton for 48 and 72 hours, respectively. Feed was stored frozen following fumigation and residues at time of thawing averaged 1 ppm. Residues were expected to begin to dissipate at thawing, and were therefore unknown at time of consumption. No signs of carcinogenicity were noted.[38]
- Rats exposed to phosphine through whole-body inhalation at concentrations of 0.3, 1.0, and 3.0 ppm for up to 2 years exhibited no carcinogenic effects.[30]

Humans

- The U.S. EPA determined that chronic exposure to zinc phosphide should be negligible and therefore waived carcinogenicity testing requirements for reregistration.[2] See the text box on Cancer.
- No human data were found on carcinogenic effects of zinc phosphide or phosphine.

Reproductive Effects
Animals

- Researchers dosed 25 pregnant female rats per group daily by stomach tube at doses of 1, 2, or 4 mg/kg/day during the second week of the pregnancy. Nine of the rats in the highest dose group died although the cause of death was not determined. Rats in the highest dose group also ate less and lost weight in the first half of the week. Both parameters returned to pre-study levels by the end of the treatment period. The maternal NOEL was established at 2 mg/kg/day.[39]
- Researchers exposed 24 pregnant female rats to phosphine for the 20 days of gestation at concentrations of 0, 0.03, 0.33, 2.80, 4.90, and 7.50 ppm in whole-body exposure tests. Fourteen of the females died by day 10 in the high-dose group. No treatment-related effects were noted in the dams of all other exposure groups.[23]
- Ten male and 10 female adult rats were fed 0.03% zinc phosphide for 22 days. One male and four females died before the end of the exposure. All of the surviving rats maintained their fertility despite the exposure.[17]

Humans

- No human data were found on the teratogenic or reproductive effects of zinc phosphide or phosphine exposure.

Developmental Effects

Chough et al. reported in their studies that shock, oliguria, coma, and convulsions could develop, and pulmonary edema, metabolic acidosis, hypocalcemia, hepatotoxicity, and thrombocytopenia could be seen in cases of zinc phosphide poisoning

Teratogenicity
No human data were found on the teratogenic or reproductive effects of zinc phosphide or phosphine exposure.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard

Breathing Zinc Phosphide can irritate the nose and throat.

Symptoms / effects, both acute anddelayed

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not discharge effluent containing this product directly to water. Do not contaminate water when disposing of equipment wash water.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Zinc phosphide - 1314-84-7	U249	reactive waste; toxic waste when present atconcentrations >10%

14. Transport information

DOT

UN-No	UN1714
Proper Shipping Name	ZINC PHOSPHIDE
Hazard Class	4.3
Subsidiary Hazard Class	6.1
Packing Group	I

TDG

UN-No	UN1714
Proper Shipping Name	ZINC PHOSPHIDE
Hazard Class	4.3
Subsidiary Hazard Class	6.1
Packing Group	I

IATA

UN-No	UN1714
Proper Shipping Name	ZINC PHOSPHIDE
Hazard Class	4.3
Subsidiary Hazard Class	6.1
Packing Group	I

IMDG/IMO

UN-No	UN1714
Proper Shipping Name	ZINC PHOSPHIDE
Hazard Class	4.3
Subsidiary Hazard Class	6.1
Packing Group	I

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Zinc phosphide	1314-84-7	X	ACTIVE	-

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Zinc phosphide	1314-84-7	-	X	215-244-5	X	X	X	-	X	KE-35572

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Zinc phosphide	1314-84-7	<=100	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Zinc phosphide	X	-	X	-

Clean Air Act Not applicable

OSHA - Occupational Safety andHealth Administration

Not applicable

CERCLA Not applicable

Component	Hazardous Substances RQs	CERCLA EHS RQs
Zinc phosphide	100 lb	100 lb

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Zinc phosphide	X	X	X	-	-

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of HomelandSecurity

This product does not contain any DHS chemicals.

16. Other information

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 SDS