

SAFETY DATA SHEET

8-28-2020: File reviewed, more current MSDS/SDS not available. JMC



PHOSPHORUS, WHITE

MSDS No.: M7588

Rev. Date: 04/28/2008

Rev. Num.: 01

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Company Identification: Glenn Springs Holdings, Inc.
5005 LBJ Freeway, Suite 1305
Dallas, Texas 75244

24 Hour Emergency Telephone Number: 1-800-733-3665 or 1-972-404-3228 (U.S.); 32.3.575.55.55 (Europe); 1800-033-111 (Australia)

To Request an MSDS: MSDS@oxy.com or 1-972-404-3245
Customer Service: 1-800-752-5151 or 1-972-404-3700

Synonyms: White phosphorus, Yellow phosphorus

Product Use: Chemical Intermediate

2. HAZARDS IDENTIFICATION

***** EMERGENCY OVERVIEW:

Color: Colorless to yellow
Physical State: Solid
Odor: Odorless when not exposed to air
Signal word: DANGER

MAJOR HEALTH HAZARDS:

CAUSES BURNS TO THE RESPIRATORY TRACT, SKIN, EYES AND GASTROINTESTINAL TRACT. MAY CAUSE KIDNEY, LIVER AND BONE DAMAGE. MAY CAUSE PERMANENT EYE DAMAGE.

PHYSICAL HAZARDS SUMMARY STATEMENT:

Flammable solid. Will ignite on contact with air.

AQUATIC TOXICITY:

Harmful to Aquatic Organisms.

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POTENTIAL HEALTH EFFECTS:

Inhalation: Fumes or smoke are respiratory tract irritants.

Skin contact: Contact may cause severe burns from chemical and thermal effects.

Eye contact: Contact with eye may cause severe burns and/or blindness. Exposure to fumes may cause severe irritation.

Ingestion: Highly toxic if ingested. Symptoms of ingestion usually include abdominal pain, diarrhea, and vomiting. Vomit may be smoking, luminescent, and have a garlicky odor. Symptoms may subside and recur in several days more intensely. Ingestion may cause liver and/or kidney damage or death.

Target Organs Effected: Kidney (Nephrotoxin), Liver (Hepatotoxin), Respiratory System, Blood (Hematologic), Musculoskeletal System

Chronic Effects: Changes in the blood system and to bones may result from long term over-exposure.

Interaction with Other Chemicals Which Enhance Toxicity: None known.

Medical Conditions Aggravated by Exposure: None known.

See Section 11: TOXICOLOGICAL INFORMATION

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component	Concentration (by weight %)	CAS - No.
Phosphorus	99 - 100	7723-14-0

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. If respiration or pulse has stopped, have a trained person administer Basic Life Support (Cardio-Pulmonary Resuscitation/Automatic External Defibrillator) and CALL FOR EMERGENCY SERVICES IMMEDIATELY (911 or emergency transport services).

Skin Contact: Immediately immerse contaminated areas under water. GET MEDICAL ATTENTION IMMEDIATELY. Keep contaminated area immersed in water until medical attention arrives. Remove contaminated clothing, jewelry and shoes. Discard contaminated clothing and footwear.

Eye Contact: Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissues. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

4. FIRST AID MEASURES

Ingestion: Never give anything by mouth to an unconscious or convulsive person. If swallowed, do not induce vomiting. Give large amounts of water. If vomiting occurs spontaneously, keep airway clear. Give more water when vomiting stops. GET MEDICAL ATTENTION IMMEDIATELY.

5. FIRE-FIGHTING MEASURES

Fire Hazard: Severe fire hazard. Will ignite on exposure to air. If allowed to dry, contaminated water may ignite.

Extinguishing Media: Use regular foam, water, wet sand or earth. Do not use alkaline based extinguishing agents.

Fire Fighting: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Do not scatter spilled material with high-pressure water streams. Avoid inhalation of material or combustion by-products. Wear NIOSH approved positive-pressure self-contained breathing apparatus operated in demand mode.

Sensitivity to Mechanical Impact: Not sensitive

Sensitivity to Static Discharge: Not sensitive

Flash Point: Spontaneously flammable

Autoignition Temperature: 86 F (30 C)

Hazardous Combustion Products: Phosphorus pentoxide, Oxides of phosphorus

6. ACCIDENTAL RELEASE MEASURES

Occupational Release:

Keep unnecessary people away, isolate hazard area and deny entry. Consider evacuation of personnel located downwind. Extinguish fire. Collect spilled material in appropriate container for disposal. Keep out of water supplies and sewers. Releases should be reported, if required, to appropriate agencies.

7. HANDLING AND STORAGE

Storage Conditions: Store and handle in accordance with all current regulations and standards. Store under water and an inert gas. Keep container tightly closed and properly labeled. Keep in a well-ventilated area away from incompatible materials.

Handling Procedures: Handle under water. Avoid breathing vapors. Do not get in eyes, on skin, or on clothing. Use forceps to handle small quantities of frozen phosphorus. Wash thoroughly with soap and water after handling.

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

OSHA Regulatory Exposure limit(s):

Hazardous Component	CAS - No.	OSHA Final PEL TWA	OSHA Final PEL STEL	OSHA Final PEL Ceiling
Phosphorus	7723-14-0	0.1 mg/m ³	-----	-----

Non-Regulatory Exposure Limit(s):

The Non-Regulatory OSHA limits shown in the table are the Vacated 1989 PEL's (vacated by 58 FR 35338, June 30, 1993).

Hazardous Component	CAS - No.	ACGIH TWA	ACGIH STEL	ACGIH Ceiling	OSHA TWA (Vacated)	OSHA STEL (Vacated)	OSHA Ceiling (Vacated)
Phosphorus	7723-14-0	-----	-----	-----	0.1 mg/m ³	-----	-----

ENGINEERING CONTROLS: Use closed systems when possible. General or local exhaust ventilation and other forms of engineering controls are the preferred means for controlling exposures. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. A quick drench tank should be used if feasible.

Skin and Body Protection: Wear chemical resistant clothing and rubber boots when potential for contact with the material exists. In certain situations, a full body suit with hood and boots may provide short term protection.

Hand Protection: Wear appropriate chemical resistant gloves.

Protective Material Types: Best Nitty Gritty(R), Aluminized Kevlar(R)

Hazardous Component	Immediately Dangerous to Life/ Health (IDLH)
Phosphorus	5 mg/m ³ IDLH

Respiratory Protection: Supplied air is required unless there is no phosphine gas or phosphorus pentoxide present. A NIOSH approved respirator with acid gas cartridges/N95 filters cartridges may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits, or when symptoms have been observed that are indicative of overexposure. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Appearance:	Waxy
Color:	Colorless to yellow
Odor:	Odorless when not exposed to air
Molecular Weight:	123.88
Molecular Formula:	P ₄
Boiling Point/Range:	Not applicable
Melting Point/Range:	111 F (44 C)
Vapor Pressure:	0.026 mmHg @ 20 C

9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Density (air=1): 4.66
Specific Gravity (water=1): 1.83 @ 25 C
Water Solubility: 3 ppm @ 20 C
Partition Coefficient (n-octanol/water): Log Kow = 3.08

10. STABILITY AND REACTIVITY

Reactivity/ Stability: Will ignite on exposure to air.

Conditions to Avoid: Do not allow contact with air. Avoid contact with strong caustics due to generation of phosphine.

Incompatibilities/ Materials to Avoid: Air, Alkaline hydroxides, Halogens, Oxidizing agents

Hazardous Decomposition Products: Phosphorus pentoxide, Oxides of phosphorus

Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

IRRITATION DATA: Red phosphorus was not considered a sensitizer when tested on the skin of guinea pigs. For white phosphorus, no test data or case reports were located in open literature.

TOXICITY DATA:

Hazardous Component	LD50 Oral	LC50 Inhalation	LD50 Dermal
Phosphorus	3.03 mg/kg (Rat)	4.3 mg/L (1 hr-Rat)	100 mg/kg (Rat)

ACUTE TOXICITY:

Liver effects observed in humans with white phosphorus-induced burns included jaundice, hepatomegaly, and increased serum bilirubin levels. Evidence of renal damage in individuals burned once with white phosphorus include increased blood urea nitrogen, increased urinary levels of protein and urea nitrogen, and signs of acute renal failure.

CHRONIC TOXICITY:

Anemia (marked decrease in red blood cells or hemoglobin) and leucopenia (very low levels of white blood cells or leukocytes) were observed in workers chronically exposed to airborne white phosphorus. In a study of workers, necrosis of the jawbones, a condition known as phossy jaw, was observed. The first indications of phossy jaw are toothache and excessive salivation, followed by loosening of teeth, severe pain, and swelling of the jaw. Ulcerations can develop which may invade the bone. Effects to bones have also been observed in studies of rats and rabbits.

CARCINOGENICITY: No carcinogenicity studies were located.

Hazardous Component	NTP:	IARC (GROUP 1):	IARC (GROUP 2):	OSHA:
Phosphorus	Not listed	Not listed	Not listed	Not Listed

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MUTAGENIC DATA: Did not show mutagenic effects in animal experiments.

REPRODUCTIVE TOXICITY: In two reproductive studies, pregnant rats receiving white phosphorus orally experienced difficulty delivering their pups.

DEVELOPMENTAL TOXICITY: In reproductive studies in rats, there were no significant effects on the offspring.

12. ECOLOGICAL INFORMATION

AQUATIC TOXICITY: Harmful to Aquatic Organisms.

Freshwater Fish Data:

LC50 channel catfish: 73 ug/L/96 hr

LC50 rainbow trout: 22 ug/L/96 hr

LC50 fathead minnow: 20 ug/L/96 hr

LC50 bluegill sunfish: 6 ug/L/96 hr

Invertebrate Toxicity Data:

EC50 daphnia magna: 30 ug/L/48 hr

EC50 scud: 250 ug/L/48 hr

FATE AND TRANSPORT: Particles will settle due to gravitational forces and may sorb to particulate matter in water and be transported to sediment. Volatilization from water to air is another mode of transport.

PERSISTENCE: Will not persist. The estimated half-lives at ambient temperatures due to a combination of hydrolysis and oxidation reactions were 42 hours in air-saturated water and 56 hours in non air-saturated water.

BIOCONCENTRATION: This material moderately bioconcentrates in aquatic organisms. Bioconcentration factors for species tested ranged from 22 to 127. Elimination was rapid when the organism was placed in clean water.

ADDITIONAL ECOLOGICAL INFORMATION: This material has exhibited slight toxicity to terrestrial organisms.

13. DISPOSAL CONSIDERATIONS

Reuse or reprocess, if possible. Dispose in accordance with all applicable regulations. May be subject to disposal regulations: U.S. EPA 40 CFR 261. Hazardous Waste Number(s): D001, D003

14. TRANSPORT INFORMATION

U.S.DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Phosphorus, white, under water

DOT UN NUMBER: UN1381

HAZARD CLASS/ DIVISION: 4.2

PACKING GROUP: I

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LABELING REQUIREMENTS: 4.2, 6.1
MARINE POLLUTANT: Phosphorus, white, under water
DOT RQ (lbs): RQ 1 Lbs. (Phosphorus)

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

SHIPPING NAME: PHOSPHORUS, WHITE, UNDER WATER
UN NUMBER: UN1381
CLASS: 4.2; 6.1
PACKING/RISK GROUP: I
MARINE POLLUTANT: Phosphorus, white, under water
OTHER INFORMATION: Emergency Response Assistance Plan (ERAP) may be required

15. REGULATORY INFORMATION

U.S. REGULATIONS

- **OSHA REGULATORY STATUS:** This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200) (US).
- **CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):** If a release is reportable under CERCLA section 103, notify the state emergency response commission and local emergency planning committee. In addition, notify the National Response Center at (800) 424-8802 or (202) 426-2675.

Hazardous Component	CERCLA Reportable Quantities:
Phosphorus	1 lb (final RQ)

- **EPCRA EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):** If a release is reportable under EPCRA, notify the state emergency response commission and local emergency planning committee. If the TPQ is met, facilities are subject to reporting requirements under EPCRA Sections 311 and 312.

Hazardous Component	EPCRA RQs	Threshold Planning Quantity (TPQs)
Phosphorus	1 lb (EPCRA RQ)	100 lb (TPQ)

- **EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.21):**
Fire Hazard, Acute Health Hazard, Chronic Health Hazard, Extremely Hazardous
- **EPCRA SECTION 313 (40 CFR 372.65):** The following chemicals are listed in 40 CFR 372.65 and may be subject to Community Right-to Know Reporting requirements:

Hazardous Component	Status:
Phosphorus	Listed

- **DEPARTMENT OF HOMELAND SECURITY - Chemical Facility Anti-Terrorism Standards (6 CFR 27):** The Department of Homeland Security identifies phosphorus as a chemical of interest. Unless otherwise exempted, facilities that process quantities in excess of the Screening Threshold Quantity (STQ) must submit a Top-Screen to aid the DHS in determining if the facility presents a high level of security risk. The STQ for phosphorus is 400 pounds.
- **OSHA PROCESS SAFETY (29 CFR 1910.119):** Not regulated

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NATIONAL INVENTORY STATUS

- **U.S. INVENTORY STATUS (TSCA):** All components are listed or exempt.
- **TSCA 12(b):** This product is not subject to export notification
- **CANADIAN INVENTORY STATUS (DSL/NDSL):** All components are listed.

STATE REGULATIONS

Hazardous Component	Phosphorus
California Proposition 65 WARNING:	Not listed
Massachusetts Right to Know List	Listed
New Jersey Right to Know Hazardous Substance List	Listed
New Jersey Special Health Hazards Substance List	Listed
New Jersey - Environmental Hazardous Substance List	Listed
Pennsylvania Right to Know Hazardous Substance List	Listed
Pennsylvania Right to Know Special Hazardous Substance List	Not Listed
Pennsylvania Right to Know Environmental Hazard List	Listed
Rhode Island Right to Know List	Listed

CANADIAN REGULATIONS

WHMIS - Classifications of Substances	B4, E
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16. OTHER INFORMATION

This information is intended solely for the use of individuals trained in the NFPA and/or HMIS systems.

HMIS: (SCALE 0-4) (Rated using National Paint & Coatings Association HMIS: Rating Instructions, 2nd Edition)

Health: 3*	Flammability: 4	Reactivity: 2
NFPA 704 - Hazard Identification Ratings (SCALE 0-4) NFPA 704 - Hazard Identification Ratings (SCALE 0-4)		
Health: 4	Flammability: 4	Reactivity: 2

Reason for Revision: This data sheet contains changes from the previous version in section(s): Update to sections 1, 2, 3, 8, 9, 11, 12, and 15.

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16. OTHER INFORMATION

IMPORTANT:

The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED, IS MADE REGARDING PERFORMANCE, SUITABILITY, STABILITY OR OTHERWISE. The information included herein is not intended to be all-inclusive as to the appropriate manner and/or conditions of use, handling and/or storage. Factors pertaining to certain conditions of storage, handling, or use of this product may involve other or additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions for use are intended to, and nothing herein shall be construed as a recommendation to, infringe any existing patents or violate any laws, rules, regulations or ordinances of any governmental entity.

Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, material safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Material Safety Data Sheet available to your employees.
