

# Material Safety Data Sheet



## Martrex, Inc.

### Section 1: Chemical Product and Company Information

**Product name:** Diphosphorus Pentoxide

**Reference Number:** n/a

**Web:** [www.martrexinc.com](http://www.martrexinc.com)

**Supplier/ Further Information:** Martrex, Inc.

P. O. Box 1709

**Phone:** 952/933-5000

14525 Highway 7

**Toll Free:** 800/328-3627

Minnetonka, Minnesota 55345-3793

**FAX:** 952/933-1889

**EPA Registration Number:** no data

**CAS#:** 1314-56-3

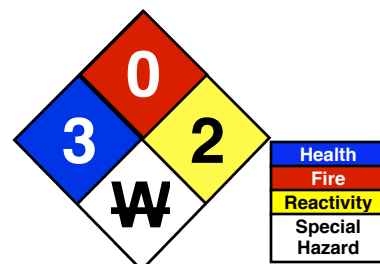
**Chemical Name:** Diphosphorus Pentoxide

**Synonyms:** Phosphorus Oxide; Phosphoric Anhydride; Phosphorus pentoxide

**Chemical Family:** no data

**Product Use:** Laboratory Reagent

**MSDS Number:** no data



For NFPA Rating Explanation see Section 16

**24 Hour Emergency Phone - Chemtrec Transport: 1-800-424-9300; Medical: 1-800-441-3637**

### Section 2: Composition/Information on Ingredients

Hazardous Component	CAS#	%	OSHA Limits	ACGIH Limits	OTHER Limits
Diphosphorus Pentoxide	1314-56-3	99—100%	PEL: 1 mg/m <sup>3</sup> (TWA) for phosphoric acid	TLV: 1 mg/m <sup>3</sup> (TWA), 3 mg/m <sup>3</sup> (STEL) for phosphoric acid	no data

### Section 3: Hazards Identification

#### Emergency Overview:

**DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED. FUMES CAUSE IRRITATION TO EYES AND RESPIRATORY TRACT. WATER REACTIVE. REACTS VIOLENTLY WITH WATER TO GENERATE HEAT AND PHOSPHORIC ACID.**

**NFPA Ratings:** Health: 3 Flammability: 0 Reactivity: 2 Other: **Water reactive**

**Potential Health Effects:** Diphosphorus Pentoxide reacts with moisture on body tissue surfaces to form phosphoric acid, which approximates sulfuric acid and hydrochloric acids in corrosive intensity.

**Primary Routes of Exposure / Entry:** no data

**Target Organs:** no data

**Inhalation (breathing):** Inhalation produces damaging effects on the mucous membranes and upper respiratory tract. Symptoms may include irritation of the nose and throat, and labored breathing. May cause lung edema, a medical emergency.

**Eye Contact:** Corrosive. Fumes and airborne powder cause eye irritation. Contact with substance can cause severe eye burns and permanent damage.

**Skin Contact:** Corrosive. Contact can cause severe irritation, burns, redness, and pain. Burns usually penetrate the skin with sharply defined edges, and heal slowly with the formation of scar tissue.

**24 Hour Emergency Phone - Chemtrec: 1-800-424-9300 Transportation  
1-800-441-3637 Medical**

**Ingestion (swallowing):** Corrosive. Releases heat on contact with moisture and will burn mucous surfaces. Sore throat, abdominal pain, nausea, vomiting, and diarrhea may result. Brown or yellow stains will be found around the mouth. Suffocation may occur from swelling of the tongue. Aspiration into the lungs can cause chemical pneumonitis. Ingestion of this material has caused human fatalities.

**Chronic Exposure:** Chronic ingestion or inhalation may induce systemic phosphorous poisoning. Liver damage, kidney damage, jaw/tooth abnormalities, blood disorders and cardiovascular effects can result.

**Aggravation of Pre-existing Conditions:** Persons with pre-existing skin disorders or eye problems, jaw/tooth abnormalities, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

**Carcinogenicity Data:**

See Section 11 for more Toxicological information

#### Section 4: First Aid Measures

**Eye Exposure:** Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. **Get medical attention immediately.**

**Skin Exposure:** Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. **Get medical attention immediately.** Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Ingestion:** Aspiration hazard. If swallowed, vomiting may occur spontaneously, but **DO NOT INDUCE**. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. **Call a physician immediately.**

**Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. **Get medical attention immediately.**

**NOTE TO THE PHYSICIAN:** Treat symptomatically and supportively.

#### Section 5: Fire Fighting Measures

**Flammability Classification**

**Fire:** Non-combustible but can cause high local temperatures in contact with water, heat generated may be enough to ignite other materials. Reacts violently with water to form phosphoric acid. Phosphoric acid in contact with common metals may generate flammable and explosive hydrogen gas.

**Explosion:** Not considered to be an explosion hazard. See **Section 10 Reactivity** Incompatibilities.

**Fire Extinguishing Media:** Dry chemical or carbon dioxide. If water is used, the amount should be enough to overcome heat and acid build-up.

**Special Fire Fighting Information:** In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face-piece operated in the pressure demand or other positive pressure mode.

**Hazardous Combustion Products:** See **Section 10 Reactivity** Incompatibilities.

#### Section 6: Accidental Release Measures

**Procedure to be Followed in Case of Leak or Spill:** Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill.

**Spill and Leak Personal Procedures:** Wear appropriate personal protective equipment as specified in Section 8.

**Cleanup and Disposal of Spill:** Treat spilled material with an excess of soda ash or slaked lime, mix and add water cautiously to yield acid(s) and react with the alkali until fully neutralized. Collect the residual for disposal. Flush spill area with plenty of water. Consult local waste regulators for proper disposal.

**Environmental and Regulatory Reporting:** See Sections 12, 13 and 15

## Section 7: Handling and Storage

**Handling & Storage:** Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Keep away from water. Store away from flammable materials and animal feed. If water or moisture is present, type 316 LSS rubber-lined steel or FRP are the preferred materials of construction. Mild steel is the preferred material of construction of process equipment, storage or shipping containers when the product is kept dry. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

**REGULATORY REQUIREMENTS:** Obey all Federal, State and Local regulations when storing or disposing of Diphosphorus Pentaoxide. See Section 15.

## Section 8: Exposure Controls / Personal Protection

### Airborne Exposure Limits:

OSHA Permissible Exposure Limit (PEL): 1 mg/m<sup>3</sup> (TWA) for phosphoric acid

ACGIH Threshold Limit Value (TLV): 1 mg/m<sup>3</sup> (TWA), 3 mg/m<sup>3</sup> (STEL) for phosphoric acid

**Ventilation/Engineering Protection:** A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Eye Protection:** Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. **Maintain eye wash fountain and quick-drench facilities in work area.**

**Skin Protection:** Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Protective Clothing and Equipment:** Wear impervious protective clothing.

**Respiratory Protection:** (NIOSH Approved): If the exposure limit is exceeded and engineering controls are not feasible, a full face-piece respirator with high efficiency particulate filter (NIOSH type N 100 filter) may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face-piece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Hygienic Work Practices:** Handle in accordance with good industrial hygiene and safety practice.

## Section 9: Physical and Chemical Properties

**Chemical Name:** Diphosphorus Pentaoxide

**Percent Equivalent:** 99-100%

**Physical State:** Solid

**Color and Appearance:** White, very deliquescent crystals or powder.

**Odor:** Pungent, sharp, irritating odor.

**Odor Threshold:** no data

**pH:** <2 (0.1 N aqueous sol. of phosphoric acid)

**Specific Gravity:** 2.39

**% Volatiles by volume ~ 21C (70F):** 0

**Vapor Pressure (mm Hg):** 1 ~ 384°C (723°F)

**Vapor Density (Air = 1):** no data

**Density:** no data

**Bulk Density:** no data

**Volatilities by Volume:** no data

**Boiling Point:** not applicable

**Melting Point:** 300 - 360°C (572 - 680°F)  
**Evaporation Rate (Butyl Acetate=1):** no data  
**Solubility in water:** Exothermic reaction with water.  
**Viscosity:** no data  
**Other Solubilities:** no data  
**Chemical Formula:** P<sub>2</sub>O<sub>5</sub>  
**Formula Wt:** 141.94

### Section 10: Stability and Reactivity

**Chemical Stability :** Stable X Unstable \_\_\_\_\_

Stable under ordinary conditions of use and storage.

**Reacts violently with water to form phosphoric acid.**

**Hazardous Polymerization:** May Occur \_\_\_\_\_

Will Not Occur X

**Conditions to Avoid:** Moisture and incompatibles.

**Chemical Incompatibility and Materials to Avoid:** Ammonia, calcium oxide, chlorine trifluoride, hydrogen fluoride, oxygen difluoride, perchloric acid, perchloric acid and chloroform, potassium, propargyl alcohol, sodium, sodium carbonate, sodium hydroxide, water, and a mixture of water and organic material.

**Hazardous Decomposition Products:** Phosphorus oxides may form when heated to decomposition.

### Section 11: Toxicological Information

**Inhalation rat LC50:** 1217 mg/m<sup>3</sup>/1-hr.

**Carcinogen Status:**

NTP: No IARC Category: None

### Section 12: Ecological Information

**Environmental Fate:** No data

**Environmental Toxicity :** No data

### Section 13: Disposal Considerations

**Disposal Procedures:** Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

### Section 14: Transport Information

**Domestic (Land, D.O.T.)**

Proper Shipping Name: Diphosphorus Pentaoxide

Hazard Class: 8

UN/NA: UN1807

Packing Group: II

Information reported for product/size: 500G

**International (Water, I.M.O.)**

Proper Shipping Name: Diphosphorus Pentaoxide

Hazard Class: 8

UN/NA: UN1807

Packing Group: II

Information reported for product/size: 500G and larger

**24 Hour Emergency Phone - Chemtrec: 1-800-424-9300 Transportation  
1-800-441-3637 Medical**

**International (Air, I.C.A.O.)**

Proper Shipping Name: Diphosphorus Pentaoxide  
Hazard Class: 8  
UN/NA: UN1807  
Packing Group: II  
Information reported for product/size: 500G

**Section 15: Regulatory Information****Inventory Status:**

**UNITED STATES (TSCA) Y**  
**EUROPE (EINECS/ELINCS) Y**  
**JAPAN (MITI) Y**  
**AUSTRALIA (AICS) Y**  
**SOUTH KOREA (KECL) Y**  
**CANADA**  
    (DSL) Y  
    (NDSL) N  
**PHIL. Y**

Y = All ingredients are on the inventory.

E = All ingredients are on the inventory or exempt from listing.

P = One or more ingredients fall under the polymer exemption or are on the no longer polymer list. All other ingredients are on the inventory or exempt from listing.

N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing.

**FEDERAL REGULATIONS**

**Inventory Issues:** All functional components of this product are listed on the TSCA Inventory..

**SARA 302**

    RQ: No

    TPQ: 10

**SARA 313**

    List: No

    Chemical Catg.: No

**CERCLA: 1**

**RCRA 261.33:** No

**TSCA 8(d):** No

**Chemical Weapons Convention:** No

**TSCA 12(b):** No

**COTA:** No

**SARA 311/312:**

    Acute: Yes

    Chronic: Yes

    Fire: No

    Pressure: No

    Reactivity: Yes (Pure / Solid)

**Australian Hazchem Code:** 4W

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## Section 16: Other Information

### Label Hazard Warning:

**DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED. FUMES CAUSE IRRITATION TO EYES AND RESPIRATORY TRACT. WATER REACTIVE. REACTS VIOLENTLY WITH WATER TO GENERATE HEAT AND PHOSPHORIC ACID.**

### Label Precautions:

Do not breathe dust.  
Do not get in eyes, on skin, or on clothing.  
Keep container closed.  
Do not contact with water.  
Use only with adequate ventilation.  
Wash thoroughly after handling.  
Reaction with water can generate enough heat to ignite materials that burn.

### Label First Aid:

Aspiration hazard. If swallowed, vomiting may occur spontaneously, but **DO NOT INDUCE**. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. **Call a physician immediately**. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. **Get medical attention immediately**. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. **Get medical attention immediately**.

### \*\*MSDS Acronyms\*\*

**ACGIH** - American Conference of Governmental Industrial Hygienists

**ANSI** - American National Standards Institute

**CAS** - Chemical Abstracts Service

**CERCLA** - Comprehensive Environmental Response, Compensation & Liability Act of 1980

**CFR** - Code of Federal Regulations

**CHEMTREC** - Chemical Transportation Emergency Center

**CPR** - Controlled Products Regulations

**CWC** - Chemical Weapons Convention

**DOT** - U.S. Department of Transportation

**DSL** - Canadian Domestic Substance List

**EHS** - Extremely Hazardous Substance

**EPA** - U.S. Environmental Protection Agency




**HMIS** - Hazardous Material Identification System

**IARC** - International Agency for Research on Cancer

**LEL/UEL** - Lower and Upper Explosive Limit

**mg/m<sup>3</sup>** - Milligrams per cubic meter

**MSDS** - Material Safety Data Sheet

 <b>NFPA Rating Explanation Guide</b> 					
Rating Number	Health Hazard	Flamibility Hazard	Instability Hazard	Rating Symbol	Special Hazard
4	Can be lethal	Will vaporize and readily burn at normal temperatures	May explode at normal temperatures and pressures	<b>ALK</b>	Alkaline
3	Can cause serious or permanent injury	Can be ignited under almost all ambient temperatures	May explode at high temperature or shock	<b>ACID</b>	Acidic
2	Can cause temporary incapacitation or residual injury	Must be heated or high ambient temperature to burn	Violent chemical change at high temperatures or pressures	<b>BIO</b>	BioHazard
1	Can cause significant irritation	Must be preheated before ignition can occur	Normally stable. High temperatures make unstable	<b>COR</b>	Strong Corrosive
0	No Hazard	Will not burn	Stable	<b>CRYO</b>	Cryogenic
				<b>OXY</b>	Oxidizer
					Radioactive
				<b>W</b>	Reacts violently or explosively with water
				<b>W OX</b>	Reacts violently or explosively with water or oxidizer

*This chart for reference only - For complete specifications consult the NFPA Standard*

**24 Hour Emergency Phone - Chemtrec: 1-800-424-9300 Transportation  
1-800-441-3637 Medical**

**NAERG** - North American Emergency Response Guidebook  
**NIOSH** - National Institute of Occupational Safety and Health  
**NFPA** - National Fire Protection Association  
**NTP** - National Toxicology Program  
**OSHA** - Occupational Safety and Health Administration  
**PEL** - Permissible Exposure Limit (set by OSHA)  
**PPE** - Personal Protective Equipment  
**RCRA** - Resource Conservation and Recovery Act of 1976  
**SARA** - Superfund Amendments and Reauthorization Act  
**TDG (Canadian)**: Transport of Dangerous Goods Regulations  
**TLV** - Threshold Limit Value (set by ACGIH)  
**TWA** - 8-hour Time Weighted Average  
**TSCA** - US Toxic Substance Control Act  
**WHMIS** - Workplace Hazardous Material Information System

**MSDS Issue Date:** n/a  
**Revised Date:** 5-16-2011  
**Supersedes:** n/a

**Disclaimer:** Martrex, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. **MARTREX, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MARTREX, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.**