Safety Data Sheet

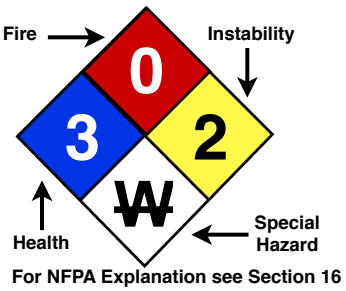
Martrex, Inc.

Section 1: Chemical Product and Company Information

Product name: Diphosphorus Pentaoxide
Reference Number: n/a
Web: www.martrexinc.com
Supplier/ Further Information: Martrex, Inc.

1107 Hazeltine Blvd,
Suite 535 MD 27,
Chaska, Minnesota 55318

Phone: 952/933-5000
Toll Free: 800/328-3627
FAX: 952/933-1889



For NFPA Explanation see Section 16

EPA Registration Number: no data
CAS#: 1314-56-3
Chemical Name: Diphosphorus Pentaoxide
Synonyms: Phosphorus Oxide; Phosphoric Anhydride; Phosphorus pentoxide
Chemical Family: no data
Product Use: Laboratory Reagent
SDS Number: no data

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

Section 2: Hazards Identification

Emergency Overview

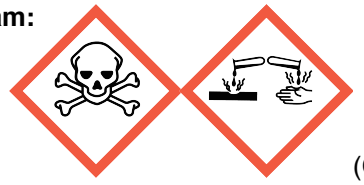
Danger! **Corrosive. Causes Burns to Any Area Of Contact. Harmful If Swallowed or Inhaled. Fumes Cause Irritation to Eyes and Respiratory Tract. Water Reactive. Reacts Violently with Water to Generate Heat and Phosphoric Acid.**

GHS Classification (Global Harmonized Classification see Section 16)**:**

Skin corrosion/irritation.	**Category 1A**	(H314)
Serious eye damage/eye irritation.	**Category 1**	(H318)
Acute toxicity, Inhalation.	**Category 2**	(H330)

GHS Label, Hazards and Precautionary Statements

GHS Pictogram:



(GHS Pictogram Hazards Definitions See Section 16)

Label Signal Word: **Danger**

Hazard Statements:

Causes severe skin burns and severe eye damage. (H314)
Fatal if inhaled. (H330)

Precautionary Statements:

Prevention:

Do not breathe dust, fume, gas, mist, vapors, spray. (P260)
Wash thoroughly after handling. (P264)
Wear protective gloves, protective clothing, eye protection, face protection. (P280)
Use only outdoors or in well ventilated area. (P271)
Wear respiratory protection. (P284)

Response:

IF SWALLOWED: Rinse mouth. **DO NOT** induce Vomiting. (P301+P330+P331)
Immediately Call a Poison Control Center/ Doctor (P310)
Specific Treatment see Section 4: First Aid Measures, Ingestion. (P321)
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. ↳(P303+P361+P353)
Wash contaminated clothing before reuse. (P363)
Immediately Call a Poison Control Center/ Doctor (P310)
Specific Treatment see Section 4: First Aid Measures, Skin Exposure. (P321)
IF INHALED: Remove person to fresh air and keep comfortable for breathing (P304+P340)
Immediately Call a Poison Control Center/ Doctor (P310)
Specific Treatment is Urgent: see Section 4: First Aid Measures, Inhalation. (P320)
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338)
Immediately Call a Poison Control Center/ Doctor (P310)
Specific Treatment see Section 4: First Aid Measures, Eye Exposure. (P321)

Storage:

Store in well-ventilated place. P403)
Keep container tightly closed. (P233)
Store locked up. (P405)

Disposal Considerations:

Dispose of content/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. (P501)

Potential Health Effects: Diphosphorus Pentaoxide 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.

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 pro-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.

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

Carcinogenicity Data:

See Section 11 for more Toxicological information

Section 3: Composition/Information on Ingredients

Hazardous Component	CAS#	%	OSHA Limits	ACGIH Limits	OTHER Limits
Diphosphorus Pentaoxide	1314-56-3	99—100%	PEL: 1 mg/m3 (TWA) for phosphoric acid	TLV: 1 mg/m3 (TWA), 3 mg/m3 (STEL) for phosphoric acid	no data

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/m3 (TWA) for phosphoric acid
ACGIH Threshold Limit Value (TLV): 1 mg/m3 (TWA), 3 mg/m3 (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 ~ 384ºC (723ºF)
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 - 360ºC (572 - 680ºF)
Evaporation Rate (Butyl Acetate=1): no data
Solubility in water: Exothermic reaction with water.
Viscosity: no data
Other Solubilities: no data
Chemical Formula: P_2O_5
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^3/1-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: UN18O7
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
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 SDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the SDS 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.**

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/m³ - Milligrams per cubic meter
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)

GHS Pictograms and Hazards

Health Hazard  • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	**Flame**  • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	**Exclamation Mark**  • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder  • Gases Under Pressure	**Corrosion**  • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals	**Exploding Bomb**  • Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle  • Oxidizers	**Environment** (Non-Mandatory)  • Aquatic Toxicity	**Skull and Crossbones**  • Acute Toxicity (fatal or toxic)

NFPA Rating Explanation Guide

Rating Number	Health Hazard	Flammability Hazard	Instability Hazard
4	Can be lethal	Will vaporize and readily burn at normal temperatures	May explode at normal temperatures and pressures
3	Can cause serious or permanent injury	Can be ignited under almost all ambient temperatures	May explode at high temperature or shock
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
1	Can cause significant irritation	Must be preheated before ignition can occur	Normally stable. High temperatures make unstable
0	No Hazard	Will not burn	Stable

Rating Symbol	Special Hazard
ALK	Alkaline
ACID	Acidic
BIO	BioHazard
COR	Strong Corrosive
CRYO	Cryogenic
OXY	Oxidizer
☢	Radioactive
W	Reacts violently or explosively with water
W OX	Reacts violently or explosively with water or oxidizer

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

PPE - Personal Protective Equipment
RCRA - Resource Conservation and Recovery Act of 1976
SARA - Superfund Amendments and Reauthorization Act
SDS - Safety Data Sheet
STEL - Concentration to which workers can be exposed continuously for a **short** period of time without suffering from irritation, irreversible tissue damage or narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue or materially reduce work efficiency.
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

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