MSDS Number: **P4116** * * * * * *Effective Date:* ***03/09/11*** * * * * * *Supersedes:* ***09/14/09***

MSDS Material Safety Data Sheet

From: Avantor Performance Materials, Inc.
Saucon Valley Plaza
3477 Corporate Parkway
Suite #200
Center Valley, PA 18034

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service, 1-855-AVANTOR (855-282-6867) for assistance.

PHOSPHORUS PENTOXIDE

1. Product Identification

Synonyms: Phosphorus Oxide; Phosphoric Anhydride; Phosphorus pentaoxide
CAS No.: 1314-56-3
Molecular Weight: 141.94
Chemical Formula: P2O5
Product Codes:
J.T. Baker: 2155, 9374, 9378
Macron: 6612

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Phosphorus Pentoxide	1314-56-3	99 - 100%	Yes

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.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Life)
Flammability Rating: 0 - None
Reactivity Rating: 3 - Severe (Water Reactive)
Contact Rating: 4 - Extreme (Corrosive)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: White (Corrosive)

Potential Health Effects

Phosphorus pentoxide reacts with moisture on body tissue surfaces to form phosphoric acid, which approximates sulfuric acid and hydrochloric acids in corrosive intensity.

Inhalation:
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.
Ingestion:
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. Aspiratiuon into the lungs can cause chemical pneumonitis. Ingestion of this material has caused human fatalities.
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.
Eye Contact:
Corrosive. Fumes and airborne powder cause eye irritation. Contact with substance can cause severe eye burns and permanent damage.
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.

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
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.
Skin Contact:
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.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

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.
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 Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. 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.

7. Handling and 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 316LSS 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.

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 System:

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.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with high efficiency particulate filter (NIOSH type N100 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 Ror P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

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

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.

9. Physical and Chemical Properties

Appearance:
White, very deliquescent crystals or powder.
Odor:
Pungent, sharp, irritating odor.
Solubility:
Exothermic reaction with water.
Specific Gravity:
2.39
pH:
< 2 (0.1 N aqueous sol. of phosphoric acid)
% Volatiles by volume @ 21C (70F):
0
Boiling Point:
Not applicable.
Melting Point:
300 - 360C (572 - 680F)
Vapor Density (Air=1):
No information found.
Vapor Pressure (mm Hg):
1 @ 384C (723F)
Evaporation Rate (BuAc=1):
Not applicable.

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage. Reacts violently with water to form phosphoric acid.
Hazardous Decomposition Products:
Phosphorus oxides may form when heated to decomposition.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
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.
Conditions to Avoid:
Moisture and incompatibles.

11. Toxicological Information

Inhalation rat LC50: 1217 mg/m3/1-hr.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Phosphorus Pentoxide (1314-56-3)	No	No	None

12. Ecological Information

Environmental Fate:
No information found.
Environmental Toxicity:
No information found.

13. Disposal Considerations

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.

14. Transport Information

Domestic (Land, D.O.T.)

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

International (Water, I.M.O.)

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

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

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

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\---------------------------------

Ingredient	TSCA	EC	Japan	Australia
Phosphorus Pentoxide (1314-56-3)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\---------------------------------

		--Canada--		
Ingredient	Korea	DSL	NDSL	Phil.
Phosphorus Pentoxide (1314-56-3)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\---------------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Phosphorus Pentoxide (1314-56-3)	No	10	No	No

--------\Federal, State & International Regulations - Part 2\----------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Phosphorus Pentoxide (1314-56-3)	1	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: 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.

16. Other Information

NFPA Ratings: Health: **3** Flammability: **1** Reactivity: **3** Other: **Water reactive**
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.
Product Use:
Laboratory Reagent.
Revision Information:
No Changes.

Disclaimer:

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Prepared by: Environmental Health & Safety