

## Material Safety Data Sheet

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Version 1.3

According to 91/155/EEC

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1 - Product and Company Information

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Product Name	PHOSPHORUS PENTOXIDE, 99.9999%
Product Number	417114
Company	Sigma-Aldrich Pte Ltd #08-01 Citilink Warehouse Singapore 118529 Singapore
Technical Phone #	65 271 1089
Fax	65 271 1571

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2 - Composition/Information on Ingredients

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Product Name	CAS #	EC no
PHOSPHOROUS PENTOXIDE	1314-56-3	215-236-1
Formula	P2O5	
Molecular Weight	141.94 AMU	
Synonyms	Diphosphorus pentoxide * Phosphorus(V) oxide * Phosphorus pentaoxide	

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3 - Hazards Identification

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SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT  
Causes severe burns.

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4 - First Aid Measures

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## AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

## AFTER SKIN CONTACT

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

## AFTER EYE CONTACT

In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

## AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately. Do not induce vomiting.

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5 - Fire Fighting Measures

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## EXTINGUISHING MEDIA

Suitable: Use extinguishing media appropriate to surrounding fire conditions.

Unsuitable: Do not use water.

## SPECIAL RISKS

Specific Hazard(s): Emits toxic fumes under fire conditions.

## SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

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## 6 - Accidental Release Measures

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PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL  
Evacuate area.

### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

### METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

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## 7 - Handling and Storage

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### HANDLING

Directions for Safe Handling: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

### STORAGE

Conditions of Storage: Keep tightly closed. Store in a cool dry place.

Incompatible Materials: Do not allow contact with water

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## 8 - Exposure Controls / Personal Protection

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### ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

### GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

### EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	1 MG/M3
Poland		NDSch	3 MG/M3
Poland		NDSP	-

### EXPOSURE LIMITS - DENMARK

Source	Type	Value
OEL	TWA	1 mg/m3

### EXPOSURE LIMITS - GERMANY

Source	Type	Value
TRGS 900	OEL	1 mg/m3, E

Remarks: =1=

### EXPOSURE LIMITS - NORWAY

Source	Type	Value
	OEL	1 mg/m3

### EXPOSURE LIMITS - SWEDEN

Source	Type	Value
	LLV (Level 1)	mg/m3
EXPOSURE LIMITS - SWITZERLAND		
Source	Type	Value
OEL	OEL	1 mg/m3

Remarks: E

EXPOSURE LIMITS - UNITED KINGDOM		
Source	Type	Value
OEL	STEL	2 mg/m3

Remarks: Indicative limit value

#### PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.

Hand Protection: Compatible chemical-resistant gloves.

Eye Protection: Chemical safety goggles.

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### 9 - Physical and Chemical Properties

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Appearance	Color: White Form: Fine crystals	
Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	N/A	
MP/MP Range	340 °C	
Flash Point	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	N/A	
Vapor Pressure	10 mmHg	238 °C
SG/Density	2.3 g/cm3	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	4.9 g/l	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	N/A	
Surface Tension	N/A	
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

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### 10 - Stability and Reactivity

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#### STABILITY

Stable: Stable.

Materials to Avoid: Water, Sodium, Potassium, Ammonia, Peroxides, Magnesium, Alcohols, Metals, Oxidizing agents Reaction with 95% formic acid caused rapid evolution of carbon monoxide. Dry mixtures with sodium oxide, calcium oxide react violently if warmed or moistened. A reaction with sodium carbonate may be initiated by strong local heating. The addition of phosphorous pentoxide to 3-propynol results in ignition. Reacts vigorously with hydrogen fluoride, violently with iodides and sulfides, and

explosively with calcium when heated. Incompatible with: bromine pentafluoride, chlorine trifluoride, perchloric acid, and oxygen difluoride

#### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Thermal decomposition may produce toxic fumes of phosphorus oxides and/or phosphine.

#### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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### 11 - Toxicological Information

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RTECS NUMBER: TH3945000

#### ACUTE TOXICITY

LC50

Inhalation

Rat

1,217 mg/m3

1H

Remarks: Lungs, Thorax, or Respiration:Chronic pulmonary edema.  
Lungs, Thorax, or Respiration:Other changes. Blood: Hemorrhage.

LC50

Inhalation

Mouse

271 mg/m3

1H

Remarks: Lungs, Thorax, or Respiration:Chronic pulmonary edema.  
Lungs, Thorax, or Respiration:Other changes. Blood: Hemorrhage.

LC50

Inhalation

Rabbit

1,689 mg/m3

1H

Remarks: Lungs, Thorax, or Respiration:Chronic pulmonary edema.  
Lungs, Thorax, or Respiration:Other changes. Blood: Hemorrhage.

LC50

Inhalation

Guinea pig

61 mg/m3

1H

Remarks: Lungs, Thorax, or Respiration:Chronic pulmonary edema.  
Lungs, Thorax, or Respiration:Other changes. Blood: Hemorrhage.

#### SIGNS AND SYMPTOMS OF EXPOSURE

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

#### ROUTE OF EXPOSURE

Skin Contact: Causes burns.

Skin Absorption: Harmful if absorbed through skin.  
Eye Contact: Causes burns.  
Inhalation: Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.  
Ingestion: Ingestion can cause immediate burning pain in the mouth, throat, abdomen; severe swelling of the larynx and skeletal paralysis affecting the ability to breathe, circulatory shock and convulsions.

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## 12 - Ecological Information

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## 13 - Disposal Considerations

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### SUBSTANCE DISPOSAL

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

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## 14 - Transport Information

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### RID/ADR

UN#: 1807  
Class: 8  
PG: II  
Proper Shipping Name: Phosphorus pentoxide

### IMDG

UN#: 1807  
Class: 8  
PG: II  
EmS Number: 8-06  
MFAG Number: 700  
Proper Shipping Name: Phosphorous pentoxide  
Marine Pollutant: No  
Severe Marine Pollutant: No

### IATA

UN#: 1807  
Class: 8  
PG: II  
Proper Shipping Name: Phosphorus pentoxide  
Inhalation Packing Group I: No

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## 15 - Regulatory Information

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### CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 015-010-00-0  
INDICATION OF DANGER: C

Corrosive.

R-PHRASES: 35

Causes severe burns.

S-PHRASES: 22 26 45

Do not breathe dust. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

### COUNTRY SPECIFIC INFORMATION

Germany

WGK: 1

SWITZERLAND

SWISS POISON CLASS: 2

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16 - Other Information

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WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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